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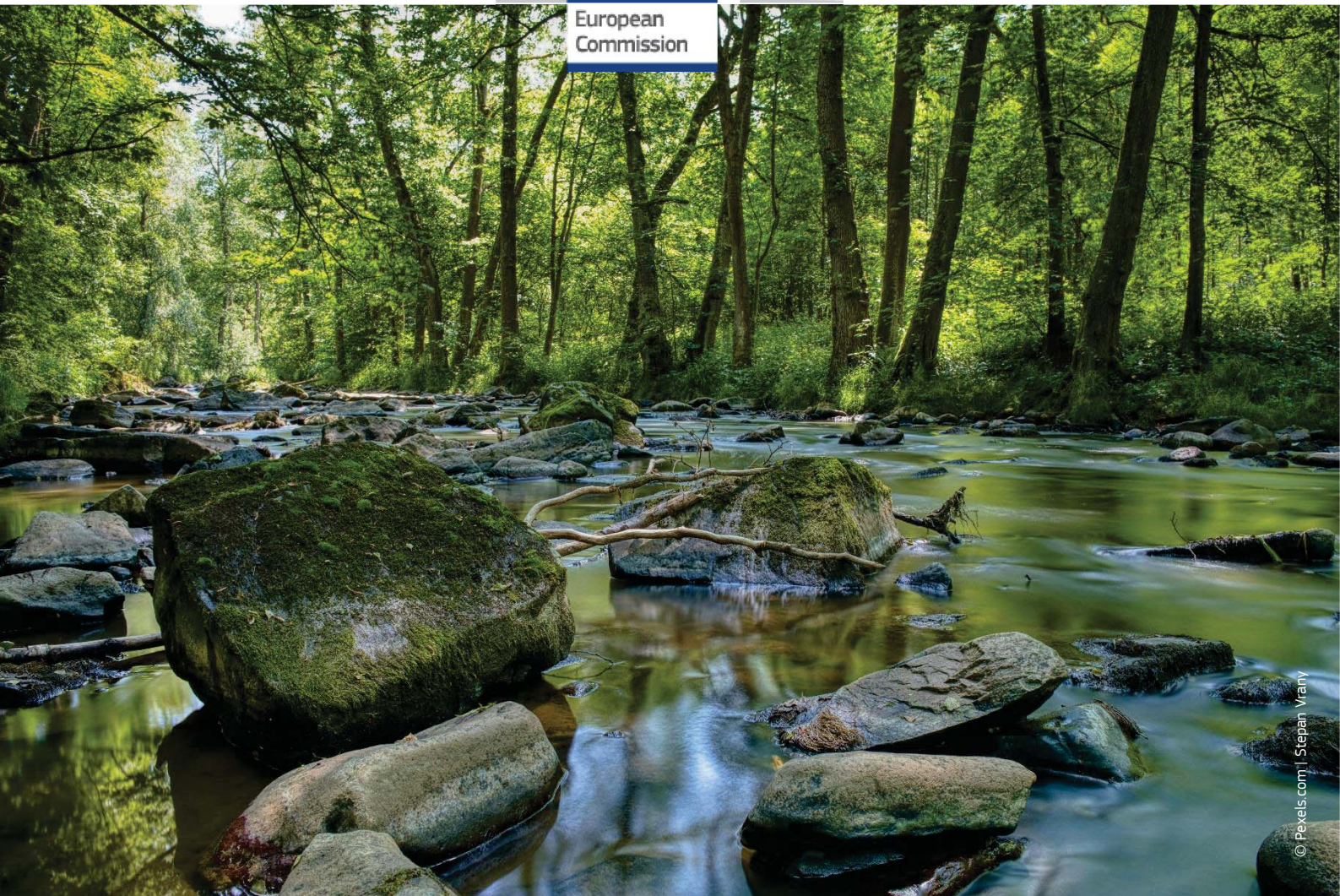
**Third River Basin Management Plans Second Flood Hazard and Risk Maps and
Second Flood Risk Management Plans
Member State: Cyprus**

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}



Country-specific staff working document

Cyprus



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SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, member state characterisation

Cyprus is the largest island in the Eastern Mediterranean and the third-largest island in the Mediterranean Sea. It has a terrestrial area of approximately 9,251 km² and an Exclusive Economic Zone (EEZ) of around 98,000 km².

Strategically located at the crossroads of Europe, Asia and Africa, Cyprus shares maritime boundaries with Turkey, Syria, Lebanon, Israel, Egypt and Greece. Its population is estimated at around 1.37 million inhabitants in 2025, with a population density of approximately 148 inhabitants per km², above the EU average. Cyprus is characterised by a diverse landscape dominated by the Troodos mountain range in the central and south-western part of the island and the Pentadactylos mountain range in the north, separated by the fertile Mesaoria Plain. Under the Water Framework Directive, Cyprus constitutes a single River Basin District. The island has a semi-arid Mediterranean climate and limited water resources, which are largely dependent on highly precipitation. Increasing temperatures, prolonged droughts, growing demand from households, agriculture and tourism have intensified pressure on water resources, leading Cyprus to be one of the Member States with the highest Water Exploitation Index Plus values. To strengthen water security and improve water efficiency, Cyprus has invested in an integrated water management system based on dams, seawater desalination, wastewater treatment and water reuse.

Currently, 37.8% of the country's land area is designated as protected area, which is significantly above the EU value of 26.4%. As regards agriculture, most farms are family holdings with very small surface areas. In fact, more than 75% of farms occupy less than two hectares. The agriculture of the island is very vulnerable to water scarcity and climate change, and relies heavily on wastewater reuse. Cyprus claims that it already reuses around 90% of its treated wastewater, significantly above the EU average, with reclaimed water meeting around 37% of the country's irrigation needs.

Map A. Map of river basin districts

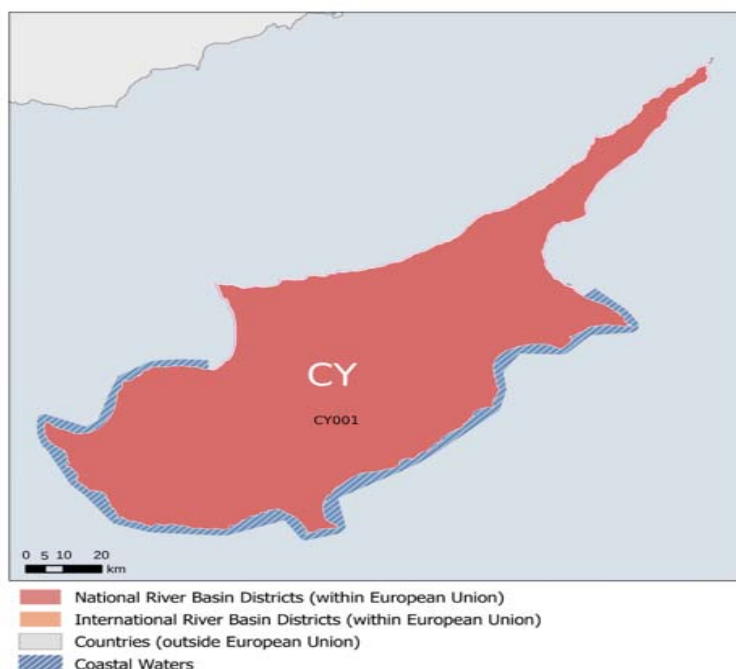


Table A. Overview of Cyprus's river basin districts

RBD	Name	Size (km ²)
CY001	Cyprus	9 235.914

Source: WISE electronic reporting

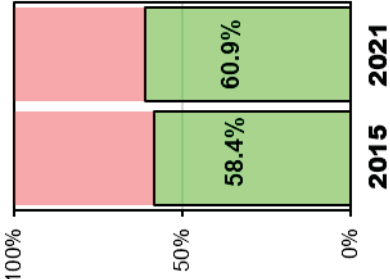
Reporting

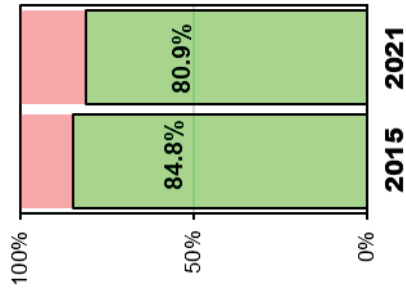
The deadline for reporting the third river basin management plans (RBMPs) was March 2022. The European Commission and the European Environment Agency (EEA), together with Member States, developed a voluntary electronic reporting system in the Water Information System for Europe (WISE). Some Member States used it to fulfil their obligations; others submitted their 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 this date.

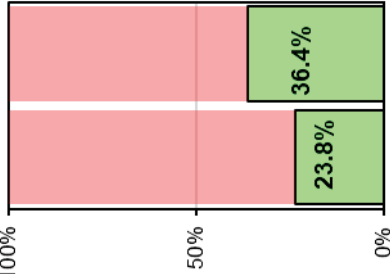
A RBMP for Cyprus (CY001) was submitted in pdf format in November 2023, along with eight background documents. Electronic reporting was completed by Cyprus, but it did not consult, adopt and report the RBMP according to the Water Framework Directive (WFD) timetable. The late adoption resulted in infringement proceedings by the European Commission.

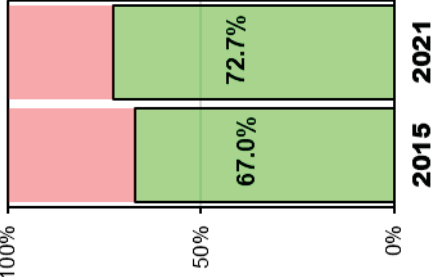
The values used in this document are based on the third RBMP e-reporting. However, during the consultation phase of the consultant's report, Cyprus noted inconsistent values in the e-reporting and provided updated values. Therefore, the values used in this document are based on the e-reporting and the updated values are referenced with an appropriate footnote.

Changes in status, pressures, exemptions and measures

Surface water bodies (215)	Trend (% good status/potential)	Main pressures and changes and exemptions						
ECOLOGICAL STATUS	 <table><thead><tr><th>Year</th><th>% good status/potential</th></tr></thead><tbody><tr><td>2015</td><td>58.4%</td></tr><tr><td>2021</td><td>60.9%</td></tr></tbody></table>	Year	% good status/potential	2015	58.4%	2021	60.9%	The percentage of surface water bodies (SWBs) with good or high ecological status or potential has increased slightly since the second RBMP (58.4% to 60.9%). However, there is low confidence in the ecological status of SWBs due to limited monitoring of quality elements. Many are not monitored at all, and there is limited use of grouping and expert judgement to compensate for gaps in monitoring. The main drivers for pressure are diffuse pollution from agriculture (around 29%) followed by abstraction for agriculture, affecting around 15% of SWBs. It must be highlighted that there is a significantly high number of as yet unknown anthropogenic pressures affecting 63% of SWBs. By 2027, it is expected that 62.8% of SWBs will have good or better ecological status, 32.6% will have less than good ecological status and the remaining 4.6% unknown status. Another issue to be noted is that there is no linkage between gap indicators, key type measures (KTMs) and measures taken for the electronic reporting. Several measures have been linked to KTMs 2, 3 and ‘other’. For nutrients, the information on gap indicators was not provided in the third RBMP electronic reporting, in terms of either the need to reduce nutrient loads or the number of water bodies where measures are needed. It is therefore not possible to assess the gaps and the distance to target. <u>Article 4(4) exemptions</u> are applied to 8 SWBs (3.7%) due to natural conditions, and to 15 SWBs (7%) for technical feasibility reasons. <u>Article 4(5) exemptions</u> are applied to 4 SWBs (1.9%) due to disproportionate costs.
	Year	% good status/potential						
2015	58.4%							
2021	60.9%							

The percentage of SWBs with good chemical status in Cyprus has slightly decreased (84.8% to 80.9%). No change is expected in the number of SWBs that have good chemical status by 2027. However, SWBs with unknown chemical status are expected to increase. Regarding the confidence rating, for SWBs with good chemical status, the confidence in classification for the high and medium categories has increased considerably (down from 50% in 2015 to 30% in 2021). As the overall number of monitoring stations has increased, this may be part of the explanation as to why the overall confidence in classification has improved. Of the 45 priority substances, monitoring obligations cover known discharges of 6 substances (primarily metals) (the frequency of monitoring varies per location and substance, from as low as once every six years, to as high as 10 times a year). For lakes and reservoirs, a reduced subset of the total priority substances is included in the monitoring programme. For the period 2013 to 2019, monitoring was conducted for all 45 priority substances in rivers. The top priority substances affecting SWBs include metals such as nickel, mercury and cadmium, all in the top 5 (as well as lead, which is in the top 10). Nickel is responsible for 10% of all water bodies failing to achieve good chemical status. Regarding measures, there is no electronic reporting of KTMs for pressures or the gap indicators. It is therefore hard to identify the gaps to achieving good status for the chemical pollutants identified. <u>Article 4(4) exemptions</u> apply to 2 SWBs (0.9%) for technical feasibility reasons, and to 4 SWBs (1.9%) due to natural conditions. <u>Article 4(5) exemptions</u> apply to 18 SWBs (8.4%) due to disproportionate costs, and to 15 SWBs (7%) due to infeasibility.	CHEMICAL STATUS <table><tr><th>Year</th><th>Percentage of SWBs with good chemical status</th></tr><tr><td>2015</td><td>84.8%</td></tr><tr><td>2021</td><td>80.9%</td></tr></table>	Year	Percentage of SWBs with good chemical status	2015	84.8%	2021	80.9%
Year	Percentage of SWBs with good chemical status						
2015	84.8%						
2021	80.9%						

Groundwater bodies (22)	Trend (% good status/potential)	Main pressures and changes and exemptions						
QUANTITATIVE STATUS	 <table><thead><tr><th>Year</th><th>% good status/potential</th></tr></thead><tbody><tr><td>2015</td><td>23.8%</td></tr><tr><td>2021</td><td>36.4%</td></tr></tbody></table>	Year	% good status/potential	2015	23.8%	2021	36.4%	The percentage of groundwater bodies (GWBs) with good quantitative status is relatively low, but has increased in the third RBMP (23.8% to 36.4%). 14 GWBs fail to achieve good quantitative status due to the available groundwater resource being exceeded by the long-term annual average rate of abstraction and/or due to a human-induced decline in groundwater levels. Moreover, 6 out of these 14 GWBs (i.e. 27.3% of total GWBs assessed) have failed to achieve a good quantitative status because of regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction. The same 14 GWBs (i.e. 63.6% of total GWBs assessed) that had poor quantitative status in 2021, are also expected to fail to achieve good quantitative status by 2027. <u>Article 4(4) exemptions</u> apply to 14 GWBs (63.6%) due to natural conditions.
Year	% good status/potential							
2015	23.8%							
2021	36.4%							

CHEMICAL STATUS	 <table border="1"> <thead> <tr> <th>Year</th> <th>Good (%)</th> <th>Poor (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>67.0%</td> <td>33.0%</td> </tr> <tr> <td>2021</td> <td>72.7%</td> <td>27.3%</td> </tr> </tbody> </table>	Year	Good (%)	Poor (%)	2015	67.0%	33.0%	2021	72.7%	27.3%	The percentage of GWBs with good chemical status has increased in the third RBMP. All 22 GWBs, and thus the entire GWB area, are subject to chemical monitoring, compared to high but less than full coverage in the second RBMP, when 19 out of 21 GWBs (i.e. 90.5% of total GWBs) were assessed. The top five pollutants affecting GWBs consist of electrical conductivity (22.7% of all GWBs), chloride (22.7% of all GWBs), nitrate (22.7% of all GWBs), sulphate (18.2% of all GWBs) and ammonium (9.1% of all GWBs). The same 6 GWBs (i.e. 27.3% of total GWBs assessed) that had poor chemical status in 2021 are expected to fail to achieve good chemical status by 2027. In the third RBMP electronic reporting, there is no quantified gap assessment for chemical pollution in GWBs. Therefore, the gap to achieving good chemical status in GWBs is not visible. <u>Article 4(4) exemptions</u> apply to 6 GWBs (27.3%) due to natural conditions.
Year	Good (%)	Poor (%)									
2015	67.0%	33.0%									
2021	72.7%	27.3%									

2. Horizontal aspects



2.1 Governance

The Ministry of Agriculture, Rural Development and Environment (MARD&E) is the ministry responsible, but the Water Development Department (WDD) is the competent authority that actually implements the Water Framework Directive and prepares the RBMPs, including monitoring water status, analysis, public consultation and reporting. It coordinates the programme of measures and preparation of the RBMP, with final approval from the Council of Ministers. Since the second RBMP, there have been no changes or subplans. A strategic environmental assessment (SEA) was completed and included in the third phase of public consultation¹. Cyprus is treated as a single RBD covering all 70 main river basins. The government controls 47 of these, which are grouped into 9 subunits². The remaining RBDs do not fall under the effective control of the Government of the Republic of Cyprus.

A consultation was conducted for the third RBMP. The competent authorities used a consultation questionnaire and a workshop, and a steering committee comprising representatives of relevant ministries, government departments and local authorities was appointed to coordinate the RBMP and the preparation of the programme of measures. However, it is not clear whether the comments have been published and whether a summary of responses is being made available.

Although Cyprus's third RBMP builds on the second RBMP and the first flood risk management plan (FRMP), it lacks clear information on how it is coordinated with the second FRMP as regards the identification of significant water management issues, risk assessment, monitoring and public consultation. Moreover, it is unclear if a joint public consultation for the RBMP and FRMP took place.

Some coordination between the management of marine areas and freshwater is evidenced since the Cyprus Department of Fisheries and Marine Research participated in the third RBMP consultation and was on the steering committee for drafting the third RBMP and programme of measures. However, the RBMP does not specify whether a joint public consultation was carried out for the 3rd RBMP and the 2nd FRMP.



2.2 Characterisation of River Basin District

In Cyprus, there are a total of 215 SWBs and 22 GWBs. As was also the case in the second RBMP, Cyprus has delineated river, lake and coastal water bodies but has not delineated transitional or territorial water bodies. During 2019-2020, the delineation of water bodies was reanalysed and updated, but without changing the basic and additional criteria used in the second and first RBMPs. Since the second RBMP, most of the intermittent rivers (watercourses that do not flow continuously throughout the year – they have periods of flow and periods of no flow, driven by seasonal rainfall and groundwater patterns) in Cyprus are no longer considered WFD water bodies but they are still subject to monitoring under national legislation.

Cyprus's third RBMP has delineated a total of 23 GWBs, increasing from 22 in the second RBMP. This change results from the re-delineation, and subsequent splitting into two, of one GWB, with the overall total GWB area remaining nearly unchanged since the previous cycle. One GWB (CY-20) is situated within an area not under the effective control of the Government of the Republic of Cyprus

¹ Terms are detailed in Section 1.6 of the third RBMP.

² In accordance with Protocol No 10, annexed to the Act of Accession of the Republic of Cyprus to the European Union (EU), the application of the *acquis*, i.e. the body of EU law, is suspended in the areas of the Republic of Cyprus in which the Government of the Republic of Cyprus does not exercise effective control.

and, consequently, has been excluded from both the second and third RBMP assessments, leaving 21 and 22 GWBs assessed, respectively.

Table 1. Water bodies delineated in Cyprus

RBD Name	Rivers	Lakes	Transitional	Coastal	Territorial	Groundwater
Cyprus (CY001)	170	23	0	22	0	22

Source: WISE electronic reporting

Surface waters

63% of SWBs are affected by as yet unknown anthropogenic pressures. This calls for more thorough operational or surveillance monitoring.

The significant impact affecting the highest percentage of SWBs is nutrient pollution. Indeed, 54 out of the 215 SWBs assessed (i.e. 25.1% of total SWBs assessed) failed to achieve good ecological status or potential by 2021 and are significantly affected by diffuse pollution from agriculture. This differs from the previous cycle, where the highest impact was stated as being altered habitats due to morphological changes.

In Cyprus, hydromorphological pressures are only reported for a dam/barrier on the Chapotami river. Significant pressures also come from abstraction due to agriculture and public water supply.

Agriculture covers around 47.5% of Cyprus, and forest and semi-natural areas cover 42.4%³. Around 7% of agricultural land is managed organically⁴.

Gap analyses for nutrient pollution have not been carried out in the third RBMP.

Groundwater

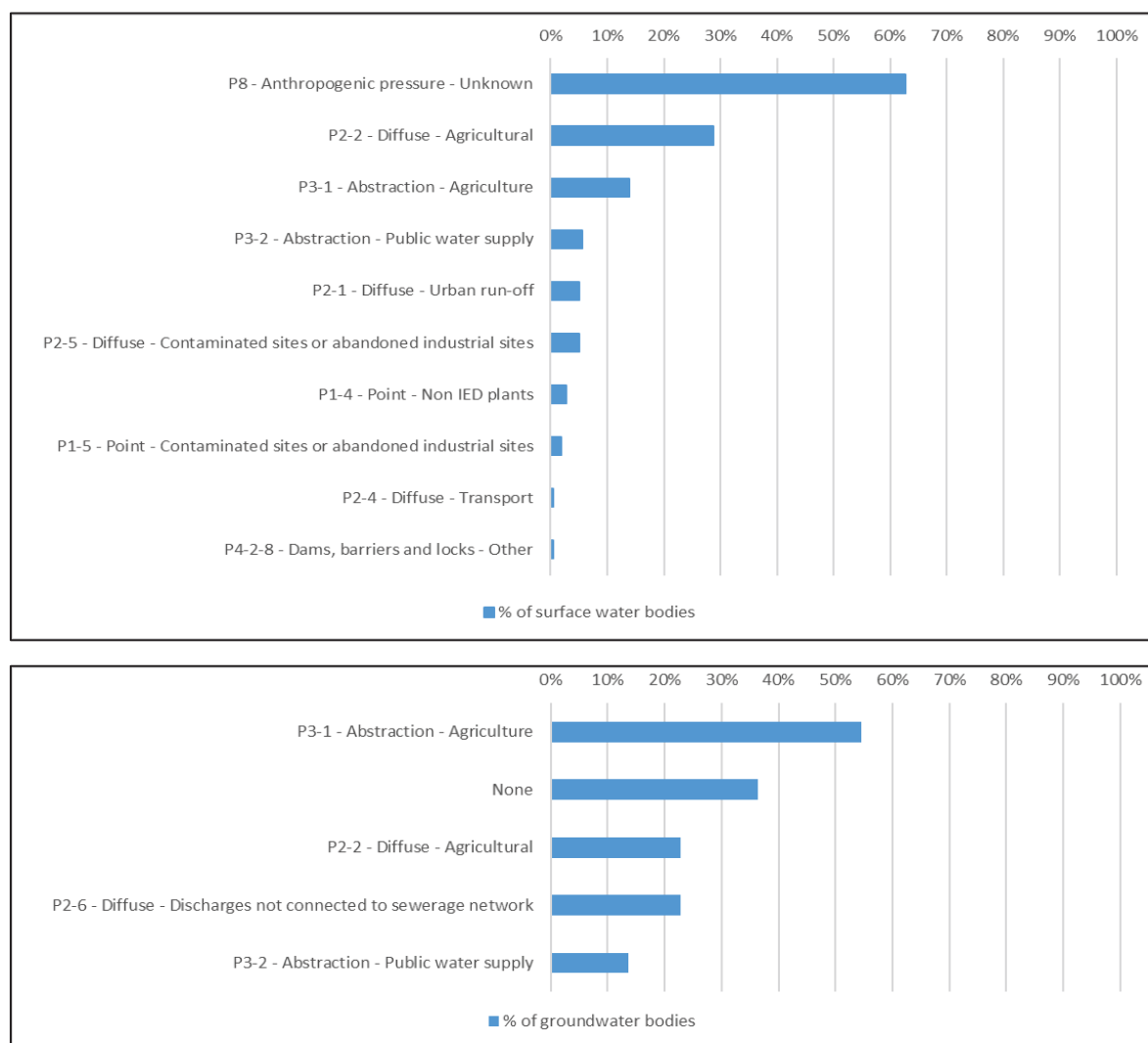
For GWBs, as was already the case in the past, the most significant pressure and impact comes from abstraction for agriculture and lowering water tables. However, there seems to be a slight improvement in pressures and impacts compared to the previous cycle. In addition, it is noted that 5 out of the 22 GWBs assessed (i.e. 22.7% of total GWBs assessed) had poor chemical status in 2021 and are significantly affected by diffuse pollution from agriculture.

³ <https://www.eea.europa.eu/en/analysis/maps-and-charts/land-cover-and-change-statistics-dashboards>.

⁴ Eurostat - Developments in organic farming in 2021:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Developments_in_organic_farming.

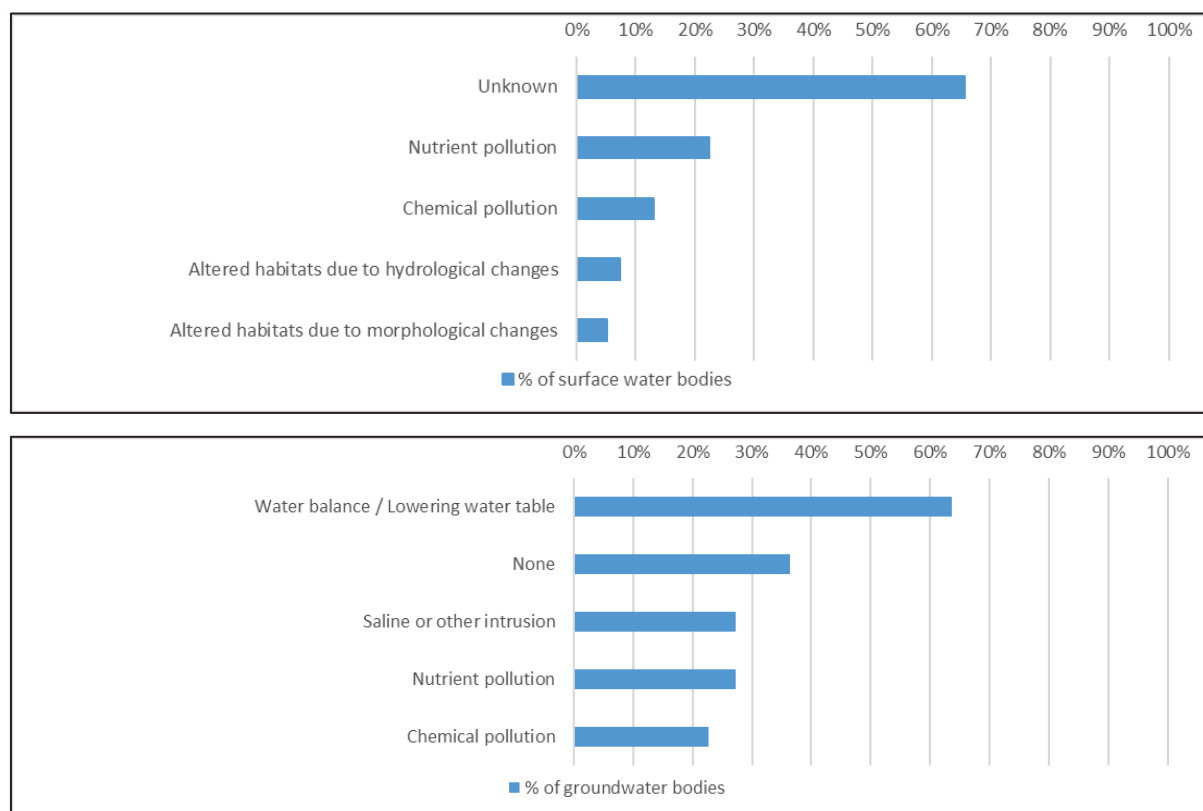
Figure 1. The most significant pressures on surface water and groundwater bodies in Cyprus in the third RBMP (expressed as percentages of numbers of water bodies)⁵



Source: WISE electronic reporting.

⁵ Cyprus provided alternative values for the percentage of SWBs affected by significant pressures that are different to those reported in the electronic data. According to Cyprus, the significant pressures affecting the highest percentage of SWBs are diffuse pollution from agriculture (37%) followed by abstraction for agriculture (19%). Unknown anthropogenic pressures affect only 5% of the SWBs.

Figure 2. The most significant impacts on surface water and groundwater bodies in Cyprus in the third RBMP (expressed as percentages of numbers of water bodies)⁶



Source: WISE electronic reporting

The WFD requires type-specific reference conditions to be set for biological hydromorphological and physico-chemical quality elements. These are the values at high ecological status. This has been done for rivers and coastal water, but not for the majority of lakes (83%).

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 to determine the status of all water bodies at risk of not reaching the environmental objectives and ii) surveillance monitoring aimed rather at providing an assessment of the overall surface water status within the RBD, as well as identifying impacts and long-term changes. In Cyprus, surveillance monitoring covers 55% of river length, 90% of lake area and 57% of coastal area. However, Cyprus subsequently provided alternative values for the surveillance monitoring coverage in rivers and lakes compared to those reported electronically. More specifically, surveillance monitoring covers 37% of river length and 1% of lake area.

⁶ Cyprus also subsequently provided alternative values for the percentage of surface water bodies affected by significant impacts that are different to those reported in the electronic data. According to Cyprus, the significant impacts affecting the highest percentage of surface water bodies are nutrient pollution (31%) followed by chemical pollution (15%). Unknown impacts affect only 5% of the surface water bodies.

The deployment of operational monitoring remains scarce. Although Cyprus subsequently provided alternative values for the operational monitoring coverage in rivers and lakes, operational monitoring covers 23% of river length and 99% of lake area.

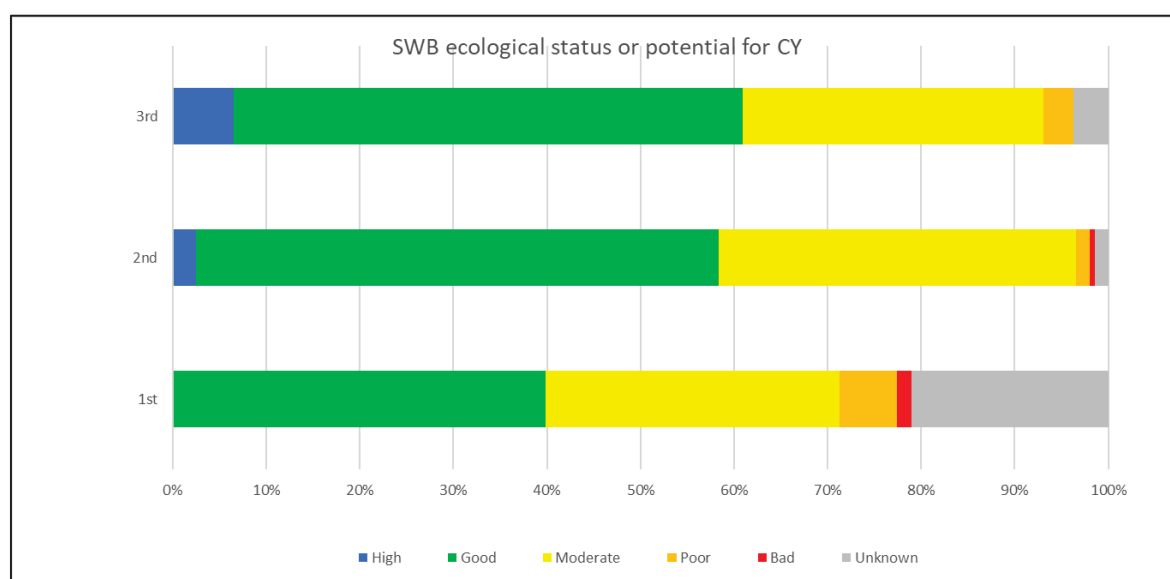
Regarding the inclusion of various biological quality elements in monitoring, these are included for coastal waters but there are significant gaps for rivers and lakes. Regarding hydromorphological quality elements and physico-chemical quality elements, some are monitored and some are not. No physico-chemical quality elements are monitored in coastal waters. In conclusion, it would seem that the monitoring system features considerable gaps across the board, and does not cover a number of elements required by law.

Status assessment

Figure 4 compares the assessment of the ecological status of surface waters in the different cycles. There are more unknowns than in the previous cycle and yet the assessment concludes that there is an improvement in the ecological status compared to the second RBMP (those with good status have increased from 58.4% to 60.9%). It is predicted that the situation will continue improving and will reach 62.9% by 2027.

For a large proportion of SWBs, the confidence in such assessments is low.

Figure 4. Ecological status or potential of surface water bodies in Cyprus in the first, second and third RBMPs



Source: WISE electronic reporting



3.2 Hydromorphological changes and artificialisation – (HMWBs and AWBs)

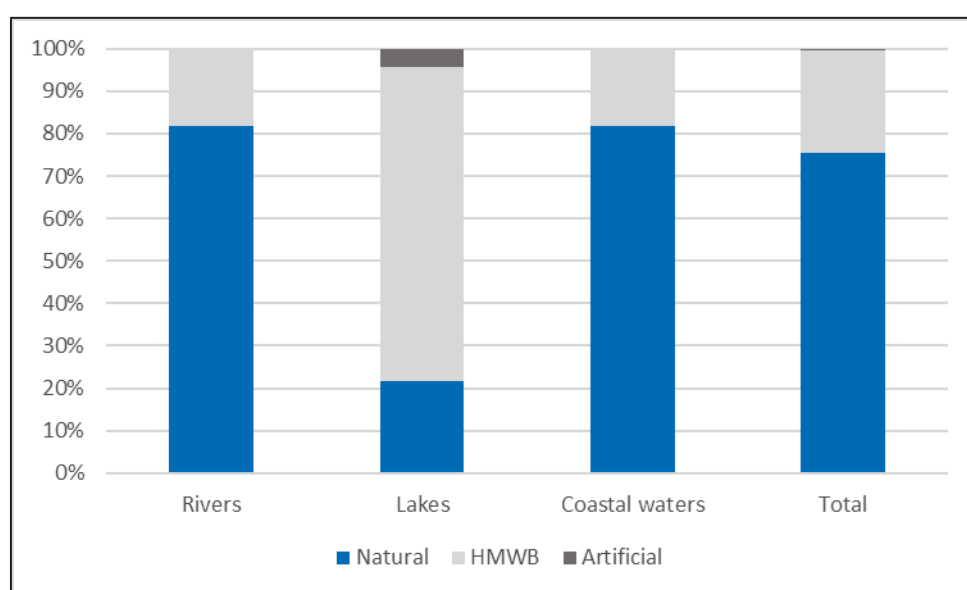
Some SWBs are such that the changes in hydromorphological characteristics necessary to achieve good ecological status would have significant adverse effects on the wider environment or on any of various uses including navigation, flood protection, hydropower and irrigation. Member States can, in such cases, designate these water bodies as HMWBs or AWBs. The environmental objective of such bodies is good ecological potential instead of good ecological status. In Cyprus, the number of river HMWBs has changed due to designation of new HMWBs, aggregation of existing ones and the reclassification of some HMWBs previously designated as natural. This has resulted in a decrease in the overall number of designated HMWBs compared to the previous cycle.

A vast majority of lakes are heavily modified and human intervention is significant also in rivers and coastal areas.

Figure 5 shows the level of human intervention in the water system. Cyprus has designated a total of 52 water bodies as heavily modified. This comprises 31 rivers, 17 lakes and 4 coastal waters.

The reasons for water bodies being heavily modified are mostly irrigation for agriculture (81%), followed by drinking water supply (46%), urban development (other use) (10%), tourism and recreation (6%) and transport (6%). According to the status assessment, 22 HMWBs have good, 27 moderate, 1 poor, and 2 unknown ecological potential. The single AWB has unknown ecological potential. Unfortunately, the third RBMP does not provide an evaluation of ecological potential for lake and coastal HMWBs.

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



Source: WISE electronic reporting



3.3 Groundwater bodies - have they sufficient water – quantitative status

All GWBs under assessment (21 and 22 in the second and third RBMPs, respectively) are subject to quantitative monitoring, with 86 monitoring sites. GWBs have not been grouped in the assessment of their quantitative status.

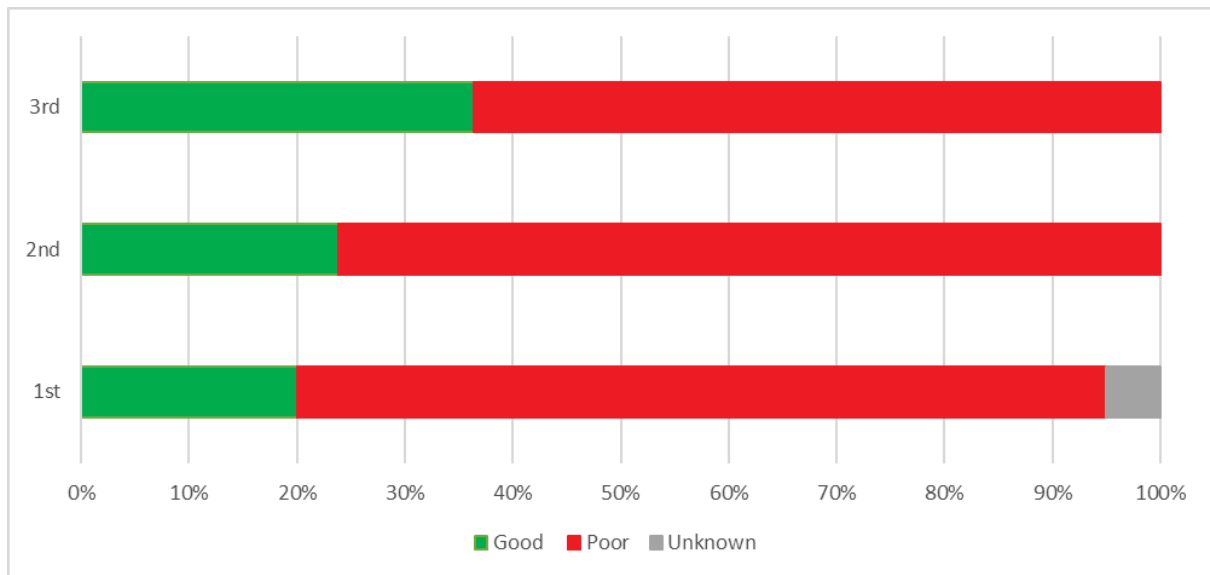
Furthermore, 13 GWBs have been designated as drinking water protected areas.

It is noted with strong concern that only 8 out of 22 GWBs (36.4%) had good quantitative status, while 14 GWBs (63.6%) continued to have poor status and are expected to continue to do so in 2027. The reason is over-abstraction, in some cases also coupled with saline intrusions.

This is an improving trend since 16 GWBs had a bad status in the previous cycle. This improvement would need to be better explained in the light of increasing impacts of climate change.

Confidence in the assessment of the quantitative status of GWBs does not show clear progress since the second RBMP.

Figure 6. Quantitative status of groundwater bodies in the first, second and third RBMPs



Source: WISE electronic reporting

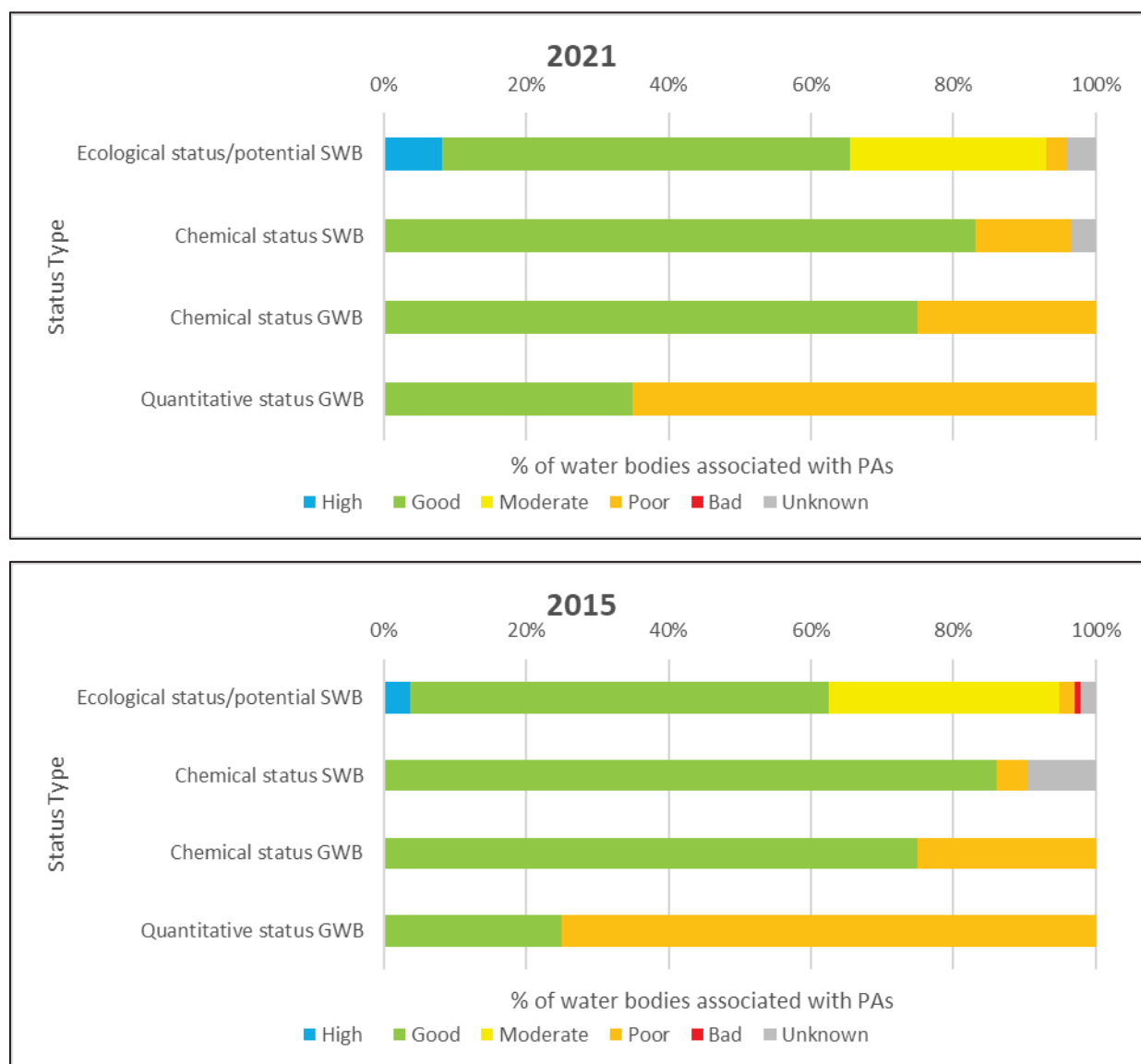


3.4 Protected areas (identification, monitoring, objectives and measures)

Cyprus has designated five types of protected areas: areas intended for the abstraction of water for human consumption, water bodies designated as recreational waters under the Bathing Waters Directive, nutrient sensitive areas under the Urban Wastewater Treatment Directive, nitrate vulnerable zones under the Nitrates Directive and Natura 2000 sites under the Birds and Habitats Directives. Monitoring sites are set up for the five types of designated protected areas.

Figure 7 shows the progress in the status of water bodies associated with protected areas in the second and third RBMPs. There seems to be an improvement in protected areas for ecological status (from 63% to 66%) and quantitative status (from 25% to 35%). The opposite is true for the chemical status of surface water, where there is a slight deterioration in protected areas (from 86% to 83%). The percentage of GWBs associated with protected areas with good chemical status remains the same.

Figure 7. Progress in the status of water bodies associated with protected areas in the second RBMP (2016) and third RBMP (2022)



Source: WISE electronic reporting

The protected areas are generally subject to additional objectives, which may differ from one water body to another. Basic measures are planned in protected areas, aimed at ensuring compliance with the relevant Directives (e.g. Nitrates Directive, Urban Wastewater Treatment Directive, Bathing Water Directive and Birds and Habitats Directives) and the respective national laws. Additional measures are planned in the Xeros Potamos river water body, a water body associated with several Natura 2000 sites. These measures aim to maintain the ecological flow (e-flow) downstream of the Asprokremmos dam. No further information has been found on additional measures related to protecting and improving protected areas associated with SWBs and GWBs.



3.5 What is being done to prevent/reduce hydromorphological pressures

To tackle these pressures, Cyprus has reported the following measures:

- KTM 5 – ‘Improving longitudinal continuity’;

- KTM 6 – ‘Improving hydromorphological conditions of water bodies other than longitudinal continuity’;
- KTM 7 – ‘Improvements in flow regime and/or establishment of ecological flows’;
- KTM 14 – ‘Research activities’.

It has also listed general measures, such as restricting extractions from selected water bodies with the aim of protecting important ecological features and habitats, and upgrading the registry of small point extractions and publishing it in the RBMP.

Regarding WFD measures also related to the Floods Directive and drought management, Cyprus has listed the following measures:

- preparing a special action programme to address stormwater runoff from residential areas and industrial facilities with the aim of protecting water (BM-h-02);
- including the prospect of groundwater enrichment in the design of flood control projects and other related projects on natural water retention (ΣM-xiv-02);
- knowledge transfer and information actions (training producers through relevant actions under the ΠΑΑ 2023-2027) (ΣM-xv-01).

As for ecological flows, they have been established, but not yet used at full scale for permitting purposes. Measures related to ecological flows include:

- e-flows downstream of dams to improve the hydromorphological characteristics of selected HMWBs that support important ecological elements (measure ΣM-vii-05);
- releasing targeted e-flows downstream of dams in selected locations with particularly important ecological characteristics (measure ΣM-vii-06);
- releasing flood flows at selected dams (Measure ΣM-vii-07);
- applying a special programme to assess the effectiveness of e-flows (measure ΣM-vii-14).



3.6 What Cyprus is doing for abstractions and water scarcity

As mentioned earlier, water abstraction in Cyprus is one of the most significant pressures affecting water resources. Cyprus is required to report water exploitation index+ (WEI+) data due to significant water abstraction pressures. The national drought management plan (DMP) reports an average WEI+ of 49.7% from 2018 to 2022, indicating severe water scarcity. Future projections show worsening conditions due to climate change⁷.

WEI+ values above 20% indicate that water resources are under stress and therefore conditions of water scarcity prevail. Values above 40% indicate that stress is severe. The DMP includes measures to address water scarcity and droughts, detailing current trends in water supply, impacts of climate change and management strategies. However, the third RBMP lacks detailed forward-looking analysis on future water demand.

The main water uses in Cyprus are irrigation: 59.1%, households and urban uses: 29.6%, tourism: 4.9%, animal husbandry: 3.3% and manufacturing: 3.0%⁸.

By law, a permit is needed for water abstraction from surface and groundwater. Yet there are evidence of unauthorised abstractions and a failure to implement environmental flow requirements.

With regard to e-flows, they have only been partially established and implemented for relevant water bodies in Cyprus, so related work continues under the third RBMP. The connection between e-flow

⁷ https://www.moa.gov.cy/moa/WDD/wfd.nsf/page31_gr/page31_gr?opendocument.

⁸ https://ec.europa.eu/eurostat/databrowser/view/env_wat_abs_custom_8401102/default/table.



implementation and the permit process for water abstraction and impoundment is only partial. Where e-flows are not established or implemented, such a connection does not exist.

3.7 Adaptation to climate change

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

Cyprus's programme of measures was partly developed with adaptation to climate change in mind, listing 14 related actions. While the third RBMP lacks a dedicated section on quantitative aspects of water management and climate change, the updated 2023 DMP includes considerations on climate change and provides water scarcity and drought indicators.

Cyprus has taken several steps to address climate change, including preparing a climate change adaptation plan in 2014 and an updated national strategy on adaptation to climate change for 2025-2050⁹ in 2025.

The DMP emphasises the importance of avoiding an imbalance between water demand and supply. It outlines long-term and short-term measures, categorised by their focus on different sectors such as water demand management, increasing water availability, minimising drought and effects of water scarcity¹⁰. These measures can be technological, economic or social, depending on their nature. As regards floods, the Floods Directive requires Member States to consider how climate change contributes to the occurrence of floods, and to therefore take it into account when preparing flood hazard and risk maps (FHRMs) and FRMPs. Climate change considerations were included in both the first and second FHRMs of Cyprus. In the second FHRMs, climate change scenarios are applied to all areas of potential significant flood risk (APSFRs). They relate to both fluvial and pluvial floods and to all the probability scenarios (low, medium and high). For each APSFR and return period, the approach used is based on statistical data on rainfall before/after 1970 and is applied to all maps. It takes into account climate change observed in Cyprus to date and the uncertainties that exist in assessing and quantifying it. In addition, for the high probability scenario (return period of 20 years), a future scenario of climate change and land use change in the year 2080 was examined, and flood maps were prepared for the future scenario in 2080. In addition, maps were also drawn up comparing the flooding results with the current climatic and development conditions. This approach is applied to all 38 APSFRs, including 19 APSFRs added in the second cycle and 19 APSFRs from the first preliminary flood risk assessment (PFRA) and FHRM. Due to climate change, flood flows are expected to increase between 14.5% and 38%, depending on the area.

Consideration of climate change in the first and the second FHRMs is similar but, in the second cycle, the methodology for assessing and presenting climate change in the maps was updated and made clearer.

In the second FRMPs, each proposed measure is assessed for its resilience to climate change as part of the cost-effectiveness assessment. The classification of each measure in terms of resilience to climate change is based on the following rationale: measures expected to perform effectively even under projected impacts of climate change (i.e. no-regret measures) – in the context of flood risk, this refers to more frequent and intense rainfall events – are characterised by high resilience. The remaining measures are characterised by medium resilience.

⁹ National Strategy on Adaptation to Climate Change 2025-2050: https://www.oeb.org.cy/wp-content/uploads/2025/02/EN_National-Adaptation-Strategy-CY.pdf.

¹⁰ https://www.moa.gov.cy/moa/WDD/wfd.nsf/page31_gr/page31_gr?opendocument.

Several measures in the programme of measures refer directly or indirectly to drought and water scarcity, such as:

- a special action programme to address stormwater runoff from residential areas and industrial facilities with the aim of protecting water resources (BM-h-02);
- including groundwater enrichment prospects in the design of projects on flood control and natural water retention (ΣM-xiv-02);
- knowledge transfer and information actions targeting producers through the 2023-2027 rural development programme (ΣM-xv-01).

One flood measure involves reviewing design requirements for flood protection and stormwater drainage works. It includes research and development on approaches to increase the resilience and adaptability of these works to climate change. A further measure, which specifically refers to adaptation, is the update of extreme weather response plans with the results and conclusions of the second FHRMs, which will use results and conclusions for the future climate change and land use change scenario. The approach to climate change considerations was similar in the first FRMPs – measures which were assessed as being effective also during extreme weather events, potentially linked to climate change, were rated more favourably.

4. Policy elements contributing to zero pollution

4.1 Surface Water: what is their chemical status

Monitoring

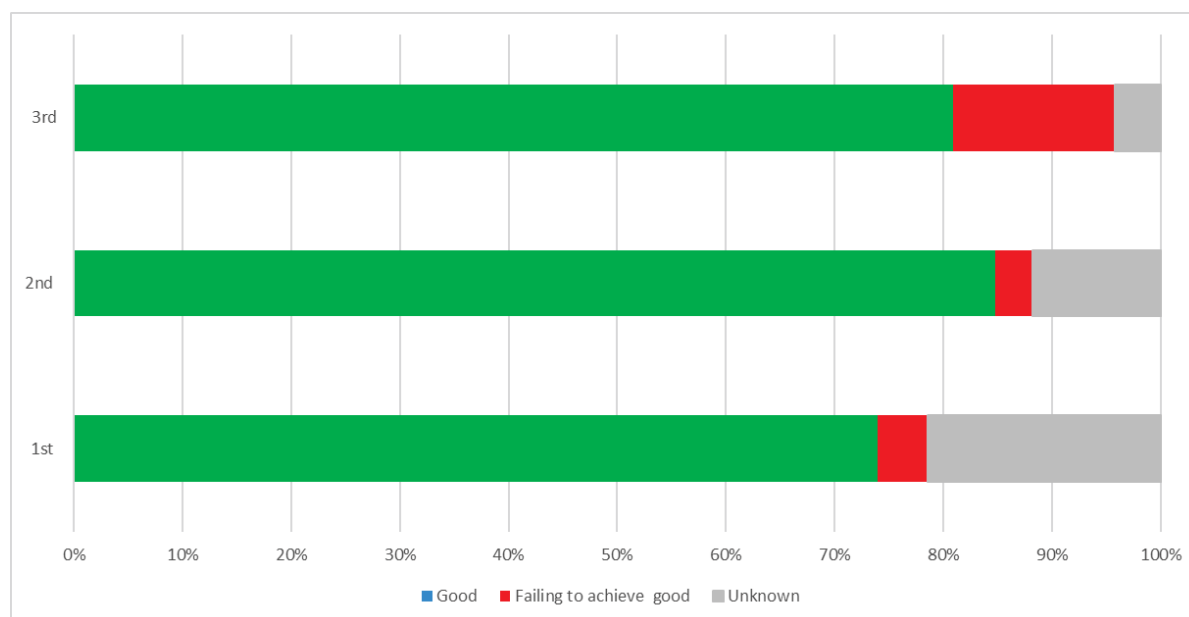
It is positive that, compared to the previous cycle, the number of operated monitoring sites has increased from 57 to 81, out of a total of 110 monitoring sites. For the third RBMP, surveillance monitoring covers 55% of all river water bodies (by length), nearly 100% of all lakes and nearly 57% of coastal water bodies (by area).

The number of priority substances monitored varies. Between 2013 and 2019, all 45 priority substances were monitored in rivers. For lakes and reservoirs, a reduced subset of substances were included in the monitoring programme. It was also noted that monitoring for short chain chlorinated paraffins, as well as dioxins and furans was conducted using sediment samples, while for tributyltin, monitoring was limited to coastal areas on the basis that it was considered as posing a low risk for rivers and lakes. In terms of the long-term trend, Cyprus has indicated that status assessment is currently ongoing. For 3 of the 20 substances (lead, mercury and polycyclic aromatic hydrocarbons), the situation has been described as broadly static, with no indications of upward or downward trends.

Status assessment

There is a noticeable reduction in the number of unknowns, from 11.8% to now 4.2%, which is welcome. However, between the second and the third cycle, there has been a decrease in water bodies with good chemical status, from 84.8% to 80.9%. This reverses the trend between the first and second RBMPs, which saw an increase in water bodies with good chemical status, from 73.9% to 84.8%. It cannot be concluded whether the deteriorating trend is the result of increased pressures and unsuitable measures, or increased knowledge of the state of water bodies.

Figure 8. Chemical status of surface water bodies in Cyprus in the first, second and third RBMPs



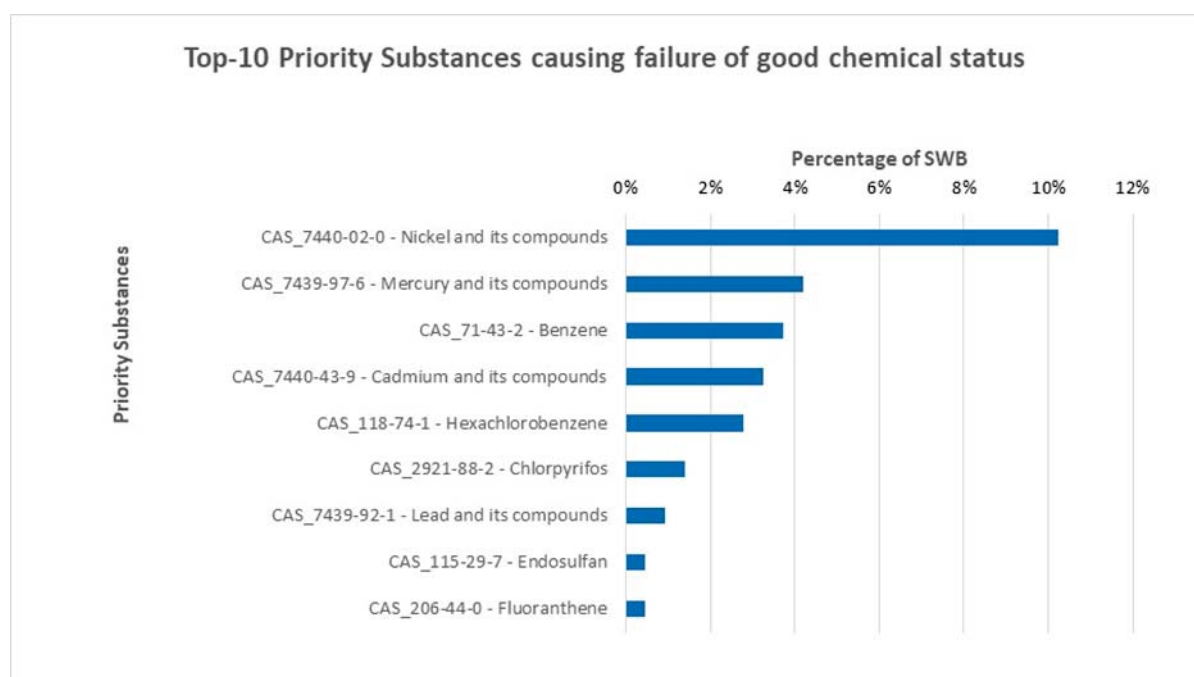
Source: WISE electronic reporting

Figure 9 shows that failure to achieve good chemical status is mainly due to metals, with nickel, mercury and cadmium all in the top 5 (as well as lead, which is in the top 10). Nickel and its compounds are responsible for just over 10% of all water bodies failing to achieve good chemical status on a national scale. This is quite unique and has not been found in other Member States. For coastal waters, mercury is the primary reason for failing to achieve good chemical status.

Pesticides banned from the EU, which have been identified as persistent organic pollutants under the UN Stockholm Convention, are also prominent in the top 10. They include hexachlorobenzene, chlorpyrifos and endosulfan.

The remaining two substances, benzene and fluoranthene, are both linked to organic chemistry, and to the processing of fossil fuels.

Figure 9. The top-10 priority substances causing failure to achieve good chemical status in SWBs in Cyprus





4.2 Groundwater Bodies: what is their chemical status

Monitoring

All 22 GWBs undergo chemical operational monitoring in the third RBMP, with 92 monitoring sites, whereas 19 out of 21 (90.5%) were monitored in the second RBMP.

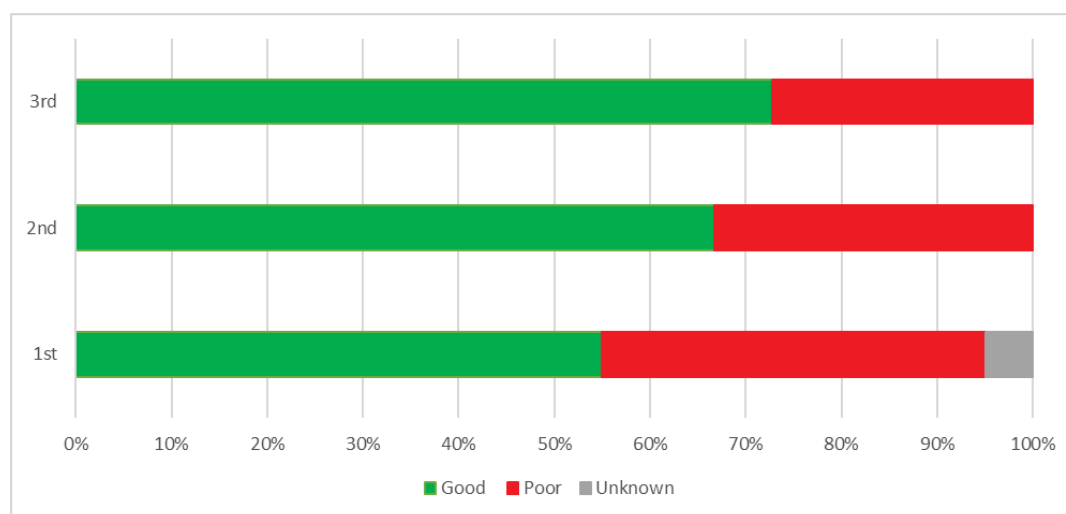
In the third RBMP, just as in the previous cycle, no GWBs are subject to surveillance monitoring^{11,12}.

GWBs have not been grouped in the assessment of their chemical status. All substances identified as presenting a risk to chemical status are monitored in the third RBMP, including all substances listed under the Groundwater Directive and all core parameters required by the WFD: nitrate, ammonium, pH, electrical conductivity and dissolved oxygen¹³.

Status assessment

Figure 10 shows that 16 GWBs (72.7%) have good chemical status, with the remaining 6 GWBs (27.3%) having poor chemical status. This will remain so in 2027. Compared to the previous cycle, there seems to be a slight improvement.

Figure 10. Chemical status of GWBs in Cyprus in the first, second and third RBMPs



Source: WISE electronic reporting

Poor status is primarily due to significant environmental risks from pollutants (27.3% of GWBs) and regional saline or other intrusions from anthropogenic changes in flow direction (22.7% of GWBs). The primary causes contributing to poor chemical status include electrical conductivity, chloride,

¹¹ According to the third RBMP pdf document (6.2.2 Monitoring programme for qualitative status). In the third RBMP e-reporting, Cyprus has erroneously reported that all 22 GWBs (i.e. 100.0% of total GWBs assessed) are subject to surveillance monitoring.

¹² According to the EC compliance assessment for the second RBMP: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:34:FIN&qid=1551205988853&from=EN>.

¹³ According to the EC compliance assessment for the second RBMP, all WFD core parameters are monitored in Cyprus, despite errors in the second RBMP e-reporting: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:34:FIN&qid=1551205988853&from=EN>. However, Cyprus has not reported the monitoring of pH and dissolved oxygen in the third RBMP pdf and background documents or in the third RBMP e-reporting (GWB_GroundWaterBodyMonitoring_MonitoringSite_ChemicalEcologicalQuantitativeMonitoring).

nitrate, sulphate and ammonium. These are the same top pollutants that showed sustained upward trends in GWBs.

In Cyprus, a significant share of chemical status classifications has low confidence (18.2%), though they have improved from 23.8% in the second RBMP¹⁴. Threshold values were not consistently utilised for all substances, and no details were provided on distinguishing upward trends from natural variation with sufficient confidence.



4.3 What Cyprus is doing to combat pollution from agriculture

Measures under KTM 2 include:

- continuation of compliance checks in nitrate vulnerable zones (BM-a-03);
- addition of special cross-compliance regulations (BM-h-02);
- pasture management (Bm-h-03).

Measures under KTM 3 include:

- elimination of the use of chemical pesticides for specific crops (BM-h-04);
- application of crop rotation for potatoes and cereal (BM-h-05);
- organic farming (BM-h-06);
- maintenance of the system for notifying the competent environmental inspectors that WFD monitoring results indicate exceedances of pollutants (BM-h-07).

'Other KTM' measures include:

- performance of targeted research (BM-i-04);
- performance of targeted investigative monitoring (BM-i-02);
- performance of a special monitoring programme of physico-chemical and chemical parameters in intermittent flow (ephemeral) water bodies (BM-i-03).

A supplementary measure was also identified (SM-xv-01), which aims bring about knowledge transfer and awareness for farmers.

Funding should come through several sources, with the costs of measures estimated at EUR 47 721 000. Administrative fees have been already included in the state budget and the relevant activities do not entail additional funding. For other measures, funding will come from the CAP strategic plan 2023-2027 and the European Agricultural Fund for Rural Development (EAFRD) for five measures (BM-h-03, BM-h-04, BM-h-05, BM-h-06 and SM-xv-01) and from national funds for three measures (BM-i-01, BM-i-02 and BM-i-03). It is striking that there are no new measures in the third RBMPs, with all measures being carried over from the second RBMP.

The Cypriot CSP 2023-2027 sets specific objectives for agricultural land: sustainable and reduced use of pesticides on 33% of Utilised Agricultural Area (UAA), improving and protecting soils on 22% UAA, protecting water quality on 18% UAA, achieving sustainable nutrient management on 17% of the UAA¹⁵.

¹⁴ The country subsequently clarified that the characterisation of the confidence is based on the assumption provided in the third RBMP (p. 220) that 'for the fullest coverage of all groundwater bodies of Cyprus, it is necessary to install additionally 6 monitoring stations'.

¹⁵ <https://op.europa.eu/en/publication-detail/-/publication/80d12120-89bc-11ee-99ba-01aa75ed71a1>



4.4 What Cyprus is doing to combat pollution from other sectors

Measures to tackle pollution from non-agricultural sources such as urban wastewater treatment plants, other industry, urban areas, forestry, transport, aquaculture and energy production. For urban wastewater treatment, measures include completing two local wastewater treatment plants (BM-a-01) and continued monitoring of compliance for wastewater treatment plants in sensitive areas (BM-a-02). For KTM 15, there is only one measure, namely completing two local wastewater treatment plants and/or pipework (BM-g-04).

Measures related to point sources other than urban wastewater have been applied under KTM 15 and 'other KTM', including the rehabilitation of landfills in Limassol district (BM-g-05), rehabilitation of the Nicosia district landfill (BM-g-03) and preparation of an action plan for stormwater runoff from residential and industrial sources (BM-h-01). For 'other KTM', there are three measures: ensuring that water body monitoring actions under the WFD are consistent with the action plan for remediation of abandoned waste sites (BM-g-01); performing targeted research for the assessment of ecological status of unclassified water bodies (with a focus on lakes) (BM-i-01); and performance of a special monitoring programme of physico-chemical and chemical parameters in intermittent flow (ephemeral) water bodies, including their sediments (BM-i-03).

Supplementary measures have also been reported under KTM 14, including performing research to understand specific pressures in lake water bodies (o ΣM-xvi-02) and performing research to understand specific pressures affecting coastal water bodies (ΣM-xvi-03).



4.5 What Cyprus is doing to combat significant pressures – overall assessment of the programmes of measures

In total, Cyprus has reported 43 measures electronically, comprising 25 basic measures and 18 supplementary measures. All 43 measures reported are carried over from the previous cycle.

Measures targeting agricultural pollution from diffuse sources and agricultural abstraction – the two dominant categories of pressure – are grouped under KTM 2, KTM 3 and 'other KTM'.

Under KTM 2, measures include:

- continuation of compliance checks in nitrate vulnerable zones (BM-a-03);
- cross-compliance regulations (BM-h-02);
- pasture management (BM-h-03).

Under KTM 3, measures include:

- elimination of chemical pesticides for specific crops (BM-h-04);
- crop rotation for potatoes and cereal (BM-h-05);
- organic farming (BM-h-06);
- maintenance of the notification system for WFD monitoring exceedances (BM-h-07).

Under 'other KTM', measures include:

- targeted research (BM-i-04);
- targeted investigative monitoring (BM-i-02);
- a special monitoring programme for physico-chemical and chemical parameters in intermittent water bodies (BM-i-03).

One supplementary measure (SM-xv-01) targets knowledge transfer for farmers.

For urban wastewater treatment, measures under KTM 1 include the completion of two local wastewater treatment plants (BM-a-01) and continued monitoring of compliance for wastewater treatment plants in sensitive areas (BM-a-02).

Under KTM 15, a further measure addresses completion of two local wastewater treatment plants and pipework (BM-g-04). For other point sources, KTM 15 and 'other KTM' cover:

- rehabilitation of landfills in Limassol (BM-g-05) and Nicosia (BM-g-03) districts;
- preparing an action plan for stormwater runoff from residential and industrial sources (BM-h-01);
- ensuring that WFD monitoring is consistent with remediation of abandoned waste sites (BM-g-01);
- targeted research on ecological status classification in lakes (BM-i-01) and coastal water bodies (SM-xvi-02, SM-xvi-03).

Cyprus has carried out a cost-effectiveness analysis, details of which are provided in Annex A to the RBMP. The total cost of measures is reported as approximately EUR 230 million. However, all funding is attributed to national investment sources. No information has been provided on EU funding in the electronic reporting, despite the RBMP itself listing the following as possible funding sources: EU cohesion policy funds, the 2023-2027 CAP strategic plan, the EAFRD, the LIFE IP Physis project and the European Investment Bank.

Cyprus has mapped its measures in coordination with the Urban Wastewater Treatment Directive and the Nitrates Directive. For the Floods Directive, several measures are interlinked – in particular the preparation of a special action programme to address stormwater runoff from residential areas and industrial facilities (BM-h-02). However, the programme of measures explicitly states that actions regarding the Marine Strategy Framework Directive (MSFD), beyond those already provided for by the MSFD itself, are not included.

When designing and implementing research-related measures, Cyprus 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.

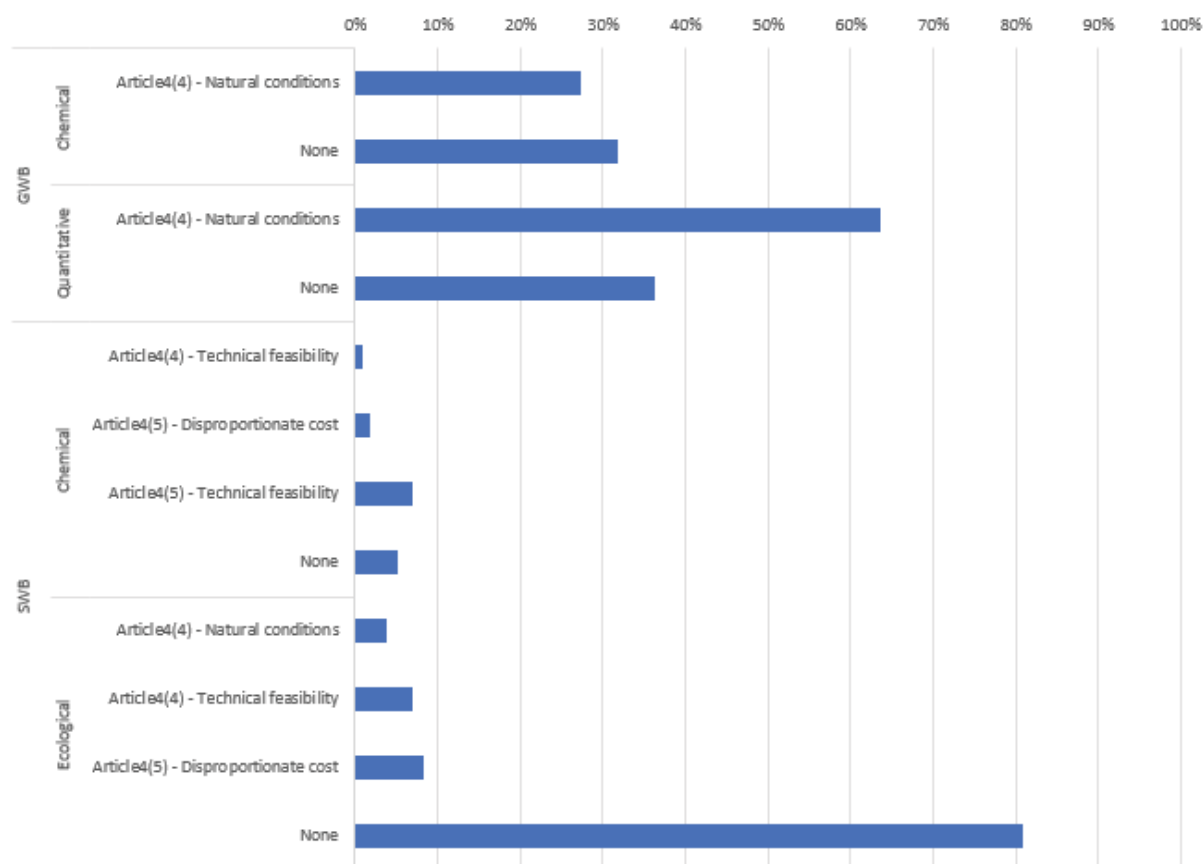
5. Exemptions and economics



5.1 To what extent are exemptions applied in Cyprus

As good status has not been achieved in all water bodies, Cyprus has reported a number of exemptions under the WFD, which are shown in Figure 11. The country has invoked Article 4(4) and Article 4(5), but never Article 4(6), 4(7) or 6(3) of the Groundwater Directive. Nevertheless, the third RBMP specifies that it will be examined whether surface waters whose characteristics are to undergo new modifications meet the conditions for the potential application of the exemption under Article 4(7).

Figure 11. The use of exemptions under Article 4(4) and 4(5) of the WFD in surface water bodies and groundwater bodies in Cyprus. The figure shows the proportion of water bodies for each type of exemption.



Source: WISE electronic reporting

Exemptions under Article 4(4) have been applied in both the second and the third RBMPs and have been justified on the grounds of technical feasibility in 15 SWBs (7%) for ecological status/potential and in 2 SWBs (0.9%) for chemical status. For the others, it has been invoked on the basis of natural conditions.

Article 4(4) exemptions have also been applied on the grounds of natural conditions in:

- 8 SWBs (3.7%) for ecological status/potential [in the third RBMP pdf document the number of these exemptions is 6 SWBs (2.8%)];
- 4 SWBs (1.9%) for chemical status [according to the third RBMP pdf document];
- 14 GWBs (63.6%) for quantitative status [in the third RBMP pdf document the number of these exemptions is 13 groundwater bodies (51.9%)];
- 6 groundwater bodies (27.3%) for chemical status [in the third RBMP pdf document the number of these exemptions is 5 GWBs (22.7%)].

In the second RBMP, 14 GWBs were exempted on the grounds of natural conditions.

Article 4(4) exemptions on the grounds of disproportionate costs were not applied in the second or third RBMPs.

It is noted that the third RBMP's description of the methodology for the application of Article 4(4) does not explicitly state how different Article 4(4) clauses were interpreted, i.e. technical feasibility, natural conditions or disproportionate costs. It can, however, be inferred from the description that technical feasibility grounds are invoked for water bodies with less than good status, but for which implementation of the planned measures is expected to

result in status improvements by 2027. Natural conditions are invoked when such improvements are anticipated, but not until after 2027.

The exemptions under Article 4(5) in the third RBMP were applied to SWBs and justified on the grounds of disproportionate costs and infeasibility. No Article 4(5) exemptions were applied to GWBs according to the third RBMP electronic reporting, but according to the third RBMP pdf document, one GWB was exempted for quantitative and chemical status in the first and second RBMPs.

Article 4(5) exemptions have been applied on the basis of:

- infeasibility in 15 SWBs (7%) for chemical status [in the third RBMP pdf document the number of these exemptions is 31 SWBs (14.4%)]. According to the third RBMP pdf document, a further 12 SWBs (5.6%) are exempted for ecological status/potential];
- disproportionate costs in 4 SWBs (1.9%) for ecological status/potential and 18 SWBs (8.4%) for chemical status [in the third RBMP pdf document the number of these exemptions is reversed].

Information is provided at individual water body level on the specific reasons for applying Article 4(4) and 4(5) exemptions, but few details are provided for individual water bodies in terms of explanation.

It is noted that the methodology described in the plan interprets infeasibility and disproportionate costs in the context of Article 4(5). However, we note with concern that the determination of disproportionate costs, in particular, is solely limited to available funding (and thus affordability). Furthermore, Article 4(5) is applied on the grounds of infeasibility due to unknown status and/or pressures.

In the second RBMP, no Article 4(5) exemptions were used for SWBs but one GWB was exempted on the grounds of infeasibility (chemical status).



5.2 Use of economic analysis and water pricing – cost recovery

Cyprus considers the following as water services: drinking water supply, irrigation, wastewater collection and treatment (up to secondary treatment), and supply of recycled water (including the prior tertiary treatment). The main sectors of water use are domestic water use, agriculture, livestock farming, industry and tourism.

The economic analysis of water uses and assessment of cost recovery are not included in the RBMP (as laid down by Article 5 of the WFD). Only some water price estimates are reported, and estimates of the relevant investments are reported in the programme of measures instead, with anticipated investments for the current management cycle being reported per individual measure.

The plan provides cost recovery rates for the various water services, but with no sectoral breakdown or reporting on costs and revenue figures. There is also no explanation or evidence of why irrigation water supply has a low cost recovery rate despite it having a significant impact on the quantitative status of GWBs and the ecological status of SWBs.

Cyprus has also provided new financial cost recovery rates from a non-published study: drinking water (107.7%), irrigation (22.7%), wastewater collection and treatment (163%) and recycled water (29.3%). Despite the difference in cost recovery rates for households (drinking water) and agriculture (irrigation), the RBMP does not report on whether the various water user sectors contribute sufficiently to the costs of water services. Nor does it report the grounds used to justify less than full cost recovery. No information on government subsidies is provided either, although supporting documentation suggests that subsidies are received to cover both capital and operational costs of some water services, but that these have not been included in the reported financial costs.

The 3rd RBMP lacks an assessment as to whether water prices provide an 'adequate incentive' for more efficient water use but provides sufficient details. Overall, Cyprus's water pricing policy seems to provide clear incentives, namely through drinking water tariffs reflecting local cost conditions, the unit rate increasing over volume brackets and combining the policy with non-price efficiency measures, such as the mandatory use of reclaimed water for irrigation, and water supply restrictions and quotas during periods of drought. It seems that, if Cyprus were to use the available material more fully, it would be able to demonstrate that it has made much more progress on the recommendation than their reporting currently suggests. On a similar note, the third RBMP states that a methodology for assessing environmental and resource costs is in place, but neither the methodology nor the cost estimates are provided.

The 3rd RBMP document does not provide an explicit account of how the polluter pays principle has been applied. It reports, that the environmental and resource cost component in the abstraction charge covers these costs fully, but it remains unclear whether these costs are charged to the actual polluters.



6. WFD recommendations

Recommendations – Cyprus should:

1. reduce the compliance gap as much as possible to reach compliance by 2027. This implies:
 - a) further improving governance by ensuring that the consultation, adoption and reporting of the fourth RBMP is carried out according to the WFD timetable;
 - b) developing a more ambitious programme of measures, which should provide a methodology for how the prioritisation and cost-effectiveness analysis for all measures has been carried out, including a gap assessment on achieving the objectives of measures, and linking the measures to the relevant KTMs, clear timetables, financing sources and expected outcomes;
 - c) ensuring full compliance with WFD provisions related to the mandatory periodic review of permits/checks for abstractions.
 - d) strengthening coordination between the WFD third RBMP, the second FRMP and the MSFD.
2. identify and put in place additional measures to tackle persistent environmental pressures preventing the achievement of good status, on the basis of robust gap analyses. This implies, inter alia:
 - a) urgently addressing water scarcity and over-abstraction, in particular from agriculture, by:
 - strengthening checks on abstractions, preventing and penalising unauthorised abstractions, improving metering and enforcement, and ensuring that abstraction permits are fully aligned with environmental objectives;
 - fully establishing and implementing environmental flows across all relevant water bodies, and explicitly linking e-flow requirements to permit review processes, making the connection between e-flow implementation and abstraction permitting mandatory;
 - improving long-term water demand management, especially in irrigation, which accounts for 59.1% of total water consumption, and providing a clearer forward-looking analysis of future water demand under climate change scenarios, with sectoral breakdowns and explicit reduction targets;
 - b) stepping up action to reduce agricultural pollution from diffuse sources, which affects around 29% of SWBs and contributes to poor chemical status in 22.7% of GWBs, by developing gap assessments for nutrient and pesticides pollution and putting in place reinforced measures to achieve the required load reduction based on clear and measurable indicators of progress;
 - c) continuing and accelerating actions on urban wastewater treatment, stormwater runoff, landfill rehabilitation and remediation of abandoned waste sites, while ensuring stronger coordination between monitoring results and pollution control actions;

- d) identifying pollution sources at the level of individual water bodies and implementing binding reduction measures, in particular for metals (nickel, mercury, cadmium, lead), which are the dominant cause of failure to achieve good chemical status in SWBs;
 - e) ensuring that protected areas linked to water bodies receive specific, effective and, where necessary, additional measures tailored to their protection objectives. While some progress is reported, further work is needed to improve chemical status in protected areas and to demonstrate how water-related measures contribute to achieving the objectives of Natura 2000 sites and other protected areas. Cyprus should also provide clearer information on additional measures and their expected effects in protected areas.
3. **Where exemptions are invoked because objectives cannot be met, they should have detailed justifications at the level of each individual water body, and their application should be regularly reviewed:**
- a) substantially reducing Article 4(4) exemptions for groundwater quantitative status. Natural conditions grounds should be applied only where properly justified by the fact that ecological response times beyond 2027 genuinely prevent achievement of good status;
 - b) reviewing the application of Article 4(5) exemptions on grounds of infeasibility and ensuring that 'infeasibility' is properly defined and applied in line with WFD provisions, noting that failure to properly classify the status of a water body or to identify the pressures is not a valid justification under Article 4(5) of the WFD;
 - c) reviewing the application of Article 4(5) exemptions on grounds of disproportionate costs, ensuring that a clear and transparent methodology is in place that reflects a genuine cost-benefit analysis that is not limited to available funding.
4. **As regards monitoring, assessment, data management and reporting, Cyprus should:**
- a) close the knowledge gap as regards the characterisation of water bodies, to ascertain the pressures that are exerted in all of them, and their level of significance, in order to develop and link them to specific measures;
 - b) strengthen monitoring coverage, which has critical gaps across key water body types and quality elements;
 - c) extend monitoring of the 20 priority substances to sediment and biota to support long-term trend analysis;
 - d) improve methodologies for assessing groundwater chemical status, including threshold values for all substances presenting a risk for achieving the environmental objectives;
 - e) improve the methodology and confidence of assessments of groundwater quantitative status, providing water balance data at water body level, recharge estimates and abstraction-to-recharge ratios.
5. **As regards economic analysis, water pricing and cost recovery, Cyprus should:**
- a) substantially improve the economic analysis in the fourth RBMP to meet the requirements of Article 5 of, and Annex III to, the WFD. A transparent cost-effectiveness analysis of the programme of measures should be included. All relevant water services, including reclaimed water supply (water reuse), must be covered;

- b) review the application of the polluter pays principle and water pricing policies to ensure that all water user sectors make an adequate contribution to cost recovery. Government subsidies and any cross-subsidisation arrangements must be disclosed transparently. The RBMP must provide an explicit account of how water prices provide an adequate incentive for more efficient water use, particularly in the agriculture sector.

6. **As regards incorporating climate resilience more systematically into water planning, Cyprus should:**

- a) include forward-looking analyses of future water demand and availability under climate and socio-economic scenarios in the fourth RBMP. Sectoral breakdowns of future demand and investment needs must be developed;
- b) increase efforts on climate proofing the programme of measures and explicitly link them to the 2025-2050 national strategy for climate change adaptation.

SECTION B:

FLOODS DIRECTIVE

7. Flood risk management under 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 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 (PFRAs) (including the identification of areas of potential significant flood risk (APSFRs)), (b) the preparation of flood hazard and risk maps, (FHRMs), and (c) the establishment of flood risk management plans (FRMPs). The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.

Cyprus has one unit of management, which corresponds to the RBD under the Water Framework Directive (WFD). There are 38 APSFRs, increasing from 19 in the first FRMP. The second FRMP states that seawater and groundwater flood sources are not relevant for Cyprus. It explains the choice of flood sources addressed in the APSFRs of the second FRMP, with fluvial sources being the main source of flooding for all APSFRs, with the exception of two APSFRs, which have two sources of flooding (fluvial and pluvial flood in APSFR-26 and fluvial flood and lake level rise in APSFR-07). The impacts of climate change are considered in the second FRMP. One of the objectives set out in the second FRMP, relating to the future scenario of climate change and land use change, focuses on reducing flood exposure in new urban development areas, through adequate urban and spatial planning. The information sources used to identify the impacts of climate change include the second annual report (of 2019) on the implementation of adaptation measures under the national climate change adaptation strategy and action plan, as well as rainfall data from the Cyprus Meteorology Department. As in the first FRMP, climate change has been taken into account using rainfall curves, based on statistical rainfall data for the period after 1970, to reflect the increase in rainfall intensities observed in Cyprus compared to the period before 1970.

It is also relevant to mention investment 5 (C2.3I5), which is a measure under component 2.3 of Cyprus Recovery and Resilience Plan – Anti-flood and Water Collection Measures. The objective of this investment is to mitigate the negative impacts of flooding events through the implementation of anti-flood infrastructure. The measure includes the construction or reconstruction of flood protection works, streets and pavements, as well as the landscaping of flood channels. As such, it contributes to strengthening flood resilience and should be considered as relevant in the context of the Flood Risk Management Plans.



7.1 FHRMs

FHRMs are provided on a common national GIS-based map viewer for different return periods: 20-year (high) return period, 100-year (medium) return period, 500-year (low) return period, and a flood hazard map for the 2080 future scenario (under climate and land use change). Each APSFR webpage for flood hazards¹⁶ includes seven maps: one map each for HQ-20-100-500, one map summarising the three scenarios, one map showing the impact of climate change and land use changes (2080), one map comparing the maximum area that could be flooded under HQ-20 with and without the impact of climate change and land use changes (2080), and one 'location' map showing the whole

¹⁶ For the second cycle APSFRs: https://www.moa.gov.cy/moa/wdd/wfdf.nsf/page09_qr/page09_qr?opendocument; for the first cycle APSFRs: https://www.moa.gov.cy/moa/wdd/wfdf.nsf/page08_qr/page08_qr?opendocument (accessed 11.01.24).

island and the selected APSFR sheet (or sheets)¹⁷ as a red frame (or frames). Each APSFR webpage for flood risks¹⁸ includes four maps: one each for HQ-20-100-500 (.jpg based on aerial photos) and one 'location' map (see above). These maps depict (i) the number of inhabitants, (ii) the type of economic, cultural and archaeological activities that may be impacted, (iii) installations which may accidentally cause pollution and (iv) other potentially significant pollution sources, according to the respective flood probability scenarios.

The methodology¹⁹ for preparing the FHRMs is available on the website of the Water Development Department, Ministry of Agriculture, Rural Development and Environment.

In terms of changes to contextual information (i.e. the way in which information about the maps is conveyed to the public) since the first FHRMs, a noteworthy change is that interactive GIS-based map viewers were developed in the second cycle, whereas the first FHRMs were based on aerial photos. In addition to the interactive GIS-based map viewers provided in the second cycle, maps based on aerial photos of each APSFR are also provided.

In terms of changes to the methodologies used to prepare flood hazard maps since the first FHRMs, the main changes are that the maps based on aerial photos now provide more detailed legends and explanatory boxes. These have been improved compared to the first FHRMs, to explain the content of the maps to the public. Furthermore, the FHRMs of the new APSFRs (identified in the second PFRAs) have been improved by adding a text box to each APSFR-specific map that explains what the 'flood hazard' and 'flood risk' on the map shows. In addition, each APSFR-specific map includes a small map of Cyprus indicating the location of the APSFR.

Climate change in the second FHRMs

As regards how the effects of climate change are taken into account in the preparation of FHRMs, reference is made to Section 3.7 on 'adaptation to climate change'.



7.2 Flood risk management plans

Objectives and measures

Cyprus has developed one FRMP for its single unit of management. It can easily be found on the website of the Water Development Department²⁰. The second FRMP cites the strategic objective for flood risk management put forward in the first FRMP, namely reducing flood-related risks to achieve the best possible benefits for the man-made environment and for the natural environment in a cost-effective manner. Similar to the first FRMP, the plan sets out three general objectives, each of which is further specified with priority action fields. These three general objectives are: A – reduce hazards

¹⁷ Some APSFRs extend over more than one sheet.

¹⁸ For the second cycle APSFRs: https://www.moa.gov.cy/moa/wdd/wfdf.nsf/page07_gr/page07_gr?opendocument; for the first cycle APSFRs: https://www.moa.gov.cy/moa/wdd/wfdf.nsf/page06_gr/page06_gr?opendocument (accessed 11.01.24).

¹⁹ Methodology for flood risk maps, <https://www.moa.gov.cy/moa/wdd/wfdf.nsf/All/77CE1A5392B1BF09C225890F0040D028?OpenDocument> and methodology for flood hazard maps, <https://www.moa.gov.cy/moa/wdd/wfdf.nsf/All/A1B12F8A92891674C2258911003A40AD?OpenDocument>.

²⁰ The FRMP can be downloaded through the following link: https://www.moa.gov.cy/moa/WDD/Owfdf.nsf/page11_gr/page11_gr?opendocument.

to ensure protection against floods; B – reduce flood exposure; and C – reduce flood vulnerability of all activities within the APSFRs. The second FRMP of Cyprus maintains the three general objectives of flood risk management in the first FRMP. It has adapted them to include a specific reference to climate change and to land use change (in Objective B). Sub-objectives are set for each APSFR. Timelines have been set for the measures which are directly connected to the objectives. Quantitative indicators have not been set for the objectives or the priority action fields.

Cyprus has planned 41 distinct individual measures for its single unit of management. Over 50% of the measures are protection measures, followed by prevention measures and preparedness measures. Two measures concern recovery and review. 25 measures are cross-cutting – they are applied either within each APSFR or for the country as a whole. For most measures, a detailed sheet indicates the steps and provides information on the expected effects. The prioritisation of measures takes into account the results of a ranking of measures on the basis of a cost-effectiveness assessment and a cost-benefit analysis. The FRMP includes measures related to spatial planning / land use, such as incorporating flood risk assessment results into spatial and urban planning via the development plans. This includes adopting ‘white’ urban planning zones in the floodplain – these are defined as zones where construction is not permitted or is only permitted under certain conditions.

The FRMP includes references to natural water retention for a few of its measures, for example for the protection measure PRO-CY-02 on enrichment and flow retention projects in riverbeds upstream of APSFRs, and protection measure PRO-CY-19 on the restoration of riverbeds and floodplains upstream of APSFRs. The main FRMP document provides a detailed analysis on the correlation and synergies of the measures of the second FRMP with the third RBMP. Details (including the WFD measure code and description) are provided for five measures from the third RBMP which have direct synergies with the second FRMP. In addition, the FRMP describes how four of its measures contribute to meeting the objectives of the third RBMP.

Consideration of climate change in the second FRMPs

As regards how the effects of climate change are taken into account in the preparation of FRMPs, reference is made to Section 3.7 on ‘adaptation to climate change’.

Governance

Coordination with neighbouring EU and non-EU countries as part of EU or bilateral agreements for cooperation and information exchanges is not applicable for Cyprus.

The competent authorities carried out a public consultation and ensured active involvement of stakeholders, using a broad range of methods including a consultation questionnaire and workshop. As a result, a wide range of stakeholders contributed actively during the various stages of developing the plan. A steering committee was appointed to coordinate the preparation of the FRMP and its SEA.

Progress identified in the second FRMPs

The second FRMPs include several notable improvements:

While the first FRMP did not provide indicators to monitor the progress of measures, the second FRMP lists several key indicators, which could be used for this purpose at APSFR and unit of management level.

Specific objectives have been set for the 19 new APSFRs included in the second FRMP, and the objectives set for the 19 APSFRs determined in the first FRMP have been reviewed.

The second FRMP includes references to measures for natural water retention, including measures on enrichment and flow retention projects in riverbeds, and the restoration of riverbeds and floodplains upstream of APFSRs.



8. Floods Directive recommendations

Based on the information reported and the FHRMs and FRMPs assessed, the following recommendations are made to improve flood risk management in Cyprus:

1. in the FHRMs:
 - a) the GIS map viewer and the aerial maps should be merged, with the GIS map becoming the main reference;
 - b) information relating to various flood sources (where relevant) should be made easier to distinguish on the maps.
2. In the FRMPs:
 - a) timelines and quantitative indicators should be presented for the achievement of the objectives or the priority action fields;
 - b) clear baselines should be set against which progress of measures can be assessed;
 - c) more information should be included on the role of insurance policies for flood risk management;
 - d) information should be provided on how the FRMP and its programme of measures is coordinated with the national strategy for climate change adaptation.