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

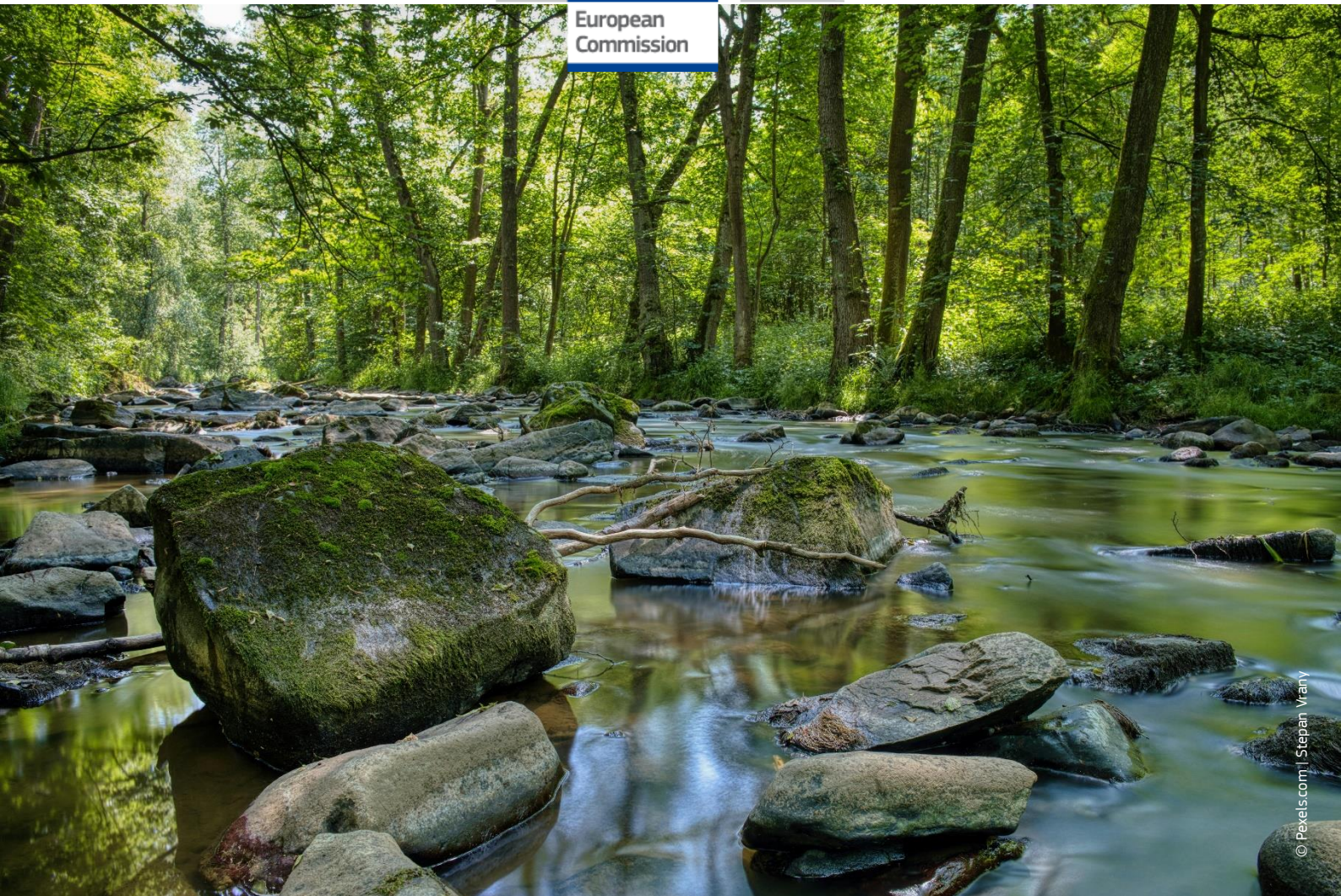
Accompanying the document

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

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Country specific staff working document

Italy



ENVIRONMENT

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SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, Member State characterisation

Italy consists of a peninsula, the two largest Mediterranean islands – Sardinia and Sicily – and several smaller islands. The territory is largely mountainous, with the Alps forming an arc in the northernmost part and the Apennines stretching all the way south through the centre of the country. The Padan plain in the northern part of the country is the largest plain.

With its population of nearly 60 million inhabitants (the third largest in Europe), Italy is densely populated (198.2 persons per km²), and its population is particularly concentrated in coastal and lowland areas, which may lead to pressures being higher in these densely populated areas. Around 55% of its population lives in cities of more than 50 000 inhabitants. With over 7,600 km, the coastline of Italy is the 14th longest in the world and fifth longest in Europe.

The increasing demand for water for multiple purposes and the intensification of severe weather conditions due to climate change have put a significant further strain on freshwater supplies in Italy in recent years, and increased water-related challenges. Since 2018 Italy has suffered from increasingly dry and hot summers, and in the last few years such problems, already better known in the southern part of the country, became a recurrent issue also in the northern part of the country, which did not use to experience severe and extended periods of drought on a regular basis. Italy is also increasingly vulnerable to severe floods, which have regularly affected the country in the last decade.

Water resources

Italy is increasingly suffering from water scarcity. In the period between 2015 and 2019, Italy's water exploitation index plus (WEI+)¹ ranged between 7.3 % and 14.7 %. While these values are below 20%, which is generally considered as an indication of water scarcity, it is important to underline that Italy is characterised by major seasonal and geographical differences. In 2019, for example, the national WEI+ index scored over 44% between July and September, signalling serious scarcity issues in the summer at national level. At the RBD level, differences are also major, with Sicily's WEI+ index reaching a peak of 93.5 % during the summer of 2019.

Reporting

The deadline for reporting the 3rd RBMPs was in March 2022. The Commission and the 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 e-reporting was September 2023 and the Member States were assessed based on the datasets available by this date.

By September 2023, Italy had not submitted full electronic reporting, but data for six out of seven RBDs were available. Therefore, the assessment is based mostly on the datasets available at that time. However, for the missing data for one RBDs information was extracted through data mining of the pdf RBMPs or, where possible, from the WISE Freshwater web portal. A detailed analysis was

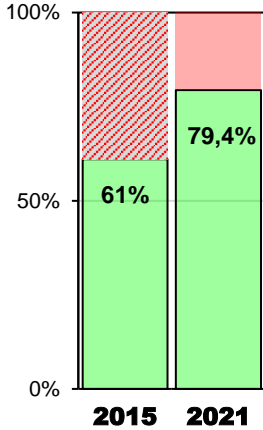
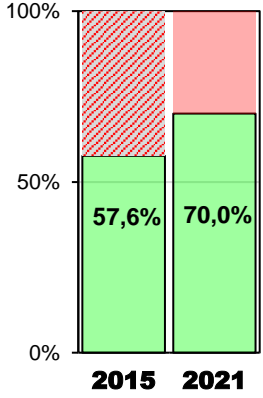
¹ The Water Exploitation Index plus (WEI+) is a measure of total fresh water use as a percentage of the renewable freshwater resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned to the environment after use.

carried out for the Po River, North Apennines, and Sicily RBMPs. Together these RBDs represent over 44% of the Italian territory.

Despite the cut off dates to produce this report, reporting continued, and, for the State of Water report, the EEA aggregated the results available by July 2024 in their products and dashboards available at WISE Freshwater web portal.

Changes in Status, Pressures, Exemptions and Measures

Surface Water Bodies (7773)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions						
ECOLOGICAL STATUS	<table><tr><th>Year</th><th>% good status/potential</th></tr><tr><td>2015</td><td>41,7%</td></tr><tr><td>2021</td><td>43,6%</td></tr></table>	Year	% good status/potential	2015	41,7%	2021	43,6%	<p>Monitoring has improved in Italy, and there are less surface water bodies (SWBs) in unknown status. However, gaps remain in the number of quality elements monitored and used for the assessments.</p> <p>The proportion of surface water bodies in good ecological status or potential has increased, but only very slightly, and challenges remain. Nutrient pollution from diffuse agricultural and urban waste water point sources, as well as hydromorphological alterations, are the main reasons for ecological status failure. Around 10% of surface water bodies are strongly affected by water abstraction. The Water Exploitation Index+ at the national level ranged from 7.3 % and 14.7 % in the years from 2015 and 2019, but water scarcity presents a very marked seasonal pattern and differences between RBDs. Italy expects about almost 80% of surface water bodies to achieve good ecological status/potential by 2027; however, a sizeable proportion of these will only achieve lowered environmental objectives (13.2 % of the total).</p> <p>Exemptions under Article 4(4) have been applied to 24.6% of SWBs under technical feasibility, 11.4% for natural conditions, and 6.4% for disproportionate cost. Article 4(5) has been applied to 9.4% for disproportionate cost, and 9.2% for technical feasibility. Article 4(6) has been applied to 0.1% SWBs for natural causes, and Article 4(7) to 0.1% for new modifications, among them new irrigation systems.</p>
Year	% good status/potential							
2015	41,7%							
2021	43,6%							
CHEMICAL STATUS	<table><tr><th>Year</th><th>% good status/potential</th></tr><tr><td>2015</td><td>72%</td></tr><tr><td>2021</td><td>75,1%</td></tr></table>	Year	% good status/potential	2015	72%	2021	75,1%	<p>Chemical pollution, due to the presence of ubiquitous persistent, bioaccumulative toxins (uPBTs) as well as to industrial emissions (including of heavy metals, PFOS, flame retardants), remains a challenge, although some improvements in the chemical status of surface waters can be observed. Monitoring has improved covering 36% of all water bodies and with only 8.5% of SWBs in unknown status. Just over 75% of surface water bodies are in good chemical status. Italy expects just over 80% of SWBs to be in good chemical status/potential by 2027.</p> <p>The substances causing the highest proportion of status failures are ubiquitous persistent, bioaccumulative and toxic substances (uPBTs) which are mostly introduced to surface waters through atmospheric deposition, namely mercury and PAHs. If these substances were to be left out in the assessment the proportion of surface water bodies in good chemical status would rise to 81%. These substances are most commonly released during combustion processes of fossil fuels. Further significant substances leading to failure are several metallic compounds, PFOS (from industrial emissions), and the biocide tributyltin.</p> <p>Exemptions under Article 4(4) have been applied to 11% of SWBs under technical feasibility, 7% for natural conditions, and 3.5% for disproportionate cost. Article 4(5) has been applied to 0.03% SWBs for disproportionate cost, and 0.3% for technical feasibility.</p>
Year	% good status/potential							
2015	72%							
2021	75,1%							

Ground Water Bodies (1007)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions												
QUANTITATIVE STATUS	 <table><tr><th>Year</th><th>Good Status (%)</th><th>Unknown Status (%)</th><th>Bad Status (%)</th></tr><tr><td>2015</td><td>61%</td><td>39%</td><td>0%</td></tr><tr><td>2021</td><td>79.4%</td><td>20.6%</td><td>0%</td></tr></table>	Year	Good Status (%)	Unknown Status (%)	Bad Status (%)	2015	61%	39%	0%	2021	79.4%	20.6%	0%	<p>Monitoring has improved with about half of groundwater bodies (GWBs) covered and considerably fewer GWBs are in unknown status. The proportion of GWBs in good quantitative status has increased to 79.4%, from 62% in 2015, which represents good progress. Italy expects further improvement by 2027 and reported that over 90% of GWB are expected to achieve good quantitative status. Well over half of the GWBs are drinking water protected areas. Water balances, long-term groundwater level trends or spring discharges are considered in the assessment of quantitative status. However, the needs of groundwater associated aquatic ecosystems and of groundwater dependent ecosystems are not considered in all RBMPs.</p> <p>In general, issues with water scarcity and droughts are worsening, with the problem no longer limited to the southern part of the country and its main islands, but increasingly being felt at more northern latitudes, due to climate change, with reduced snowfall and increasingly unpredictable rainfall patterns. Water abstractions are another challenge, affecting both surface and groundwaters, with issues linked to unreported uses and quantities. One common reason for status failure is a lowering water level, followed by saline intrusions and lowered ecological or chemical status of associated surface waters. A large share remains affected by multiple combined pressures from pollution and abstraction.</p> <p>Exemptions under Article 4(4) have been applied to 11.3% of GWBs under technical feasibility, 5.3% for natural conditions, and 7.7% for disproportionate cost.</p>
Year	Good Status (%)	Unknown Status (%)	Bad Status (%)											
2015	61%	39%	0%											
2021	79.4%	20.6%	0%											
CHEMICAL STATUS	 <table><tr><th>Year</th><th>Good Status (%)</th><th>Unknown Status (%)</th><th>Bad Status (%)</th></tr><tr><td>2015</td><td>57,6%</td><td>42.4%</td><td>0%</td></tr><tr><td>2021</td><td>70,0%</td><td>30.0%</td><td>0%</td></tr></table>	Year	Good Status (%)	Unknown Status (%)	Bad Status (%)	2015	57,6%	42.4%	0%	2021	70,0%	30.0%	0%	<p>Chemical pollution remains a challenge, although improvements in the chemical status of groundwater can be observed. Chemical monitoring has improved to coverage of almost 80% of all GWBs in the 3rd RBMPs and significantly fewer GWBs in unknown status. However, some gaps remain in relation to monitored substances and quality criteria. 70% of GWBs are in good chemical status, which represents a good improvement compared to 2015. However, for 2027 only about 73% GWBs are expected to be in good status, with just over 2% achieving lowered environmental objectives.</p> <p>Almost 9% of total GWBs are expected to fail to achieve good chemical status by 2027. Failure is caused by nitrates (pointing to nutrient pollution), trichloromethane (industrial emission), chloride and electrical conductivity (indicative of saline intrusion), and sulphate. The highest reported pressure on GWBs comes from diffuse agricultural pollution and urban run-off, followed by abandoned industrial and contaminated sites.</p> <p>Exemptions under Article 4(4) have been applied to 12% of GWBs under technical feasibility, 12% for natural conditions, and 5.5% for disproportionate cost. Article 4(5) has been applied to 1.9% of GWBs for technical feasibility and to 2% for disproportionate cost.</p>
Year	Good Status (%)	Unknown Status (%)	Bad Status (%)											
2015	57,6%	42.4%	0%											
2021	70,0%	30.0%	0%											

2. Horizontal aspects



2.1 Governance

Italy has a highly decentralised governance system, which may lead to fragmented solutions to environmental challenges. For the management of its river basin districts (RBDs), Italy has a complex structure, which includes competent authorities at national, RBD and regional level.

The responsibility for the preparation of the River Basin Management Plans (RBMPs) and the Flood Risk Management plans (FRMPs) lies mainly with the River Basin Authorities, while the Ministry of the Environment is responsible for overarching tasks, including providing guidance and coordinating between River Basin Authorities, as well as ensuring alignment with EU legislation. Regional authorities also have an important role, including providing knowledge and data, analyse the impact of human activities on the status of water, perform economic analyses, plan, and implement the necessary measures. Regional Water Protection Plans are now developed and adopted under the umbrella of each RBMPs and must be considered as detailed sub-plans of the RBMPs.

To ensure coordination of water management at national level, especially to better address issues linked to water scarcity, Permanent Observatories of Water Uses (osservatori permanenti sugli utilizzi idrici) were established already in 2016 in every RBD. Through legislation adopted in 2023, the Permanent Observatories have been integrated as formal structures within the river basins authorities.

Coordination with the Floods Directive is pursued, with efforts to maximise synergies and where possible putting in place fully integrated measures and the same authorities oversee the development of both the RBMPs and the FRMPs. The situation is less clear as regards coordination with the Marine Strategy Framework Directive: references to synergies and coordination are reported in only two of the RBMPs examined in detail and in rather general terms.

Italy has three international RBDs. The Eastern Alps RBD (ITA) is part of the Danube international RBD, it has an international RBMP, an international agreement and a permanent cooperation body. The Po River (ITB) and North Apennines (ITC) RBDs both have an international agreement and a permanent cooperation body in place (designated as category 2 cooperation).

Italy did not adopt its RBMPs in line with the Water Framework Directive (WFD) deadlines, with its seven RBMPs published between April 2022 and September 2023. However, this delay may at least partly be explained by the onset of the COVID 19 pandemic. Indeed, Italy reported extensive public consultation exercises, which in many cases run for longer than the minimum 6 months required by WFD, due to the COVID 19 pandemic and the need to adjust the process (for example by organising meetings online). Overall, the RBMPs analysed in detail provide a good overview of the stakeholders consulted, of the type of comments submitted and on how such comments were considered in the finalisation of the plans.



2.2 Characterization of River Basin District

Italy has seven River Basin Districts (RBDs) as illustrated in Table 1.

Table 1. number of water bodies delineated in Italy

RBD	Name	Rivers	Lakes	Transitional	Coastal	Territorial	Groundwater
ITA	Eastern Alps	1689	40	35	12	1	125
ITB	Po River	2163	109	18	3	1	227
ITC	North Apennines	868	29	10	42	1	129
ITE	Central Apennines	611	38	6	32	2	144
ITF	South Apennines	791	68	18	144	3	186
ITG	Sardinia	498	31	42	95	1	114
ITH	Sicily	256	32	18	65	1	82
TOTAL		6876	347	147	393	10	1007

The largest, the Po River Basin District (ITB) covers almost one quarter of the country's territory. Five RBDs cover mainland Italy, while one each covers Italy's two large islands, Sardinia, and Sicily. Since the 2nd RBMP, the boundaries of some RBDs have been changed (Eastern Alps ITA, Po River ITB, North Apennines ITC and Central Apennines ITE), and one RBD (ITD – Serchio) was merged with the Northern Apennines RBD (ITC) for the 3rd RBMP.

The three northernmost RBDs are international, shared with France (ITB and ITC), Switzerland (ITA and ITB), Austria (ITA) and Slovenia (ITA).

For its seven RBDs, Italy reported a total of 7773 surface water bodies (SWBs) and 1007 groundwater bodies (Table 1). Since the 2nd RBMPs, Italy has modified the boundaries of its RBDs and its water bodies have been re-delineated, with aggregation, splitting and new delineations. However, only minor changes in the proportion of Artificial and Heavily Modified Water Bodies (HMWB) were reported. Groundwater bodies characteristics are well described with only a relatively small number of water bodies for which either the geological formation is not known, or the data is missing.

Type specific reference conditions and environmental objectives

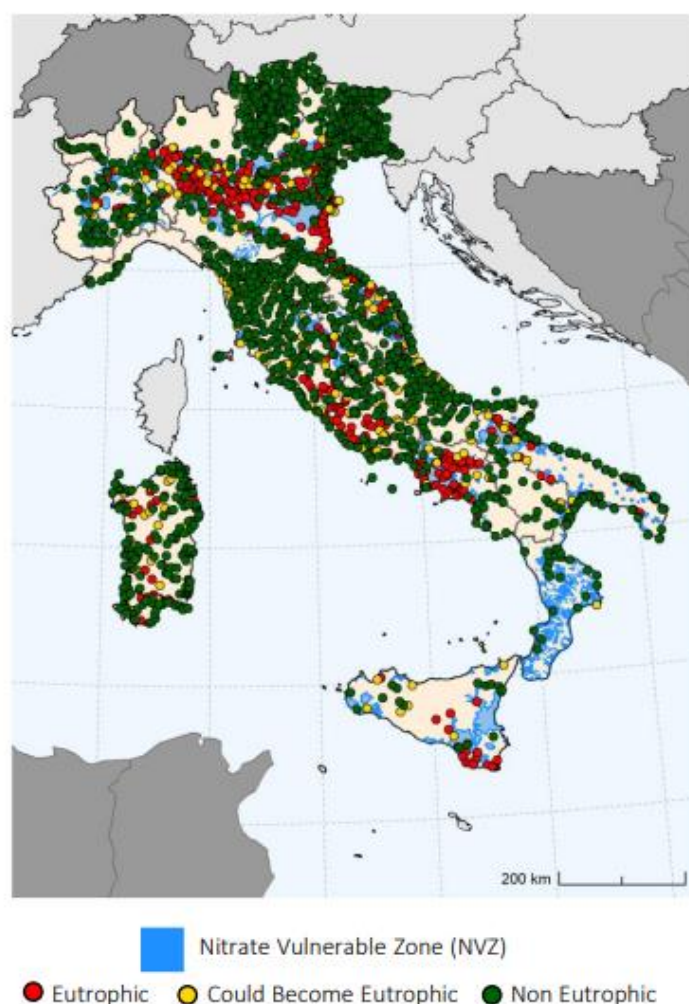
Italy made a considerable effort to set reference conditions for most surface water types and for most categories. It has established type-specific reference conditions for all relevant biological quality elements for 99 % of river types, 66 % of lake types, 95 % of transitional types and 81 % of coastal types. However, weaknesses remain when it comes to hydromorphological quality elements for transitional and coastal waters and for physico-chemical quality elements for rivers and lakes, for which no type-specific reference conditions have been set.

Environmental objectives have been reported in all RBMPs and additional objectives have also been set for water bodies associated to protected areas where so needed to ensure compliance with the requirements of the Directives applicable to those areas.

Main pressures and impacts

The main pressures on surface water bodies reported by Italy are diffuse pollution from agriculture, pollution from urban wastewater and hydromorphological alterations.

Figure 1. Map of the monitoring points showing eutrophication assessment in Italy, according to the reporting of the Nitrates Directive



Source: Joint Research Center of European Commission (n.d.). JRC NITRATES DIRECTIVE - Reporting Period 7 (2016-2019) Trophic Status. [online] [water.jrc.ec.europa.eu](https://water.jrc.ec.europa.eu/portal/apps/dashboards/cb6034c2a75e4df282f8a62f90c16caa). Available at:

<https://water.jrc.ec.europa.eu/portal/apps/dashboards/cb6034c2a75e4df282f8a62f90c16caa>

Note : 0% of the monitoring stations are above the threshold of 50mg/l

Italy has a relatively high share of agricultural land under organic farming (17%), which witnessed a steady increase in the last ten years², but diffuse pollution from agriculture remains a challenge with over a third of surface water bodies affected. Pollution from urban wastewater is a second significant pressure, affecting a quarter of the surface water bodies. Italy lags behind the EU average in the implementation of the Urban Waste Water Treatment Directive, with only 56% of the urban wastewater treated according to UWWTD requirements (EU average is 76%) and with some deficits in the necessary water treatment infrastructure, especially in some areas. Hydromorphological alterations are a further significant pressure affecting close to a quarter of surface water bodies, while the presence of invasive alien species is reported as significant for 10% of water bodies. Certain aquatic species that are well established in the territory, including the coypu, curly water weed, or the Louisiana crayfish, can significantly alter the conditions of water bodies, including the status of riparian areas, the physico-chemical characteristics, or species abundance and composition. Finally, water abstractions affect 9.3% of surface water bodies failing to achieve good ecological status or potential, and with climate change this pressure is expected to affect an increasing number of water bodies.

The main significant pressures identified for groundwater bodies are diffuse nutrient pollution (about a quarter of GWBs) and diffuse urban run-off (around 20% of groundwater bodies). Groundwater is also affected by chemical pollution, with point pollution from contaminated sites or historical pollution cited as a significant pressure for around 20% of groundwater bodies. When it comes to abstraction pressures, 11.3% of groundwater bodies failing to reach good status are significantly affected.

These significant pressures translate into the following significant impacts³ on both surface and groundwaters: chemical pollution impacts over 45% of surface water bodies and close to 40% of groundwater bodies, while nutrient pollution impacts close to 40% of surface water bodies and just under 30% of groundwater bodies.

Habitat alterations due to morphological changes is the next most significant impact for surface water bodies (almost a third of water bodies are affected), while a sizeable proportion of groundwater bodies suffer from lowering water tables (almost a quarter).

While the assessments vary from one RBMP to the other, pressures and impacts are mostly assessed using methods that combine the use of data and expert judgment. Pressures are evaluated against thresholds and at least in some cases pressures are assessed on the basis of their effect on all quality elements, rather than on their effect on a single quality element. National guidelines have been established by the Italian Institute for Environmental Protection and Research (ISPRA) in 2018 to ensure a certain level of harmonisation in the assessment of pressure, and in most cases the thresholds suggested were indeed used in the preparation of the RBMPs. It has to be noted however that 45 surface water pressure types were reported as not being assessed. While improvement have been made, some gaps remain and reliance on expert judgement remains substantial.

² [Country Factsheets \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

³ Pressures are related to the possible causes of pollution or other impacts, while the impacts relate to the actual pollution or other impact which manifests itself in a water body.

3. Policy elements contributing to biodiversity and climate change adaptation



3.1 Surface Water: what is their ecological status or potential

Monitoring

Italy has improved its monitoring capacity, both in terms of geographic coverage and of broader selection of biological, hydromorphological and general physico-chemical quality elements that are being monitored.

There are two types of monitoring: i) operational monitoring to determine the status and which covers all water bodies at risk and ii) surveillance monitoring aimed rather at identifying impacts and long-term changes and design monitoring programmes.

In the 3rd RBMPs, surveillance monitoring covers 21.7 % of river water body lengths, 43.3 % of lake water body areas, 32.1 % of coastal areas, and 16.8 % of transitional areas. For the coverage of operational monitoring, the percentages for river lengths are 33.6 %, for lakes 52.8 %, for coastal areas 47.5 %, and for transitional areas 90%.

There has been a significant increase in monitoring across most quality elements. Some biological quality elements that were not monitored in the 2nd RBMPs, are now monitored, such as phytobenthos in lakes and fish in transitional waters. For hydromorphological quality elements, monitoring now covers continuity conditions in rivers; hydrological conditions and morphological conditions in lakes; morphological conditions in coastal waters, and tidal conditions in coastal waters. However, only some hydromorphological standards have been reported to be consistent with the good-moderate class boundaries for sensitive biological quality elements for the North Apennines (ITC) RBD, while information on other RBDs was not provided. For general physico-chemical quality elements, the following are now monitored: acidification status for rivers; salinity conditions for lakes; transparency conditions, thermal conditions, salinity conditions, and acidification status for coastal waters⁴. Furthermore, River Basin Specific Pollutants (63 substances responsible for failure to achieve good status) are monitored for all surface water categories.

Status assessment

Close to 90% of water bodies have been classified for ecological status or potential. Regrettably, however, there remains high proportions of water bodies of different categories, for which certain WFD quality elements (biological, hydromorphological or physico-chemical) or river basin specific pollutants are not used for the classification of ecological status or potential. While this can be justified under the WFD rules, the information provided does not allow to understand how accurate the assessment may be in Italy. This seems particularly worrying when it comes to hydromorphological quality elements and to some physico-chemical quality elements, which are only considered in the assessment of small percentages for certain water categories.

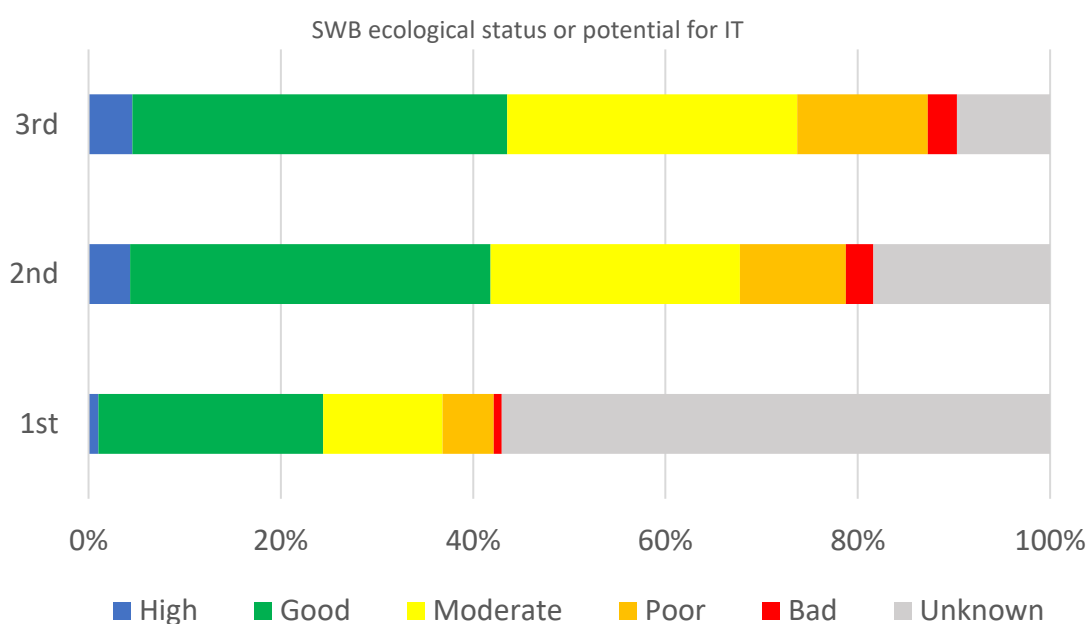
⁴ Acidification is not a mandatory quality element for coastal waters.

As shown in Figure 2, the ecological status/ potential for surface water bodies has been improving over the years and there has been a marked decrease in the number of water bodies for which the status is unknown.

Progress since the 2nd RBMP has however been worryingly slow, with over half of Italy's surface water bodies still in less than good status. While rivers appear to be faring slightly better, with a higher proportion of river water bodies classified in good status, transitional water bodies and coastal water bodies are more frequently classified in less than good status. While the information provided in the RBMPs on the reasons for failing to achieve good ecological status is not exhaustive, the main pressures reported for surface water bodies, which may explain the failures, include pollution, hydromorphological alterations and water abstractions.

Italy reports that over 70 % of surface water bodies are expected to reach good status by 2027, which would represent a significant improvement compared to the current state. Worryingly, however, it is expected that in 2027 roughly 16 % of surface water bodies will remain below good status (either fail good status or achieve lowered environmental objectives), with the remaining unknown or data missing, which may not fully align with the WFD goals.

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



Source: WISE electronic reporting

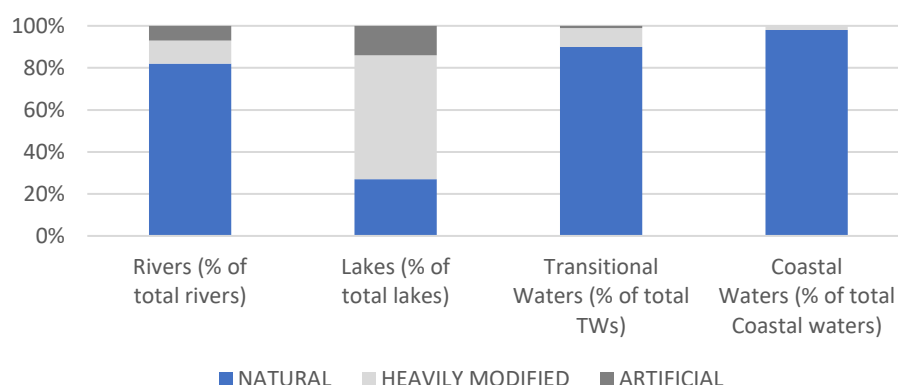


3.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

The level of human intervention in the water systems in Italy is higher than the EU average, with approximately 20% of water bodies being designated as heavily modified or artificial, and hydromorphological pressures are recognised as a significant pressure in almost half of all surface water bodies. The percentages of artificial and heavily modified water bodies are set out in Figure 3.

Notably, roughly two thirds of lakes are heavily modified. The situation has not changed significantly from the 2nd RBMPs, with only minor changes in the proportion of Artificial and Heavily Modified Water Bodies (HMWB) reported.

Figure 3. proportion of heavily modified and artificial water bodies per water category



Source: WISE electronic reporting

In 2016 Italy approved a national methodology for the identification and classification of heavily modified (HMWBs) or artificial water bodies (AWBs), based on existing EU and national legislation, which has been used in most RBDs to identify and classify such water bodies in the 3rd RBMPs. As it is the case for natural water bodies, the classification of HMWBs and AWBs is carried out using monitoring data on biological and general physico-chemical quality elements sensitive to significant pressures. The national methodology reports the assessment methods for each quality element with the relative thresholds, for rivers and lakes.

The main reasons for the designation as heavily modified water bodies are flood protection (40%), agriculture (27%), hydropower (16%), and urban development (15%). Unknown use is put down in 13 % of water bodies. Overall, less than a fifth of heavily modified or artificial water bodies are in good ecological potential, with over two thirds of water bodies failing to achieve good status (as detailed in Table 2). The chemical status is better, with almost two thirds of water bodies in good chemical status, and just over 20% failing to achieve good status.

Table 2. ecological status or potential of HMWBs and AWBs

Modifications	Good or higher ecological status or potential (% of HMWB or artificial WBs)	Failing to achieve good status or potential (% of HMWB or artificial WBs)	Unknown (% of HMWB or artificial WBs)
HEAVILY MODIFIED	16.5 %	62.5 %	21 %
ARTIFICIAL	16.5 %	74.1 %	9.4 %

Source: WISE electronic reporting



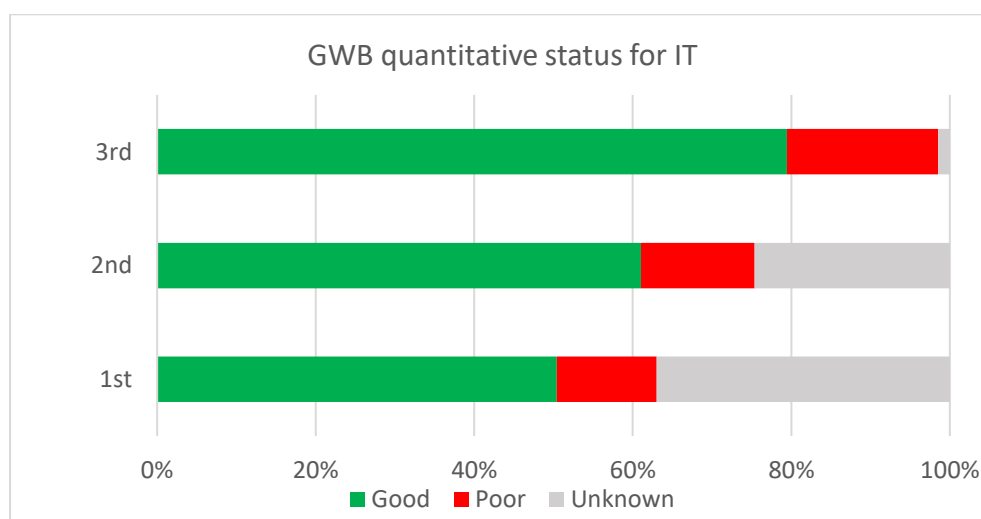
3.3 Groundwater bodies - have they sufficient water – quantitative status

Italy considers the water balance, long-term groundwater level trends or spring discharges in the assessment of groundwater quantitative status in all its RBMPs. The needs of groundwater associated aquatic ecosystems and of groundwater dependent terrestrial ecosystems however are not considered in all RBDs when assessing the quantitative status of groundwater bodies. Indeed, while three RBDs (Eastern Alps, Po River and North Apennines) consider both associated aquatic ecosystems and groundwater dependent terrestrial ecosystems, the other RBDs⁵ either do not consider the needs of associated aquatic ecosystems nor groundwater dependent terrestrial ecosystems, or, in one case (Sardinia), consider only the needs of associated aquatic ecosystems, but not of groundwater dependent terrestrial ecosystems. Where these elements are not considered in the assessment of the quantitative water status, possible impacts of abstractions in Natura 2000 protected areas may be underestimated.

Almost 80 % of groundwater bodies are in good quantitative status, which represents good progress compared with 61% in the 2nd RBMPs (Figure 4). However, more groundwater bodies (almost 5 % more than in the 2nd RBMPs) are classified as being in poor quantitative status, mostly due to the lowering of the water table and, to a lesser extent, to saline intrusion. While the number of groundwater bodies with poor quantitative status increased, this does not necessarily signal a negative trend as there has been considerable improvements in knowledge, with now only about 2% of groundwater bodies in unknown status (the status of almost a quarter of GWBs was unknown in the 2nd RBMPs).

Italy reported an expected positive trend up to 2027, when over 90% of groundwater bodies are expected to be in good quantitative status. However, around 7% of groundwater bodies will still fail to achieve good quantitative status by 2027, and for the remaining groundwater bodies it is expected that the status will remain unknown.

Figure 4. Quantitative status of groundwater bodies in the 1st, 2nd, and 3rd RBMPs



Source: WISE electronic reporting

⁵ For those RBDs (South Apennines and Sicily) for which electronic reporting was available at the time of the assessment.



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

In accordance with WFD, Italy has designated protected areas of all types foreseen by the relevant Directives listed in Annex IV of the WFD, including some national designated areas. When it comes to areas protected for habitats and species, Italy has designated 21.4% of its terrestrial areas as protected area (the EU average is 26.4%), the majority of which is designated as Natura 2000 areas, and a smaller percentage is nationally designated (~10%).

Protected areas are listed in the register of protected areas in line with the WFD requirements and information is included in the individual RBMPs. Table 3 details the number of water bodies associated with protected areas per water category.

Table 3. Number of water bodies associated with protected areas in Italy by 2021

Protected Area type	Number of water bodies associated with protected areas				
	Rivers	Lakes	Coastal	Transitional	Groundwater
Bathing waters	15	43	197	5	
Drinking water protection area	643	93	63	11	602
Freshwater fish designated water	398	30	2	4	
Nationally designated area (CDDA)	395	40	76	25	119
Natura 2000 protected sites	1 745	119	172	101	53
Nitrate vulnerable zone	1 201	12		16	236
Sensitive area under the UWWTD	551	97	25	76	
Shellfish designated water	46		69	57	

Source: WISE electronic reporting

There have been some changes in the number of protected areas, which may be explained by the partial electronic reporting (at the time of the assessment) and by the re-delineation of water bodies. However, an increase in the number of nitrate vulnerable zones can be observed (e.g. 1201 river water bodies vs 796 in the 2nd RBMPs) and in sensitive areas designated under the UWWTD (e.g. 551 rivers vs 52 in the 2nd RBMPs), which may signal an increased attention to the issue of nutrient pollution. It is to be noted that Italy's compliance with the Urban Waste Water Treatment Directive is

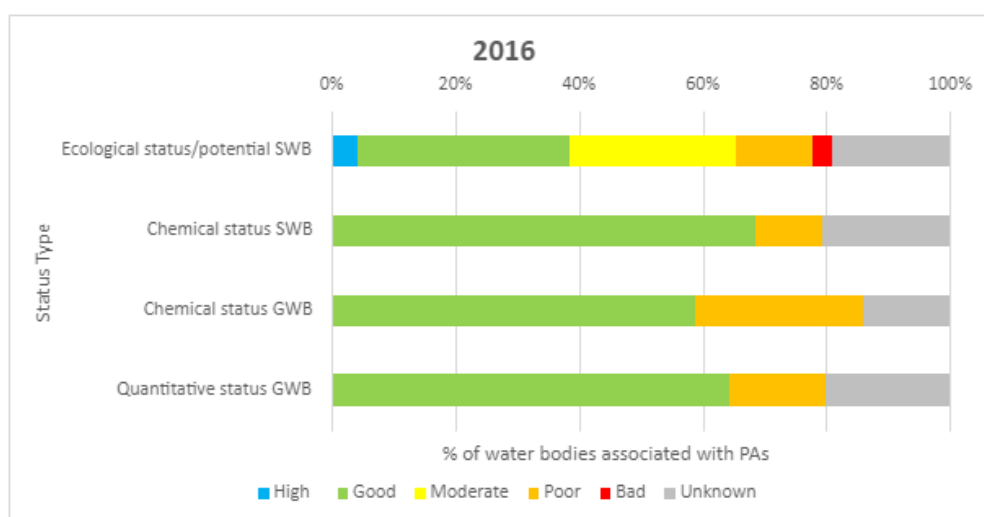
below the EU's average with only 56% of the total urban wastewater meeting all requirements. Natura 2000 sites have also increased (1745 sites associated with rivers in the 3rd RBMP vs 1331 in the 2nd RBMPs).

Additional objectives were set for some Natura 2000 areas (865 surface water sites and nine groundwater sites) in the 3rd RBMPs, based on harmonised criteria set out in national guidelines⁶. For other Natura 2000 sites work is ongoing to determine needs. When it comes to shellfish protected areas, roughly half of them have additional objectives that are identical to those of the repealed Shellfish Directive, while different microbial standards were set for the other half. Additional objectives have also been set for 6% of surface and 61 % of groundwater drinking water protected areas.

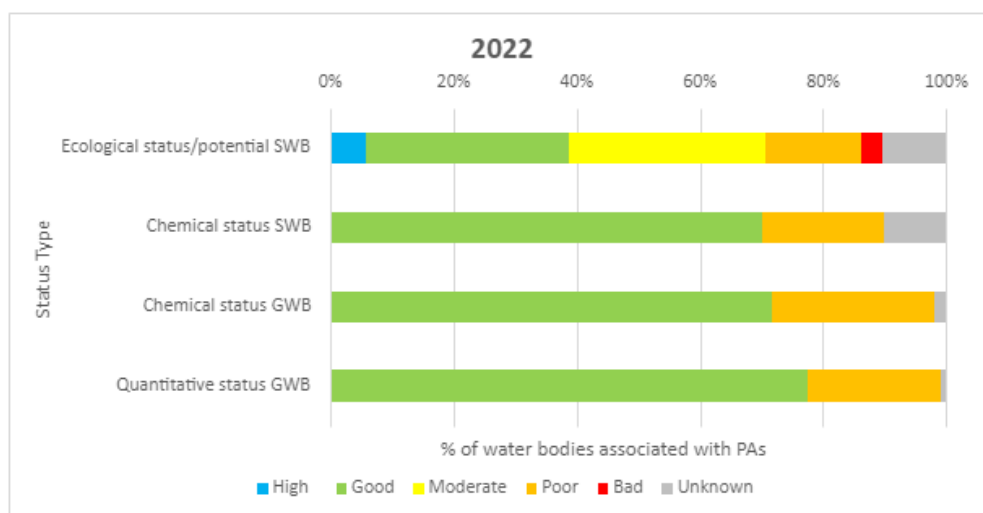
Some information is available in the RBMPs assessed more in details on additional measures for Natura 2000 areas, such as river restoration, restoring continuity and connectivity with the floodplains, on improving wastewater treatment in areas affecting bathing waters, and on measures to protect drinking water areas, including the establishment of safeguard zones as well as site-specific measures. The information provided however does not always allow to establish whether the set measures will be sufficient to achieve the specific objectives of these areas.

Monitoring has been strengthened in general in Italy, and for protected areas the status assessment is done with medium to high confidence in most cases. While groundwater bodies show some improvement, notably in their chemical status, progress is not discernible in the status of surface water bodies associated with protected areas (Figure 5). Furthermore, for a large majority of protected areas information is not available on whether the specific objectives have been achieved or will be achieved by 2027.

Figure 5. Progress in the state of water bodies associated with protected areas by 2016 and 2022



⁶Link: http://www.minambiente.it/sites/default/files/archivio/allegati/trasparenza_valutazione_merito/Pianificazione_governo_territorio/linee_guida.pdf.



Source: WISE electronic reporting



3.5 What is being done to prevent/reduce hydromorphological pressures

Hydromorphological alterations are the third most significant pressure on surface water bodies in Italy, affecting almost half of surface water bodies. Italy has an authorisation and permitting regime in place to control physical modifications, including changes to the riparian area, but it is not clear whether the revision of such permits is periodical or if it is triggered by certain changes, for example changes in operations.

Measures are planned to improve the hydromorphological conditions of water bodies, including for longitudinal continuity; to improve flow regimes and establish ecological flows; to establish natural water retention measures; and to reduce sediments from soil erosion and surface run-off. Integrated measures are foreseen to contribute to the achievement of objectives not only under WFD but also to address flood risks, protect and restore ecosystems and biodiversity and manage droughts.

Guidelines to define and set e-flows were developed and are part of a ministerial decree published in 2017, which gives the river basin authorities the responsibility of setting (and implementing) e-flows using that methodology in the third RBMPs.

In general, nature-based solutions and natural water retention measures are included in the programmes of measures, including bank maintenance and restoration, water retention on floodplains, implementation of buffer strips and filter ecosystem along the natural and artificial water network in plains. However, in some cases proper application of the measures is hindered by lack of financing. By way of illustration, the Po River RBMP includes measures tackling hydromorphological pressures since the 1st RBMP, however it is only with the National Plan for Recovery and Resilience that funding has been earmarked for a River Po restoration project. This project includes measures to restore the ecological functions of water bodies, the reconnection of rivers and floodplain areas and the implementation of integrated measures to contribute to the goals of different Directives (WFD, Floods, Habitats, Birds, to mention a few).



3.6 What Italy is doing for abstractions and water scarcity

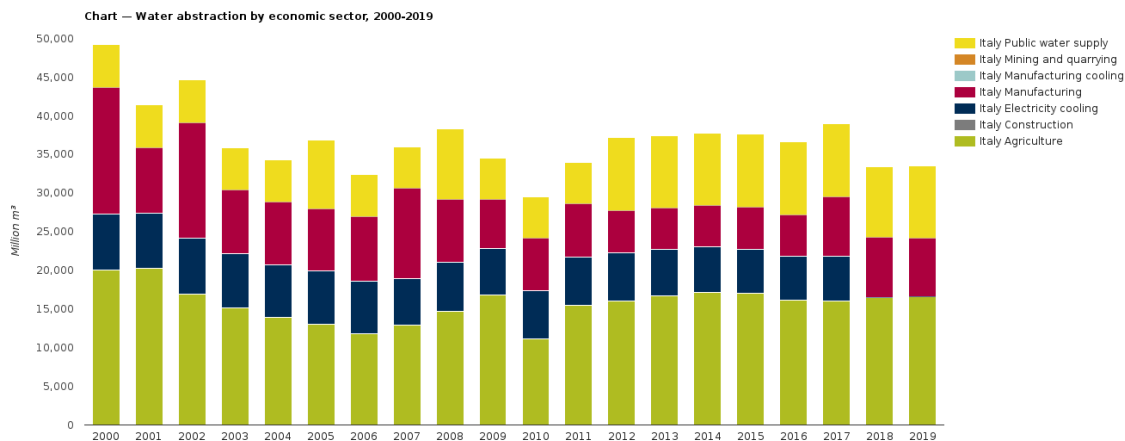
Water scarcity and droughts are recognised as a serious issue in Italy.

About 77% of the groundwater bodies in poor quantitative status are affected by significant abstraction pressures from public water supply, industry, agriculture, fish farms, hydropower, cooling water, other unspecified sector, as well as from alteration to groundwater level or volume. The remaining 23 % of groundwater bodies in poor quantitative status represent overexploited aquifers, where water abstraction used to be a significant pressure in the past, but that are now are slowly recovering. Furthermore, around three quarters of groundwater bodies at risk of failing to achieve good quantitative status by 2027 are reported as being affected by abstractions.

Abstractions are also considered a significant pressure for about 26% of total surface water bodies and 21% of the surface water bodies in less than good ecological status or failing to achieve good chemical status are reported to be significantly affected by abstractions.

According to data collected by the European Environment Agency⁷, in 2019 Italy abstracted about 10174 million m³ of water from groundwater bodies and about 23322 million m³ from surface water (see Figure 6). Around half of the total water is abstracted by the agricultural sector, with public water supply and manufacturing sharing the rest. Overall total abstractions are down compared to a total of almost 50000 million m³ in 2000, but over the years consumption has not shown a steady downward trend. Worryingly, Italy suffers from aging infrastructure issues and a substantial amount of water is lost annually due to leakages: the average non-revenue water (including losses due to leakages, maintenance, street cleaning, firefighting) in Italy is 40% of total water, well above the EU average⁸.

Figure 6. Water abstraction by economic sector in Italy



Source: European Environment Agency

Italy is making efforts to put in place the necessary structures to analyse the problem and to develop appropriate measures and to ensure coordination at national level. National guidelines on how to

⁷ [Water abstraction by source, 2000-2019 — European Environment Agency \(europa.eu\)](#), data sources include EEA own data as well as data from Eurostat and OECD.

⁸ [EurEau 2021 "Europe's Water in Figures – An overview of the European drinking water and waste water sectors"](#).

quantify the volumes of water used for irrigation have been developed and a recently appointed Special Commissioner for the water crisis (Italian law n. 68/2023) is overseeing the exercise with the support of all the national meteorological and climatological bodies. A common assessment of pressure from water abstraction at the RBD and national levels has been conducted. This activity is also addressed by a specific group of the Committee for Technical Coordination of the RBD Permanent Observatories.

The 3rd RBMPs include clear measures to address water abstraction. These measures focus on e-flows, control of abstraction, water efficiency, drinking water protected areas, research, and knowledge building. On efficiency in particular, Italy is one of the Member States that, under its CAP Strategic Plan, supports investment in the improvement of existing irrigation infrastructure and on-farm irrigation installations to reduce losses and increase efficiency. To promote more sustainable water use Italy has also included an agri-environment-climate intervention in its CAP Strategic Plan which provides for an annual payment to beneficiaries who accept commitments linked to the adoption of systems for the definition of a soil-plant-atmosphere water balance. The system defines the volume of water suitable for the proper development of the crop, to determine, for each irrigation operation, the volumes to be distributed in relation to the phenological phase of the crop and the seasonal climate trend, and thus optimize the efficient use of a scarce resource.

The RBMPs also include measures to increase water supply in all RBDs through water reuse, both in agriculture and in industry, natural water retention measures/nature-based solutions and reservoirs. The development of new reservoirs has been gaining prominence in the national debate as a central solution to address water scarcity. It will be essential to ensure that any such intervention is part of a coherent strategy which takes effective measures to maximise storage in soils and ecosystems and to ensure efficient use of water. Such interventions should also carefully consider long-term climate scenarios to avoid maladaptation. When it comes to alternative water supplies, Italy does not mention desalinisation in the RBMPs assessed more in detail. Water reuse is mentioned, but little details are provided. According to estimates⁹, Italy has a large potential for water reuse: reclaimed water could contribute up to 47% of total irrigation demand.

Italy has a concession, authorisation, and/or permitting regime to control surface and groundwater abstractions and impoundments. A register of abstraction and impoundments is in place in all RBDs, except for Sicily where this is currently being compiled.

Permits or concession for water abstractions are issued, as required by the law (Royal Decree 17775/1993, art 21) for a fixed limited period, which is specified by the RBD authorities, depending on the type of use. However, abstraction from private wells, while needing to be registered, are exempted from the permitting regime. Permits can be refused or revised under specific conditions, to maintain or achieve the environmental objectives in the RBMPs. However, some permits may be granted for a period of up to 40 years. Unless such permits are subject to a regular and periodic review prior to the end of the fixed period, this period may be too lengthy to ensure the periodic review and possible update, as required by law, of the controls on abstractions.

There is an explicit link between the implementation of e-flows and the authorisation process and/or review of permits to control water abstractions and impoundments. National authorities may conduct

⁹ Impact assessment accompanying the Proposal for a Regulation of the European Parliament and of the Council on minimum requirements for water reuse.

relevant sample checks after authorisation or targeted checks in response to complaints to prevent cases of unauthorised abstractions or violation of permit conditions.

However, the issue of illegal water abstractions in agriculture or other sectors is not explicitly addressed or quantified and measures to tackle this issue are only sporadically mentioned in the RBMPs.

A National Plan for Adaptation to Climate Change was approved on 21 December 2023 with Ministerial Decree n. 434 of the Ministry of the Environment. The Sicily RBMP, in particular, under the heading of drinking water protection measures, includes measures to strengthen abstraction controls from GWBs in areas at risk, to improve controls over abstractions from private wells, and to control the risk of desertification through supporting natural groundwater recharge. It also foresees studies to define measures for artificial groundwater recharge.



3.7 Adaptation to climate change

Severe droughts have been experienced more often and more intensely in Italy in the last couple of decades as consequences of climate change. In recent years droughts have significantly affected agricultural production, inland water navigation, public water supply and energy (thermal and hydropower) production. Drought impacts are set to further increase in the coming years as the effects of climate change will be increasingly felt.

Climate change considerations and adaptation measures have been included in all the RBMPs assessed in more detail. Moreover, measures are reported as having been analysed in terms of climate-proofing in all assessed RBMPs. However, the RBMPs include no information on the outcomes of these analysis and how this impacts the selection of measures.

As noted in the sections above, the Permanent Observatories on Water Uses have been established in each RBD and they coordinate the management of water scarcity and drought events through continuous monitoring of water use and governance and sharing of approaches to monitor and act upon such events. While no direct assessment of water scarcity and drought impacts could be identified in the RBMPs, climate change adaptation measures have been included in all the RBMPs assessed in more detail: the Po River (ITB), North Apennines (ITC) and Sicily (ITH) RBMPs.

For the Po River RBD, the measures are linked to the national Climate Adaptation Plan and aim to improve water resource management including through more efficiency and control of abstractions, recharge, or augmentation, as well as actions to improve the hydromorphology of water bodies. A Drought Management Plan is being drafted.

The North Apennines RBD has developed a water scarcity severity index which could be applied at national level, but there is no evidence of this index being used in other RBDs. Moreover, measures have been listed outlining their relevance for natural water retention measures and drought related objectives.

The Sicily RBMP presents a Drought Management Plan which lists various measures to tackle drought and water scarcity, focusing primarily on water use efficiency and reduction in water consumption, as well monitoring activities intended to inform the development of indicators for a drought / water scarcity alarm system. Other measures which are not directly included in the Drought Management Plan include actions to revise parameters for ecological flows, and the review of permitting and policies based on this definition. The measures listed have also been assessed for their alignment

with the National Strategy for Climate Change Adaptation and the Regional Strategy against Desertification.

Art 4(6) has been used for five water bodies, while it was not used in the 2nd RBMP. These exemptions have been justified on grounds of natural causes, but no further details are available as regard the justifications to apply Article 4(6).

As regards floods, flooding is also a common occurrence in Italy, with climate change exacerbating the issue. The Floods Directive requires to consider the impacts of climate change on the occurrence of floods, and therefore in the preparation of Flood Hazard and Risk Maps (FHRMs) and Flood Risk Management Plans (FRMPs). More information on these can be found in Section B. However, considering the close relationship between overall water management and floods management and the importance of climate change effects on both, climate change effects are jointly addressed in this section.

At the time of the first FHRMs, Italy did not report information on how climate change had been taken into account. For the second FHRMs, Italy has made some progress in this respect and reported that climate change was considered in 23 of its 47 Units of Management (UoMs). However, the methodological reports provide little information on how climate change was incorporated into the FHRMs: they mostly refer to ongoing research.

All five FRMPs refer to climate impacts. Four of the five plans state that climate change was considered in developing their measures, though the detail provided vary across the plans. It was projected that the temperature of the Mediterranean Sea will increase by about 2°C, while temperatures on land may increase by up to 5°C and more in the coming decades (2041-2070)¹⁰. All the plans refer to an increasing risk of flash floods. The Central Apennines plan states that these could also lead to increased risks of debris flow floods in some locations. Several FRMPs state that changes in land use, in particular ongoing soil sealing, can exacerbate the impacts of flash floods. Three of the second FRMPs refer to adaptation strategies and plans, and all mention projected climate change impacts, including increasing risks of flash floods. For instance, the plan for Sicily lists municipalities at risk of climate change impacts and those specifically at risk of flash floods. Four of the five second FRMPs assessed refer to measures to address climate impacts.

4. Policy elements contributing to zero pollution



4.1 Surface Water: what is their chemical status

Monitoring

Italy has improved the coverage of its monitoring network, with 36% of all water bodies now monitored up from 26% in the 2nd RBMPs. The focus of monitoring remains primarily on rivers, covered by 80 % of all monitoring, while the next two water categories most monitored by number of water bodies covered are coastal water bodies and lakes. Besides monitoring, Italy supports the assessment of chemical status with expert judgement.

Most priority substances are monitored (41 out of 45) at least in the Po River RBD, and the other RBMPs assessed in detail reported explicitly that 12 new substances, added to the Environmental

¹⁰ FRMP for ITE, p. 123.

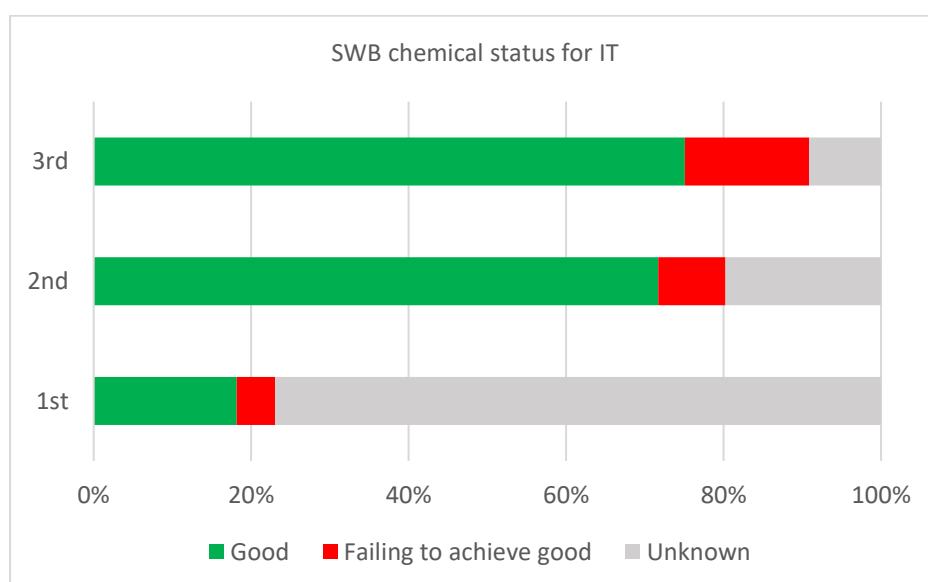
Quality Standard Directive in 2013, were included in the planning. Italy has published guidelines for assessing the long-term trend of priority substances that tend to accumulate in sediments and biota, as required by the EQS Directive. While monitoring of the 20 priority substances¹¹ that tend to accumulate in sediment and/or biota is done less frequently than what recommended as a guideline in the EQS Directive, the coverage is fairly extensive with 16 substances out of 20 monitored for biota, and 15 out of 20 for sediments.

Status classification

Thanks to improved monitoring, Italy has made steady progress in the collection of data for chemical classification. The knowledge gap is becoming smaller, with only about 9 % of surface water bodies for which the status is still unknown.

Figure 7 provides the chemical status classifications for all three rounds of RBMP reporting, as well as estimates for the status in 2027¹².

Figure 7. Chemical status of surface water bodies in the 1st, 2nd, and 3rd RBMPs



Source: WISE electronic reporting

Just over 75% of surface water bodies are in good chemical status, which represents some progress compared to the previous period. The higher proportion, compared to the 2nd RBMPs, of surface water bodies in poor chemical status (almost 16%) results from the fact that there are fewer water bodies in unknown status. Italy reported that almost 90% of surface water bodies are expected to be in good chemical status by 2027. For the remaining water bodies, about 6 % are expected to fail to reach good status by 2027, while the status of the remaining one is expected to remain unknown.

¹¹ Anthracene, brominated diphenylether, cadmium, C10-13 chloroalkanes, Di(2-ethylhexyl)phthalate (DEHP), fluoranthene, hexachlorobenzene, hexabutadiene, hexachlorocyclohexane, lead, mercury, pentachlorobenzene, PAH, Tributyltin, dicofol, perfluorooctanesulphonic acid (PFOS), quinoxifen, dioxins and furans, hexabromocyclododecane (HBCDD), and heptachlor and heptachlor epoxide.

¹² The missing data from the expected status in 2027, represents the electronic data for the Central Apennines RBD, which was not available at the time of this assessment.

The substances responsible for failing to achieve good chemical status vary by RBD. However, at aggregated national level, as illustrated in Figures 8.a and 8.b, the main substances responsible for the failure to achieve good chemical status in Italy are uPBTs such as mercury, and polyaromatic hydrocarbons (PAHs), particularly benzo(a)pyrene and fluoranthene, affecting 6% and 4% of surface water bodies, respectively.

Other substances causing failure to achieve good chemical status include heavy metals such as lead (3.5 %), nickel (3.1 %) and cadmium (1.7 %), perfluoro octane sulphonic acid (PFOS) (3.2 %), biocides such as tributyltin (1.5 %), and hexachlorobenzene (0.8 %). Compared to other Member States, polybrominated diphenyl ethers (PBDEs – heavily used in paints, plastics, foam furniture padding, textiles, building materials) are a lower concern for Italy and sit towards the bottom of the top ten pollutants. Many of these substances are a problem for only a few water bodies or are an issue in a specific RBD.

Figure 8.a. The top-10 Priority Substances causing failure to achieve good chemical status in surface water bodies in Italy (legally required 33 Priority Substances)

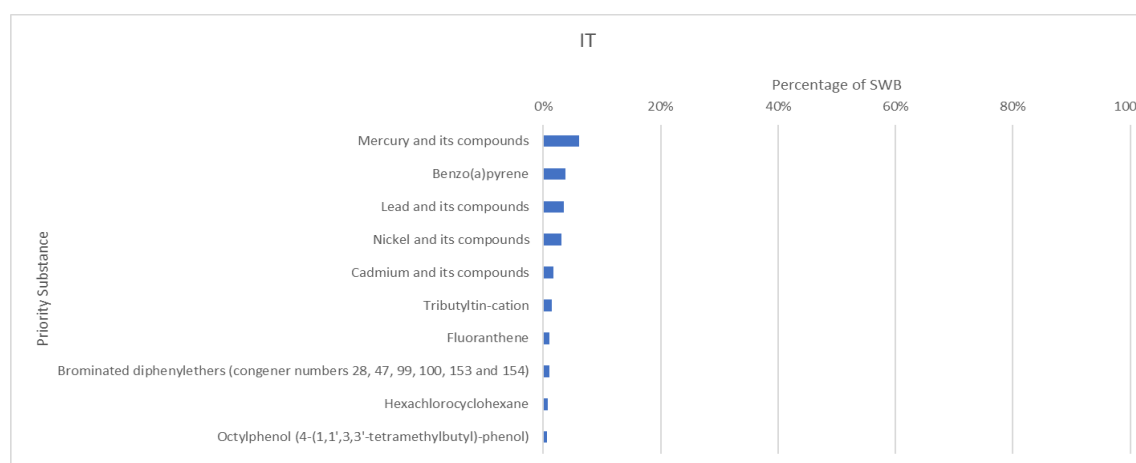
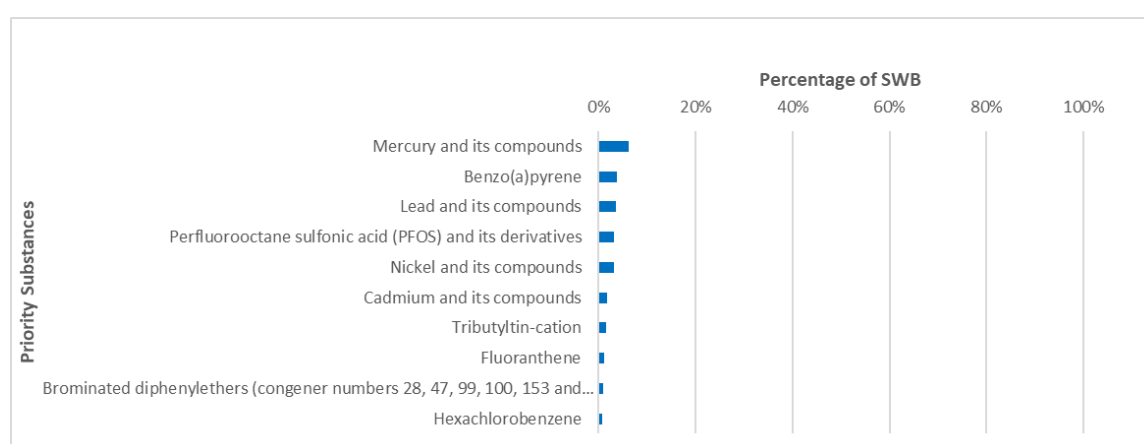


Figure 8.b. The top-10 Priority Substances causing failure to achieve good chemical status in surface water bodies in Italy (new 1-45 Priority Substances)¹³



Source: WISE electronic reporting

¹³ Directive 2008/105/EC as amended by Directive 2013/39/EU added 12 new substances i.e. numbered 34 to 45 to the priority substance list. For the 3rd RBMP, Member States have only had the obligation to monitor them. Compliance with the Environmental Quality Standard values for these 12 new priority substances will be assessed in 2027.



4.2 Groundwater Bodies: what is their chemical status

Monitoring

While the number of groundwater bodies has decreased compared to the 2nd RBMPs, due to re-delineation, the total area has remained almost unchanged. Italy has made considerable efforts to improve monitoring, especially surveillance monitoring, with now almost 80% of groundwater bodies monitored for chemical status. Furthermore, all substances set out in the Groundwater Directive (GWD) Annex I and Annex II (Part B) substances and WFD Annex V (Point 2.4.2) core parameters) are monitored in all RBDs.

Threshold values for substances are set nationally taking into consideration the impacts on groundwater dependent terrestrial ecosystems in all RBDs. However, impacts on groundwater associated surface water are considered only in five RBDs, while groundwater dependent terrestrial ecosystems, are considered only in four RBDs. This represents a weakness in the implementation of the assessment method.

Finally, the impact on saline intrusion is considered in five RBDs, but not explicitly in Sicily. This is cause for concern, given that this is a Mediterranean island, prone to dry conditions, which could make it vulnerable to saline intrusions. Nevertheless, studies are underway or are planned to define artificial recharge measures for groundwater bodies at risk, including to combat saline intrusions.

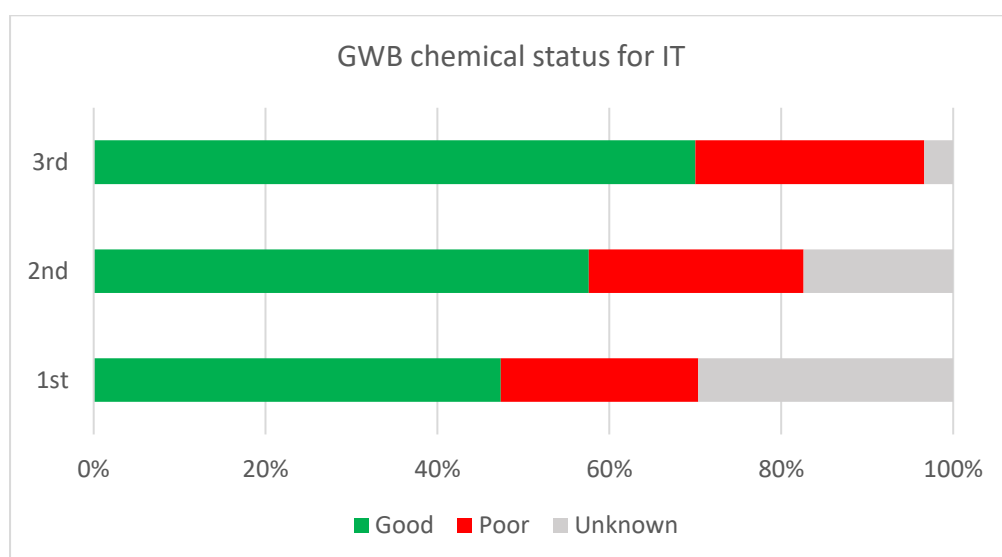
Status classification

Better and more comprehensive monitoring led to slightly higher confidence in the assessment of the chemical status of groundwater bodies (with over 74% of assessments done with high or medium confidence, up from about 70% in the 2nd RBMPs). Moreover, it has brought the number of groundwater bodies in unknown status down from about 17% to just over 3% of the total.

Figure 9 below illustrates the chemical status of groundwater, showing steady progress towards good status. In the 3rd RBMPs 70% of the total groundwater bodies are in good chemical status and 26.6 % of total GWBs are in poor chemical status. More groundwater bodies are in poor status in this cycle, but this is due not to deterioration but to better knowledge with less water bodies in unknown status.

Italy expects the positive trend to continue, with almost 86% of groundwater bodies expected to achieve good status by 2027. Nevertheless, almost 12% of groundwater bodies are expected to fail to reach good status by 2027, and for about 2% of groundwater bodies the expected status in 2027 is unknown. Furthermore, the situation will need to be monitored closely as according to the data reported, 41% of groundwater bodies remains at risk of failing to achieve good status.

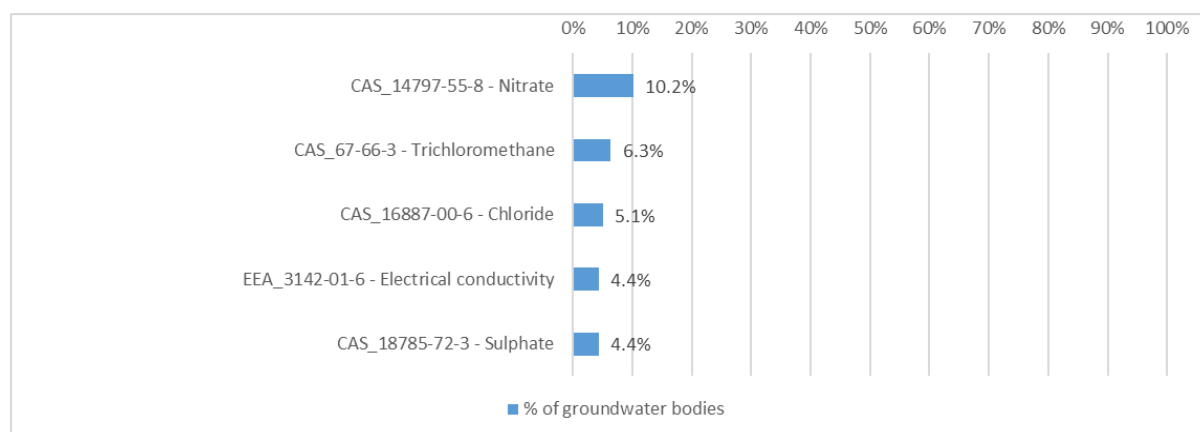
Figure 9. Chemical status of groundwater bodies in the 1st, 2nd and 3rd RBMPs



Source: WISE electronic reporting

The three main pressures affecting groundwater bodies are diffuse pollution from agriculture (about 24%), urban run-off (19.6%) and point pollution from contaminated sites or abandoned industrial sites (18.5%), translating into chemical and nutrient pollution as the two main impacts. As illustrated in Figure 10, the main pollutants causing failure to achieve good chemical status of groundwater bodies are nitrates, trichloromethane, chloride, electrical conductivity (pollutant indicator) and sulphate.

Figure 10. Top-5 pollutants causing failure to achieve good chemical status in groundwater bodies by 2021



Source: WISE electronic reporting



4.3 What Italy is doing to combat pollution from agriculture

Diffuse pollution from agriculture, resulting in both chemical and nutrient pollution, is one of the main pressures affecting both surface (over a third of all water bodies) and groundwater bodies (about one quarter of all water bodies) in Italy.

Overall Italy has set for each RBMP measures to reduce both nutrient pollution and to reduce pesticide use. The measures respond to the specific pressures reported in the different areas, although the information provided in the RBMPs assessed in detail – except for the North Apennines RBD – is not sufficiently detailed to allow the Commission to assess the gaps and the ability of the measures to close the gap.

In this respect, Italy has developed national guidelines on a methodology to conduct the gap analysis for all pressures to be used as a reference by all RBDs. However, these guidelines do not appear to have been consistently applied in every RBD. Noteworthy is the North Apennines RBMP, which provides a comprehensive gap analysis and details on how the measures will contribute to closing the gap to target, considering all pressures. The Po River and Sicily RBMPs report information on the analysis of gaps but in a less systematic and detailed fashion.

All RBMPs assessed more in detail include measures to reduce both nutrients and pesticides pollution from agriculture, but no specific load reduction targets are mentioned. For pesticide pollution measures include better monitoring of water; specific measures reported under the National Action Plan for the sustainable use of phytosanitary products; actions for the mitigation of agricultural impact; application of the measures included in the decree governing the sustainable use of phytosanitary products¹⁴.

As for nutrient pollution, the Commission opened an infringement case (INFR(2018)2249) calling on Italy over the insufficient protection of waters against pollution caused by nitrates from agricultural sources. The Italian authorities' answers to the reasoned opinion issued in February 2023 are currently under assessment by the Commission's services.

However, Italy has revised between 2016 and 2023 the regional action programmes for the implementation of the Nitrates Directive, which set out basic measures to achieve reductions in nitrate pollution. Several regions have also revised their nitrate vulnerable zones, which are the areas draining into waters identified as polluted or that could be affected by nitrate pollution. Measures foreseen by the RBMPs cover aspects such as distances from watercourses for the spreading of farming effluents; limitations on slope spreading of livestock farming effluents; use of cover crops in the winter; shortening of the periods during which farming effluents incorporation into the soil is allowed. Further measures of relevance to both the Nitrates Directive and WFD include establishment or maintenance of buffer zones along watercourses; adaptation of farming practices; surveillance of manure use; implementation of techniques to treat livestock farming effluent and to encourage circular economy approaches; study and implementation of nature-based solutions.

In its CAP Strategic Plan (2023-2027)¹⁵ Italy plans to increase support for farmers to maintain and convert to organic farming from the current 18% to 25% of the agricultural land by 2027¹⁶. In its RBMPs, Italy has also planned several agri-environment-climate interventions, including a number of measures focusing on sustainable nutrient management for some RBDs, as well as measures to treat pollutant loads in effluent from livestock farming using phyto-treatment. Finally, Italy also includes in its RBMPs drinking water protection measures, the most relevant of which are about defining and

¹⁴ Decree 150/2012

¹⁵ [Mapping and analysis of CAP strategic plans \(2023-2027\)](#)

¹⁶ [At a glance: Italy's CAP Strategic Plan \(europa.eu\)](#) and [EU organic farming: 16.9 million hectares in 2022 - Eurostat \(europa.eu\)](#)

managing drinking water safeguard areas, together with measures to establish water security plans and to limit the vulnerability of drinking water to pollution, including from nutrients and pesticides.

The RBMPs provide some information on the status of implementation and on the funding of the different measures in these areas, albeit with different levels of details. The Po River RBMP reports what measures are maintained from the 2nd RBMP and on their status of implementation (about 73% are reported as being under ongoing implementation), as well as which measures have been introduced with the 3rd RBMP. It reports information on estimated costs, but less details on financing. The North Apennines RBMPs is more systematic, reporting on which measures from the 2nd RBMP are maintained, which ones are new, and on their implementation status. It also provides detailed information on costs, on whether funding is secured, implementation status for each measure and intervention. The Sicily RBMP reports that most of the measures have been maintained from the 2nd RBMP and provides some details on costs and financing but does not provide information on the implementation status.

The RBMPs also provide some information on transboundary cooperation and exchange of knowledge when it comes to international river basins, however it is noted that the areas in question are not concerned by significant nutrient pollution. Positive efforts are to be noted in establishing coordination with the farming community, but only little information is provided, with the Eastern Alps RBD reported as a positive example.



4.4 What Italy is doing to combat pollution from other sectors

Besides agriculture, there are other sectors and sources that contribute significantly to point and diffuse pollution of water bodies caused by nutrients, organic matter, sediments, saline discharges, and chemicals (priority substances, river basin specific pollutants, groundwater pollutants and other physico-chemical parameters).

Italy has reported a variety of measures foreseen to tackle these non-agricultural pressures. These include measures to construct or upgrade wastewater treatment plants, as well as upgrades or improvements of industrial wastewater treatment plants. Measures are also included to remediate contaminated sites, to phase out emissions, discharges, and losses of Priority Substances, and to prevent or control pollution from urban areas, transport and built infrastructure. Measures to reduce surface run off and soil erosion are also mentioned.

While national legislation requires all discharges to be authorised, Italy suffers from some deficits in the necessary water treatment infrastructure in some regions and lags behind the EU average in the implementation of the Urban Wastewater Treatment Directive. Only 56% of urban wastewater is treated in accordance with the EU requirements, but some progress can be discerned with a decrease in the proportion of water not meeting the requirements for biological treatment with nitrogen and phosphorus removal. This progress and the focus on measures to upgrade or build new treatment plants are a positive development. Further measures mentioned, although not described in great level of details, include better control of discharges; wastewater treatment for scattered households and small settlements and better collection networks for unconnected areas; improving efficiency of existing treatment plants or upgrading them; construction of new treatment plants. The Commission is addressing the problem of non-compliance with the Urban Wastewater Treatment Directive through four infringements which cover more than 850 agglomerations with a population equivalent of over 26.7 million. As of September 2024, Italy has been asked to pay in total almost 143 million

EUR in fines. Despite the appointment of a Special Commissioner, there has been only limited progress in recent years in reducing the number of agglomerations non-compliant with the Directive.

The information provided in the RBMPs linking drivers, pressures and measures varies between RBDs. While it appears that not all priority substances are consistently addressed by relevant measures in all RBDs, there seems to be overall a good effort in linking drivers, pressures, and related measures. Similarly, on the basis of the information available, it is not clear to what extent the measures will contribute to closing the gap in implementation. An exception is the North Apennines RBMP, where clear information is presented on the role the measures will play in closing the gap, although the information covers all measures and does not necessarily focus only on non-agricultural pressures.



4.5 What Italy is doing to combat significant pressures – overall assessment of the Programmes of Measures

Besides more specific action to tackle pollution from agriculture and other sources, measures are planned to address all significant pressures in both groundwater and surface water, with at least one Key Type of Measure (KTM) assigned to each pressure. Operational KTMs are also linked to many individual substances, including River Basin Specific Pollutants and priority substances (e.g. pesticides, fungicides, heavy metals).

The RBMPs map a total of 1962 basic measures and 380 supplementary measures against KTMs. Overall, the information reported electronically, which was available at the time of this assessment, show that the Italian programmes of measures address all pressures and set measures that are often applicable in at least six of the seven RBMPs. Apart from measures to address diffuse pollution and point source pollution, the programmes of measures also include measures to address various hydromorphological pressures, invasive alien species, wastewater treatment (both household and industrial) and to limit erosion. The programmes of measures include water pricing measures for the recovery of costs for some sectors, but not for agriculture. Similarly, measures to directly address abstractions and diversions appear to be planned in only one RBD.

In the 3rd RBMPs analysed more in detail, some information on costs and source of funding have been explicitly associated to the KTM, but this information is not always complete. In these RBDs the estimate costs for the implementation of the measures range from almost 3 billion to over 7 billion euro. In the case of the North Apennines RBD, only about 47.6% of the total estimated has secured financing. It is to be noted however, that Italy's Recovery and Resilience Plan of EUR 194 billion (the largest in the EU) is structured around seven missions including one on the green revolution and ecological transition, with investments planned to improve waste and water management.

Not all RBMPs provide complete information on gap indicators for all significant pressures and on how measures are prioritised. Similarly, the information on the state of implementation of the measures planned under the 2nd RBMPs is not always complete.

Where there has been lack of progress in the achievement of objectives, this has been attributed to the obstacles set out in Table 4.

Table 4. Obstacles to progress in the achievement of PoM objectives between the 2nd and 3rd RBMPs

Obstacle	Number of RBDs
Governance	4
Delays	6
Lack of Finance	6
Lack of Mechanism	4
Lack of Measures	1
Measures not cost effective	1
Extreme Events	4
Other: Covid Pandemic	1

Overall Italy has made progress in associating measures to pressures, but the approaches to cost effectiveness and prioritisation of measures vary between RBDs. For example, the Po River RBDs reported that the cost effectiveness analysis is still ongoing, although the cost per KTM has been provided. The Sicily RBMP also reports costs of measures, but does not provide any information on cost-effectiveness, while the North Apennines RBMPs report detailed information on the methodology used and on how measures have been selected based on cost-effectiveness. Moreover, information on the gap analysis and on the state of implementation is insufficient or unclear, making it difficult for to assess whether the programme of measures will be effective in reaching the objectives.

5. Exemptions and economics



5.1 To what extent are exemptions applied in Italy

Environmental objectives and exemptions

WFD allows for some exemptions where necessary, but these should be used only where absolutely necessary and be properly justified. Italy has made efforts to better justify exemptions in the management of its waters: the RBMPs include the grounds on which exemptions are applied, per water body, and provide more information than in the 2nd RBMPs to justify such exemptions. Nevertheless, Italy's RBMPs would benefit from a more systematic provision of information across RBMPs and from strengthened analyses in relation to disproportionate costs¹⁷. Table 5 lists the exemptions reported.

Table 5. Articles 4(4) (time related exemptions) and 4(5) (lowered objectives) exemptions reported

Article	Justification	SW ecological status	SW chemical status	GW quantitative status	GW chemical status
4(4)	Technical feasibility	24.6 %	11 %	11.3 %	12 %

¹⁷ National guidelines on disproportionate costs were published in September 2021.

4(4)	Disproportionate costs	6.4 %	3.5 %	7.7 %	5.5 %
4(4)	Natural conditions	11.4 %	6.7 %	5.3 %	12 %
4(5)	Technical feasibility	9.2 %	0.3 %	0.1 %	1.9 %
4(5)	Disproportionate costs	9.4 %	0.03 %	/	2 %

The main significant pressures on surface water bodies requiring the use of exemptions in relation to chemical status are linked to urban wastewater, diffuse agriculture, urban run-off, and contaminated sites or abandoned industrial sites, resulting in chemical and nutrient pollution. Diffuse agriculture, urban run-off and contaminated sites or abandoned industrial sites are also the main significant pressures that require the use of exemptions for chemical status for groundwater bodies.

Exemptions under Article 4(6) (temporary deterioration as a result of 'force majeure') are applied for five surface water bodies: this was not the case in the 2nd RBMPs. No information is provided on the justification, except that it is justified on grounds of natural causes.

Exemptions under Article 4(7) (deterioration or prevention from achieving good status/potential as a result of new modifications or new sustainable human development activities) are foreseen for five surface water bodies in the Po River RBD. The Article 4(7) conditions will be assessed as part of an Environmental Impact Assessment procedure. Italy has provided information on the criteria and methods to identify and finance priority projects: as part of this procedure the RBD authorities have to verify if the Article 4(7) conditions are met. The same principle of verifying compliance with Article 4(7) conditions are also integrated in the national decree setting out a national plan for infrastructure and safety in the water sector, as well as in guidelines to evaluate investments in public works.



5.2 Use of economic analysis and water pricing – cost recovery

Italy has made efforts to harmonise the economic analysis through national laws and guidelines. However, there remains significant gaps in the implementation and the quality of the economic analysis varies considerably across the RBMPs. Some of the RBMPs assessed in more details provide good examples of what can and should be reported, indicating potential for peer-to-peer learning.

The RBMPs do not generally include long term forecasts of water demand and supply and related investment needs beyond 2027. In some cases general estimates of sectoral water demand are reported, but not systematically. While the major water uses are usually listed, the water services tend not to be clearly identified. Significant differences in the data analysis on water services can still be observed across the country, especially as regards the data on financial cost and revenues.

Similarly, it appears that cost recovery rates have not been calculated in any systematic fashion and concurrently there is no systematic reporting on the factors mitigating the cost recovery efforts, as listed in Article 9 of WFD, nor on whether the contribution by the various water uses and water user sectors can be considered adequate.

While the costings of relevant measures is generally reported, the RBMPs appear to differ as regards the use of cost effectiveness analysis to guide the selection of new measures for the Programmes of Measures.

ARERA, the Italian Regulatory Authority for Energy, Networks, and the Environment, performs two key regulatory tasks for the water sector. First, it defines and regularly updates the method for determining the tariffs for water supply and sanitation services. Through caps on cost components and on revenue, it aims to achieve full cost recovery at an efficient level, also balancing guarantees on quality with arrangements to ensure affordability for vulnerable households through rebates financed by redistribution across water utilities¹⁸. Second, ARERA approves the tariffs proposed by the competent authorities from the various regions. The various RBMPs report in different ways on the price methodology and the regulatory price setting procedure, from a detailed description to just a general reference made to ARERA. The latter does not do justice on the local conditions that inform the price setting.

Current pricing structure provide some incentives for a more efficient water use, but the assessed RBMPs tend not to assess in detail whether the level of incentives can be considered adequate. A positive exception is found in the North Apennines RBMPs: in addition to references made to the national methodology for calculating tariffs, the level of incentive provided by water tariffs is explicitly stated.

However, the information in the RBMPs suggest a fair level of price incentives with a potential for further improvement. Drinking water supply prices can be adapted in different RBDs depending on treatment and distribution costs, which in turn depend on water availability and status. However, the RBMPs do not report water scarcity considerations in the modulation of prices. There does not appear to be a nationally set pricing framework for irrigation, and hence irrigation water schemes vary considerably between RBDs. Abstraction charges are in place in every RBD¹⁹, and all permits are issued against a fee based on the volumes abstracted, but the fee appears to be based on estimates rather than on metering. Neither pollution charges, nor water storage service charges appear to have been set in Italy.

A cost-based approach is used to estimate environmental and resource costs: they are assumed to be equal to the costs of the pollution abatement and prevention measures. However, the different RBMPs do not provide further details on the national methodology that needs to be applied or an account on the actual estimates. Furthermore, difficulties are reported regarding the practical application of the polluter pays principle (no pollution charges reported). As multiple pressures determine the status of the same water body, determining the share of responsibilities is difficult. As a result, only a general assurance of the application of the polluter-pays principle is provided.



6. WFD recommendations

Recommendations - Italy should:

¹⁸ <https://www.wareg.org/documents/energy-report-wareg/>

¹⁹ Abstraction from private wells, while needing to be registered, are exempted from the permitting and charge regime.

1. accelerate action and enhance the overall level of ambition to reduce the compliance gap as much as possible to reach compliance by 2027. This will require the following:
 - a. Italy should ensure that the consumptive use of surface water and groundwater for all uses is reported. The RBMPs should include clear estimates on consumptive uses, their share, and the respective trends. Furthermore, Italy should more forcefully address illegal water abstractions in agriculture or other sectors through closer monitoring and more effective penalties.
 - b. Italy should ensure full compliance with WFD provisions related to periodic review of permits/controls for all relevant activities impacting water bodies (including abstraction, impoundment, discharges, works impacting hydromorphology) and effective, dissuasive, and proportionate sanction regimes. Italy should consider, where applicable, revising existing legislation exempting small abstractions from permitting to better manage cumulative impacts.
 - c. Italy should harmonize the gaps analysis of the different river basin management plans to create more transparency for stakeholders and comparability among the regions and to better target the measures needed to close the gap in 2027. In particular, Italy should transparently estimate nutrients and pesticide pollution reduction targets.
 - d. Italy should keep up the good work in coordinating measures with the authorities in charge of the Floods Directive. Italy should however strengthen the coordination with the authorities in charge of the Marine Strategy Framework Directive, which would contribute to accelerate progress in achieving the status requirements in both the freshwater and marine environments by better exploiting possible synergies.
 - e. Italy should tackle decisively obstacles identified in the implementation of measures, in particular insufficient funding, or administrative resources, where relevant.
2. identify and put in place, as appropriate, additional measures to reduce existing persistent environmental challenges (pressures) and make full use of the instruments agreed in the context of the European Green Deal to join up implementation efforts and increase effectiveness and efficiency. In particular:
 - a. Italy should systematically provide more complete information on the status of implementation of the measures.
 - b. Italy should continue the ongoing work to transition from minimum flow to the e-flow regime as established in the guidelines established in 2017 and ensure their proper implementation. Italy should also strengthen its efforts towards improving river continuity and restoring water bodies to a natural state, maximising efforts to deploy nature-based solutions wherever possible.
 - c. Italy should address its high level of artificialisation by ensuring the planned measures to improve hydromorphology are properly applied in all affected water bodies, including for achieving good potential for its heavily modified and artificial water bodies. In particular, Italy should privilege nature-based solutions where feasible to improve the hydromorphology of

- its water bodies and systematically assess the cumulative impacts of projects that may impact water bodies.
- d. Italy should keep up efforts to address persistent challenges linked to nutrient and chemical pollution from agricultural or urban and industrial sources, including by closing the gaps in implementation of the Urban Wastewater Treatment and the Nitrates directives. Furthermore, Italy should provide more exhaustive information on the measures planned to better control discharges; address wastewater discharges from scattered households and unconnected small settlements and improve wastewater management throughout its territory.
 - e. Italy should ensure that the ongoing work to establish a register of abstractions from surface water and groundwater and a register of impoundments is completed for the Sicily RBD.
 - f. Italy should continue improving the work on protected areas, notably to establish the status of water bodies associated with protected areas that are still unknown and investigating and reporting the reasons why objectives have not been met, to establish possible additional needs and measures.
3. improve its economic analysis, addressing gaps as regards key items, including on long term supply and demand forecasts, better defining water services, reporting of cost recovery rates, and investment needs. It should also ensure that good practices in some RBDs are adopted more consistently across RBDs to allow for comparison. In particular, Italy should:
 - a. strengthen its analysis of water demand and supply and develop long-term investment plans, ensuring adequate funding to effectively implement the planned measures.
 - b. enhance its efforts towards full application of the cost recovery principle to all water use activities that have an impact on water bodies.
 - c. systematically provide more information on the way water tariffs are set and better analyse whether they provide sufficient incentives towards more efficient water use.
 4. keep up the progress made in the application of exemptions, ensuring continued efforts to transparently justify every exemption in all RBDs, in line with ECJ jurisprudence on the restrictive interpretation of exemptions. When it comes to the use of Article 4(7) in relation to new projects, it is important that specific details are provided on cumulative effects and on the assessment of better environmental options, and the measures taken to mitigate the adverse impacts of new developments. In particular, Italy should strengthen its assessment of disproportionate costs in the context of Article 4(5) exemptions.
 5. sustain efforts to increase its resilience to climate change including by systematically considering nature-based solutions to increase water retention and balancing its adaptation needs against the impacts on hydromorphology that grey infrastructure may entail. Moreover, Italy should:
 - a. ensure that consideration of saline or other intrusions, and of impacts on groundwater dependent ecosystems and groundwater associated surface waters are consistently considered in all RBDs when assessing the quantitative and chemical status of groundwater bodies.

- b. continue pursuing the ongoing work to integrate the National Strategy for Climate Change Adaptation within the RBMPs planning process, thus ensuring the necessary measures are integrated in the programmes of measures.
 - c. ensure that any intervention to create new reservoirs is part of a coherent strategy which takes effective measures to maximise storage in soils and ecosystems and to ensure efficient use of water, including through more systematic reuse of treated wastewater where relevant, carefully considering long-term climate scenarios to avoid maladaptation.
- 6. keep up the good work done to improve monitoring, assessment, data management and reporting. Italy has made considerable progress in this regard, and it should:
 - a. further strengthen the application of the national methodology to define significant pressures, across RBDs, and limit reliance on expert judgement.
 - b. continue progressing on setting type-specific reference conditions where these have not yet been set, especially as regards hydromorphological quality elements for transitional and coastal waters and for physico-chemical quality elements for rivers and lakes.
 - c. further strengthen monitoring, to improve the geographic coverage and the parameters covered, and thus assess the status of water bodies in unknown status and further increase the level of confidence in the status assessments, limiting reliance on expert judgement. In particular, Italy should improve the monitoring and the inventories of Priority Substances, including as regards the frequency of monitoring of such substances in sediments or biota.
 - d. ensure that all details on hydromorphological standards and their consistency with the good-moderate class boundaries for sensitive biological quality elements are properly reported in its RBMPs. Moreover, Italy should ensure that all quality elements, and particularly the hydromorphological quality elements, are consistently used when assessing the ecological status or potential of water bodies.
 - e. provide more information in the RBMPs regarding the selection of River Basin Specific Pollutants and the use of EQS.
 - f. ensure gap assessment for diffuse pollutant loads from agriculture (nutrients, agri-chemicals, sediment, organic matter) are conducted comprehensively and in a more homogeneous way across RBDs, and that the information is comprehensively reported in the RBMPs, to facilitate comparison and progress towards the achievement of the WFD objectives.

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 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 47 Units of Management (UoMs) in Italy. The two UoMs for the islands of Sardinia and Sicily correspond to the River Basin Districts (RBDs) under the Water Framework Directive (WFD). Italy's other 45 UoMs are sub-basins of the 5 RBDs designated for mainland Italy.



Fluvial, pluvial, sea water, Artificial Water Bearing Infrastructure, and other types of floods are considered as potentially significant sources of flooding in Italy. Italy has designated 3748 Areas of Potential Significant Flood Risk (APSFRs). The impacts of climate change on flood risk have been considered in Italy at the time of the second preliminary flood risk assessment. The methodological reports published by the river basin district authorities refer to the 2013 EU Adaptation Strategy and to Italy's 2015 National Strategy for Adaptation to Climate Change: the latter notes that an increase in extreme meteorological events is likely, including intense precipitation episodes, that can lead to higher risks of flash floods and debris flow. The reports also refer to the ongoing expansion of soil sealing across the country.



7.1 Flood hazard and risk maps

Italy uses a national map viewer²⁰ for their FHRMs. The FHRMs cover all 47 UoMs, but the FHRMs methodological reports have been prepared at the level of the seven RBDs²¹. Maps for floods with low probability (1/1 000 years), with medium probability (1/100 years) and with high probability (1/10 years) are provided. The return periods used are different across the RBDs and the UoMs within RBDs. All maps show: flood extent; water depth; and number of inhabitants. The map portal provides, in a text box available for each APSFR, information on the types of economic activities found there, using four broad categories. In addition, a map layer of the number of enterprises is available on the map portal, though it does not indicate the types of economic activity. The number of IED / Integrated Pollution Prevention and Control (IPPC) installations affected is indicated in each APSFR for each probability scenario, but their locations are not shown in the maps²². Potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC are shown in the maps on the national map portal; in each APSFR information on the number of these areas is available, in text form.

At the time of the first FHRMs, the Italian maps that were reviewed did not show the sources, mechanisms or characteristics of flooding. Among the sources, fluvial, pluvial, and coastal sources were assessed for some UoMs, but not in others (information was not found concerning the assessment of flood mechanisms or characteristics in the first FHRMs).

In the second FHRMs, it is clear that sources, mechanisms and characteristics were assessed and information on all three is provided on the national web portal at APSFR level. The methodological reports provide a general overview of the work to update the FHRMs, describing new studies, data, and modelling. Nonetheless, all reports mention new work on fluvial flooding, and several refer to new work on coastal flooding.

The contextual information (i.e. the way in which information about the maps is conveyed to the public) has been improved since the first FHRMs. In the second FHRMs, the national map portal contains all the information produced at RBD level. Previously, FHRMs were prepared at the UoM level, and they varied widely in approach and in the quality of the information reported. The maps also ranged in format from sophisticated GIS viewers to basic web interfaces to PDF files. The first FHRMs did not include hazard elements such as flood sources, mechanisms, and characteristics. Additionally, only a few maps displayed information such as water depths, levels, flow velocity, relevant water flows, and flood hazard and flood risk on the same map. The current map portal includes all of this information. Concerning risks, the maps showed population data, risks to economic activities, and risks to areas protected under the WFD and other Directives. Furthermore, potential adverse consequences on human health, economic activity sectors, pollution sources, as well as cultural heritage sites. The current map portal covers all of the elements mentioned above.

When it comes to the methodologies used to prepare flood hazard maps, in the first FHRMs, Italy prepared maps for fluvial and coastal floods. Pluvial floods and floods from artificial water bearing

²⁰ Available at: <http://www.pcn.minambiente.it/viewer/>. Italy's map viewer was accessed on several dates in late September and in early October 2023.

²¹ Italy noted that the UoMs are the traditional territorial units at which flood risk in Italy is managed. The RBD is the level at which flood risk management is coordinated. The UoMs are aggregations of river basins with specific characteristics such as morphological, geological, or hydrological ones, and that makes each UoM the most appropriate physical unit within which the study of water dynamics and flood risk makes sense.

²² Italy explained that at national level, the presence (number) of exposed elements in an APSFR was considered relevant.

infrastructure were also assessed but not necessarily specifically mapped (the European Commission's assessment of Italy's first FHRMs identifies two UoMs where pluvial floods were mapped). In the second FHRMs, all four sources were mapped, though only fluvial floods were mapped in all UoMs.

In the background documents, methodological information was found for fluvial and coastal floods, but not pluvial floods or floods from artificial water bearing infrastructure. In the first FHRMs, the UoM maps assessed by the European Commission all showed low, medium, and high scenarios, but each map had a range of different return periods for these scenarios. This variety of return periods remains in the second FHRMs, while some UoMs used the same return periods in the first and second FHRMs. Other UoMs, reported different return periods across the first and second FHRMs. In the first FHRMs, maps were prepared by a range of authorities at different levels of governance. Also, it appears that fluvial and pluvial floods were considered together, though this was not clearly explained or shown, and coastal floods were only identified for a few UoMs. For the second FHRMs, the map portal provides an overall national approach for the presentation of maps, and the RBD methodological reports follow a common outline, indicating that there was greater coordination at RBD level.

The methodology used for the second FHRMs appears to remain largely unchanged compared to the first FHRMs, based on the same main data sources, such as national statistical data for population, Corine Land Cover data for economic activity and E-PRTR data for IED installations. The first cycle flood risk maps themselves were prepared at UoM level, however, and the extent of information provided on risk elements varied (consequently, the methodology reported at the time was not fully applied across the first risk maps). All but one of the seven first UoM risk maps assessed showed the number of inhabitants potentially affected, IED installations and cultural heritage sites, and these are now featured across all of the national map portal. Only two of the first seven UoM risk maps assessed showed WFD protected areas, now a feature across all of the national map portal. None of the first UoM risk maps assessed showed the type and sectors of economic activity or environmental consequences such as status of water bodies or significant sources of pollution; these risk elements are partly shown on the second cycle flood risk maps available in the portal.

As regards the consideration of climate change effects in the preparation of flood hazard and risk maps, reference is made to section 3.7 on 'adaptation to climate change'.



7.2 Flood risk management plans

Objectives and measures

A webpage of the national Institute for Environmental Protection and Research (ISPRA, Istituto Superiore per la Protezione e la Ricerca Ambientale) provides links to the webpages²³ of the RBD authorities, from where the second FRMPs can be downloaded.

The five FRMPs assessed all set objectives to reduce the adverse effects and/or the risks of floods. Four of the five FRMPs assessed have objectives that call for the reduction of adverse consequences of flooding. The fifth FRMP, for the Po RBD, has strategic objectives that include defending cities and metropolitan areas from flooding, which should reduce adverse consequences. The FRMP for the Po RBD also has a strategic objective to improve knowledge of flood risk, and the FRMP for the Sicily RBD has a 'generic' objective to improve knowledge of flood hazard and risk and to promote

²³ https://www.isprambiente.gov.it/pre_meteo/idro/Piani_gest.html

sustainable land use, as well as a 'strategic' objective for urban planning. Four of the five FRMPs have objectives that refer to potential adverse consequences to human health, to economic activity, to the environment and to cultural heritage.

All five FRMPs assessed have programmes of measures, and Italy has reported a total of 10 560 measures for all seven RBDs and all 47 UoMs within the RBDs. The FRMPs assessed refer to a national multi-criteria assessment methodology for prioritising measures. Italy has identified the priorities for all measures reported to EIONET. Three of the five FRMPs assessed discuss the progress of implementation of the measures under the first FRMPs. The five FRMPs assessed provide information on the costs of all or most of their measures. Three FRMPs provide the total budgets for their measures. The five FRMPs discuss cost-benefit analysis (CBA), and one presents a pilot case, but none indicates that CBA was used for its measures.

All five FRMPs have measures for land use and spatial planning. Four of the five FRMPs have sub-objectives that call to reduce adverse consequences and/or flood risks for protected areas including Natura 2000 sites. All five FRMPs include measures for natural water retention. The Po FRMP in addition has an objective to provide space for rivers. The Sicily FRMP has an objective calling for river restoration. All five FRMPs identify 'win-win' measures that support WFD objectives as well as flood risk management and Italy reported to EIONET WFD measures and codes for some of its measures. The multi-criteria prioritisation method includes the reduction of risk for WFD water bodies, with scores linked to the ecological status of the water bodies.

All five FRMPs include prevention, protection measures and preparedness measures. In particular, Italy reported to EIONET: 3 926 prevention measures; 3 887 protection measures; and 2 244 preparedness measures.

Three of the second FRMPs assessed report on progress in the implementation of the measures. The FRMPs assessed, however, provide little information on the progress towards the achievement of the objectives of the first plans. Three of the second FRMPs assessed discuss the progress of implementation of the measures under the first plans. The plan for the Po (ITB)²⁴ states generally that the measures implemented have supported the objectives of the Floods Directive, though it does not refer to progress towards the objectives of the first FRMPs. The second FRMPs for the Central Apennines (ITE) and the Southern Apennines (ITF) provide overviews of the progress of the measures in the first FRMPs. While the second plan for the Central Apennines (ITE) does not mention progress towards the objectives of the first FRMP, the second plan for the Southern Apennines (ITF) states that delays in the implementation of the measures under the first FRMP have delayed the achievement of the objectives²⁵. No information on progress was found in the second FRMP for the Eastern Alps (ITA), while the second FRMP for Sicily (ITH)²⁶ states the timeframe of the first plan, which was approved in 2019, does not allow an assessment of the progress towards its objectives. While two of the second FRMPs assessed provide some information linking their objectives to types of measures, in general the objectives remain not fully specific and not measurable.

Italy reported information on the progress of implementation of measures in their reporting to EIONET. A significant portion of the measures were reported as abandoned/interrupted (4 197 measures, 40 % of all measures). Of the remaining measures, 17 % (1 763 measures) were reported

²⁴ FRMP ITB, Chapter 5.2, pp. 80-81.

²⁵ FRMP ITF, Chapter 5.2, p. 119.

²⁶ FRMP ITH, Chapter 5.2, p. 52.

as undergoing ongoing construction, 13 % (1 406 measures) were reported as completed, and 12 % (1 267 measures) were reported as not started. Nine percent of measures were reported as in preparation (967) while another 9 % were reported as ongoing (recurrent works).

More than half of the prevention measures (52 %, 2 039 measures) were reported as abandoned/interrupted, the highest share of any measure aspect. Almost half of the recovery and review measures were reported as ongoing (recurrent) (47 %, 231 measures), while 28 % of preparedness measures were thus reported (639 measures – the highest progress category of all preparedness measures). A significant share of protection measures was undergoing ongoing construction (19 % or 737 measures, noting that 40 % or 1 517 measures were reported as abandoned/interrupted. More than half of the 13 ‘other’ measures were reported as complete (7 measures, 54 %), the highest share of any measure aspect.

While a high share of Italy’s measures is reported as abandoned/interrupted, a sample of their measure descriptions suggests that the vast majority were integrated in other measures or substituted by other measures. It appears that some measures have been abandoned or interrupted because they have been assessed as unfeasible in light of situations that prevent their implementation, no longer convenient, or they have been judged not to be a priority. In other cases, measures have been grouped or included in similar ones especially when the measure were applied to the same geographic coverage. The lists of measures for the five FRMPs assessed include a column for the progress of the measures, using the EIONET categories. These lists also indicate that many abandoned or interrupted measures have been continued under other measures. The Po FRMP (ITB) provides an overview of the measures under the first FRMPs for the RBD: for example, for measures undertaken at regional level, 27 % were completed, 40 % were ongoing in one form or another, 1 % not started, and 32 % abandoned/interrupted. The FRMP indicates that the abandoned/interrupted measures include those consolidated or merged into new RBD-level measures, those combined into new regional-level measures, those incorporated into other ongoing measures; and those linked to other planning instruments, including the Plan of Hydrogeological Status (PAI, *Piano di Assetto Idrogeologico*) and regional legislation, and thus are being implemented under these frameworks²⁷.

Climate change considerations

As regards the consideration of climate change effects in the preparation of flood risk management plans, reference is made to section 3.7 on ‘adaptation to climate change’.

Governance

Two FRMPs within international river basins – for the Eastern Alps and the Po – do not provide details on topics for coordination. Italy reported to EIONET that coordination has taken place at international level for three UoMs in the Eastern Alps RBD (Adige, Isonzo, and Regionale Friuli Venezia Giulia); and for one UoM in the Northern Apennines RBD (Regionale Liguria).

All five FRMPs assessed indicate that consultation lasted six months. The FRMPs describe a variety of methods to provide information on the draft plans and to receive comments. All FRMPs indicate that the draft plans were published on the RBD authorities’ websites. The comments received on the

²⁷ FRMP for ITE, chapter 5.3, p. 81.

plans are generally provided by the authorities (either in the FRMP or in the RBD authority's website). The FRMPs were not subject to a Strategic Environmental Assessments.

Progress identified in the second FRMPs

The second FRMPs provide more information on funding: notably, the programmes of measures for the Po FRMP (ITB) indicates the funding source for most measures, and all the FRMPs assessed provide detailed information on costs for many of their measures.

While all the second FRMPs assessed discuss CBA, they do not indicate that CBA was used to select or prioritise their measures. The FRMP for the Po RBD, however, undertook a pilot test of a CBA method. Also, the second FRMPs provide further detail on the ReNDIS database²⁸ and the procedures for monitoring measure implementation. Three second FRMPs refer to the role of insurance, compared to only one of the first FRMPs assessed. Four of the five second FRMPs assessed refer to measures to address climate impacts, and three of the second FRMPs refer to adaptation strategies and plans.

All of Italy's second FRMPs were prepared at the RBD level pointing to greater coordination within Italy, while the first FRMPs were prepared at both RBD and UoM levels. All five second FRMPs assessed provide detailed information on the consultation process and on the active involvement of stakeholders. Moreover, all the second FRMPs assessed provide at least some information on the written comments received. One other area of progress was seen in cooperation on modelling with Slovenia, carried out via two Interreg projects.



8. FD recommendations

Based on the reported information and the FHRMs and FRMPs assessed, Italy should:

- better substantiate how APSFRs identified in the PFRA are handled in the FHRM;
- further harmonise return periods for the three probability scenarios for flood hazard mapping between the UoMs, unless it can be justified why this is not the case;
- assess coastal flooding in the FHRM where it is relevant;
- improve the FHRM viewer so that it retains its features (possibly shown as layers instead of boxes) while becoming more user friendly;
- improve access to information on FHRM, which is dispersed across several websites. While these websites provide links to each other, these links should be displayed more prominently. Ideally, there should be one all-encompassing FHRM;
- provide, in the FRMPs, details on how the FHRM was used in the choice of objectives and measures;

²⁸ A national online platform for soil protection including from hydrogeological risk.

- include in all FRMPs summary maps of APSFRs;
- include a link to the national FHRM portal in all FRMPs;
- ensure that the FRMPs' objectives are measurable and where possible linked to quantitative indicators and be timebound. An assessment of the progress made towards the achievement of the objectives should be included in the FRMP;
- link both structural and non-structural measures to the objectives in the FRMPs;
- incorporate in the FRMPs, where relevant, a Cost Benefit Analysis for the prioritisation of measures that lend themselves to it and provide a clear description of the methodology used;
- include in the FRMPs further detail on international coordination;
- subject the FRMPs to a Strategic Environmental Assessment, depending on the nature of the measures.