EUROPEAN
COMMISSION

Brussels, 4.2.2025
SWD(2025) 14 final

COMMISSION STAFF WORKING DOCUMENT

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

Accompanying the document

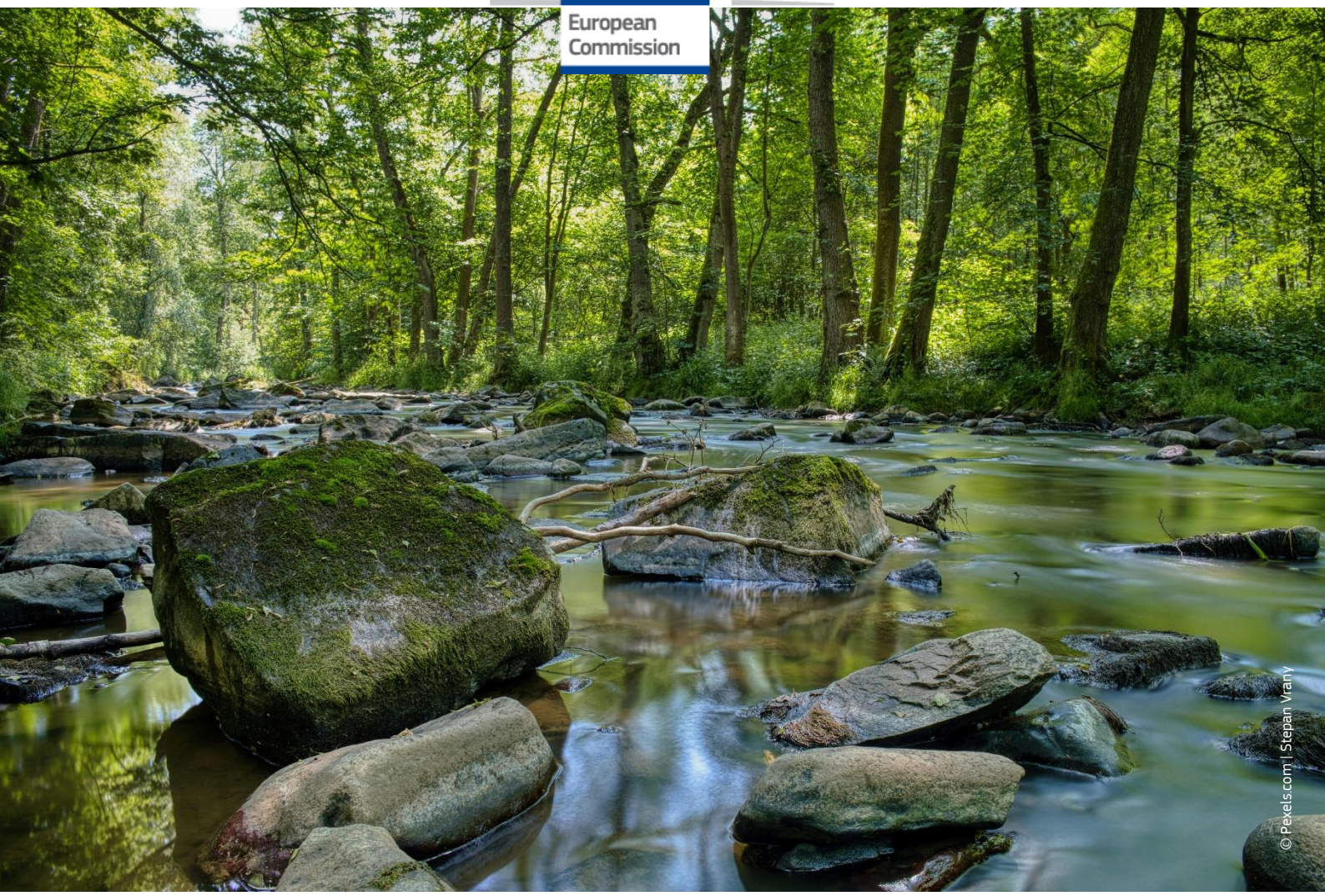
REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)

Third River Basin Management Plans
Second Flood Risk Management Plans

{COM(2025) 2 final} - {SWD(2025) 13 final} - {SWD(2025) 15 final} -
{SWD(2025) 16 final} - {SWD(2025) 17 final} - {SWD(2025) 18 final} -
{SWD(2025) 19 final} - {SWD(2025) 20 final} - {SWD(2025) 21 final} -
{SWD(2025) 22 final} - {SWD(2025) 23 final} - {SWD(2025) 24 final} -
{SWD(2025) 25 final} - {SWD(2025) 26 final} - {SWD(2025) 27 final} -
{SWD(2025) 28 final} - {SWD(2025) 29 final} - {SWD(2025) 30 final} -
{SWD(2025) 31 final} - {SWD(2025) 32 final} - {SWD(2025) 33 final} -
{SWD(2025) 34 final} - {SWD(2025) 35 final}

European Commission



Country specific staff working document

Austria



ENVIRONMENT

Content

Content 2

SECTION A: WATER FRAMEWORK DIRECTIVE 3

1. General info, member state characterisation 4

2. Horizontal aspects 7

2.1 Governance 7

2.2 Characterization of River Basin District 7

3. Policy elements contributing to biodiversity and climate change adaptation 8

3.1 Surface Water: what is their ecological status or potential 8

3.2 Hydromorphological changes and artificialization (HMWBs and AWBs) 11

3.3 Groundwater bodies - have they sufficient water – quantitative status 12

3.4 Protected Areas (identification, monitoring, objectives and measures) 13

3.5 What is being done to prevent/reduce hydromorphological pressures 14

3.6 What Austria is doing for abstractions and water scarcity 15

3.7 Adaptation to climate change 19

4. Policy elements contributing to zero pollution 20

4.1 Surface Water: what is their chemical status 20

4.2 Groundwater Bodies: what is their chemical status 22

4.3 What Austria is doing to combat pollution from agriculture 23

4.4 What Austria is doing to combat pollution from other sectors 26

4.5 What Austria is doing to combat significant pressures – overall assessment of the Programmes of Measures 27

5. Exemptions and economics 27

5.1 To what extent are exemptions applied in Austria 27

5.2 Use of economic analysis and water pricing – cost recovery 28

6. WFD recommendations 29

SECTION B: FLOODS DIRECTIVE 33

7. Flood risk management under floods directive (FD) 34

7.1 Flood hazard and risk maps 34

7.2 Flood risk management plans 35

8. FD recommendations 38

SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, member state characterisation

Austria is as a landlocked country situated largely 500 m above sea level. Austria (9 million) has a population density of 108 per km^2, almost exactly EU average. Austria benefits from abundant freshwater due to the Alps. Contrary to floods, water scarcity has so far been less of a problem, but this could change due to global warming and demographic pressures. Most of Austria is drained via the Danube to the Black Sea, only small areas via the Rhine (2,366 km^2) or Elbe (918 km^2) to the North Sea.



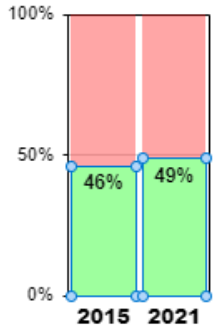
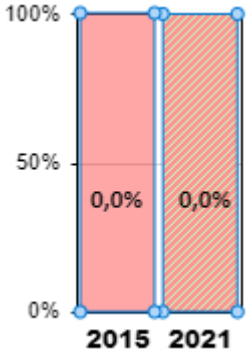
Reporting

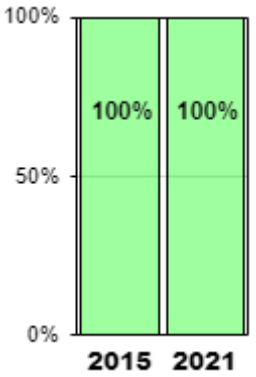
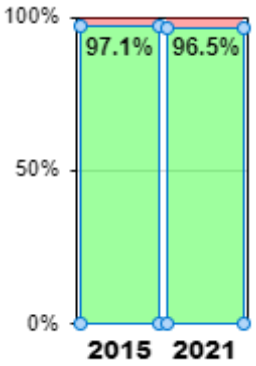
The deadline for reporting the 3rd RBMPs was in March 2022. The Commission and the EEA together with Member States developed an electronic reporting system in WISE (Water Information System for Europe). Its use was voluntary. Some Member States used it to fulfil their obligations, others reported the plans in pdf format. The cut-off date for the WISE e-reporting was September 2023 and the MS were assessed based on the datasets available by this date.

By September 2023 Austria submitted full electronic reporting and therefore the assessment is based on this dataset.

Despite the cut off dates for the production of 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 & Measures

Surface Water Bodies	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
ECOLOGICAL STATUS		The ecological status of surface water bodies slightly improved since the 2nd RBMP. Main pressures are impoundments for hydropower and flood protection. In the 3rd RBMP, Austria increased the designation of heavily modified river bodies from 627 to 880 (+ 40%), thereby lowering their WFD objective from good ecological "status" to a good ecological "potential", only. Austria has mapped measures to reduce hydromorphological pressures from impoundments. Austria aims at increasing hydropower by 5 TWh until 2030 which may further increase pressures on rivers. Austria invoked Article 4(4) WFD as regards 4044 SWBs (49.4 % - a decrease from 53 % in the 2nd RBMPs) and Article 4(5) for 1817 SWB (an increase from 1718 SWB in the 2nd RBMPs). Austria also invoked Article 4(7) for 28 SWB in the 3rd RBMPs, increasing from 11 SWB in the 2nd RBMPs.
CHEMICAL STATUS		The 100% failure to achieve a good chemical status is due to 2 uPBTs, mercury and brominated diphenyl ethers. Austria reported that these two substances result from atmospheric pollution. If excluded from the assessment, 98.4% of Austria's SWBs could be in good status and the trend would be slightly positive compared to the 2nd RBMP. For chemical status 8077 SWBS (98.8 %) have been exempted in the 3rd RBMP due to their ubiquitous nature (a slight decrease from 100 % in the 2nd RBMP). Austria has not mapped measures to reduce pressures from mercury and brominated diphenyl ethers.

Ground Water Bodies	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
QUANTITATIVE STATUS		Like in the 2nd RBMP, all GWBs in Austria achieved a good quantitative status in the 3rd RBMP. However, the 3rd RBMP also reports 3% of GWBs at risk of failing good quantitative status by 2027 due to abstractions. 4 GWBs are flagged at risk for failing good status in the coming years. A report commissioned by Austria's government suggests that farmland irrigation may increase by up to 80% until 2050 in a worst-case scenario. Austria has been taking action since the 2nd RBMP to reduce pressures on some of these ground water bodies and the programme of measures has mapped key types of measures (KTMs) for all but one GWB under pressure.
CHEMICAL STATUS		In the 3rd RBMP, 5 GWB (3.5%) failed good chemical status which is due to diffuse pollution from agriculture. This is a deterioration compared to the 2nd RBMP when only 2.9% failed good chemical status. Contrary to surface water bodies, where nutrient pollution has decreased since the 2nd RBMP, the chemical status of groundwater bodies seem to be deteriorating due to nitrates (from fertilisers) and dimethachlor (a herbicide). Austria indeed reports that pollution from nitrates, ammonium and arsenic are increasing and that 22 GWB (15%) are at risk of failing good status until 2027. The use of pesticides in Austria's agricultural sector – still comparatively low on EU average due to a high percentage of organic farming- is on the rise according to Eurostat data. For the 5 GWBs failing to achieve a good chemical status in the 3rd RBMP, Austria has invoked the exemption of Article 4(4) WFD.

2. Horizontal aspects

2.1 Governance

According to Austria's federal system, the competence to conduct environmental impact assessments in regards of exemptions from the WFD lies with regional governments of Austria's "Länder".

The consultation process for the Austrian National RBMP has a high level of transparency, as the central public consultation portal includes written responses to submitted comments during the consultation process and this portal allows stakeholders to see all comments and suggestions for change.

2.2 Characterization of River Basin District

Austria participates to three River Basin Districts which are transboundary: Danube, Rhine and Elbe. The Rhine, Elbe and the Danube are all governed by international River Basin Commissions. Each of these elaborates an International River Basin Management Plan showing the coordination on monitoring, status assessment, significant water management issues etc.

Table 1: Overview of Austria's River Basin Districts (RBDs) Source: 3rd RBMPs electronic reporting

RBD	Name	Rivers Number of water bodies	Lakes Number of water bodies	GWB
AT1000	Danube	7 769	55	134
AT2000	Rhine	246	5	7
AT5000	Elbe	101	2	1
	Total	**8 116**	**62**	**142**

Austria's 3 River Basin Districts count 8188 surface water bodies. The number of groundwater bodies in Austria increased from 138 (2nd RBMP) to 142 (3rd RBMP), but the total groundwater body area did not change.
Austria is a party to the Danube commission and holds an observer status at the Rhine and Elbe commissions. As a result, the three international river basins on Austrian territory all have some form of transboundary cooperation.

Significant pressures on Austria's surface water bodies are due to the energy sector, more specifically hydropower. In 2020, hydropower made up 36.5% of Austria's share in gross final energy

consumption[1] and about 56%[2] of electricity is produced with hydropower. Not surprisingly, Austria's river basin districts are therefore characterised by significant hydromorphological alterations due to dams and straightening of rivers.

Austria has gradually reduced chemical pressures on surface water bodies with the exception of two ubiquitous substances (brominated ethers and mercury), which fail all surface water bodies in Austria. 99% of Austria's surface water bodies would achieve good chemical status in 2021 absent these uPBTs. The pressure of agriculture is in Austria mainly present in the most intensively used regions. The main pressures on groundwater bodies in Austria come from the agricultural sector. Austria has the highest share of agricultural land under organic farming in the EU.[3] Nevertheless, nitrates from agriculture are the most important impact on the quality of groundwater.

Invasive Alien Species: According to Austria's Biodiversity Strategy, 28 of 66 invasive species of European Union concern exist in Austria. The 3rd RBMP mentions that five lakes are in particular affected by invasive fish released by hobby anglers release. Also, the North American crayfish represents a challenge for biodiversity and a good ecological status of surface water bodies. Released during the 1970s in Austria and other EU Member States, the crayfish has been spreading also to neighbouring countries. Austria's Naturschutzbund qualified the North American signal crayfish (Pacifastacus leniusculus) as invasive alien species "of the Year" in 2022.[4] North American crayfish are resistant to and carry the crayfish plague (aphanomyces astaci) which kills local crayfish astacus astacus. Signal crayfish have been introduced in Austria already during the 1970s. To reduce this pressure on the good ecological status of surface water bodies, Austria should adopt measures to reduce invasive crayfish populations, such as releasing predator fish that feast on invasive crayfish as well as dragonfly larvae, which successfully destroy juvenile crayfish. Other methods include the sterilization of males or emptying fish ponds to allow them to freeze during winters.

3. Policy elements contributing to biodiversity and climate change adaptation



3.1 Surface Water: what is their ecological status or potential

Monitoring

Austria's surveillance and operational monitoring[5] for surface water bodies has sufficient density to provide status reports for almost all surface water bodies. The surveillance monitoring network for rivers comprises a total of 100 monitoring sites in all three RBDs, which are the Danube, Rhine and Elbe. To record long-term trends of priority substances, additional six surveillance monitoring sites are established to monitor accumulation in sediments and/or biota (fish). In rivers, a total of 355 operational monitoring sites are investigated in the period 2015-2021. 6685 RWBs (82%) and 43

[1] See the 2022 European Semester Report on Austria.
[2] Statista 2023, Energy Sources 2022.
[3] Regarding the share of the utilised agricultural area under organic farming, compared to the EU average of 9.1%, in 2020 it reached more than 25% in Austria, and was above 20% in Estonia and Sweden. See EU Commission, Agricultural Economic Briefs (europa.eu), January 2023, page 5.
[4] Alien des Jahres 2023: Signalkrebs (neobiota-austria.at).
[5] 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.

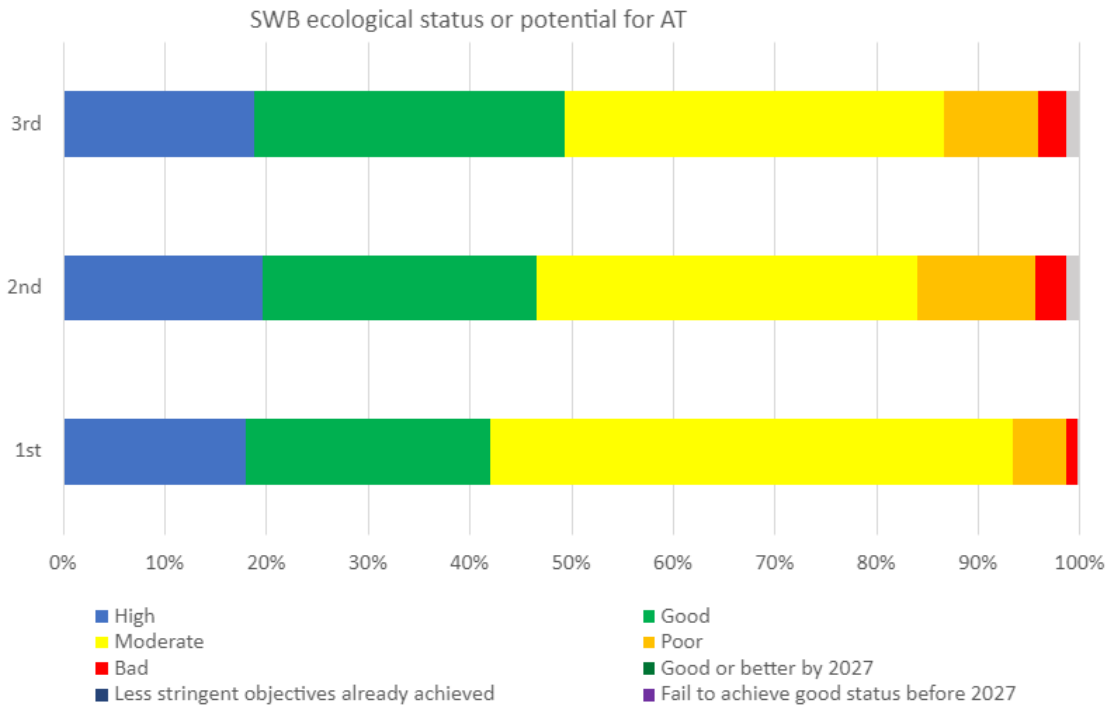
LWBs (69%) are monitored for at least one quality element. Only 1.5 % are still reported as unknown. Austria also classified more SWBs for ecological status/potential with high confidence in the 3rd RBMP, namely 18 % up from 15 % in the 2nd RBMP.

However, the ecological status for a significant part of Austria's SWBs is still being assessed without including hydromorphological quality elements ('hymo'). This could imply, for instance, that Austria is not assessing whether the construction of new boat jetties on lakes has repercussions on the ecological status. Also, almost no river basin specific pollutants are measured in Austria's rivers. Austria's three river basin specific pollutants are EDTA, Zinc and Ammonia. Regrettably, Austria is monitoring these pollutants in no more than 1.3% of all river bodies. Regarding these River Basin Specific Pollutants, Austria uses grouping for the assessment. Austria has estimated through impact assessments that EDTA is everywhere. To the contrary, it is very positive that 100% of Austria's rivers and lakes are monitored for physico-chemical substances. This is important as nutrients represent a big pressure.

Gap to Target

Austria's monitoring results suggest that the ecological status/ecological potential of its 8188 surface water bodies steadily improved since the 1st RBMP from 42% good status (2008) to 46% good status (2015) and 49.3% good status (2021). However, still the majority of SWB fail to achieve the objective in 2021. This failure is particularly acute in the Danube where most river water bodies are located (94.5 %), much fewer of them in the Rhine RBD (4.6 %) and the Elbe RBDs (0.9 %).

Figure 1 Ecological status / potential of SWB in 1st, 2nd and 3rd RBMPs



Source: WISE electronic reports

Pressures

The most significant pressure on the ecological status of surface water bodies comes from structural alterations.[6] Almost 875 kilometres of Austria's rivers and almost all larger rivers in Austria (Enns, Mur, Inn and Drau) are said to be affected by hydropeaking, that is the sudden release of large volumes of water from reservoirs to generate hydroelectric power production at moments of peak demand. Data of the International Danube RBMP from 2021 suggest that most hydropeaking events in the Danube RBD are actually caused in tributaries located in Austria (27 of 38 hydropeaks in 2015). Since the 2nd RBMP, major hydropeaking events in the Danube increased from 38 to 42.[7]

Austria's rivers also suffer from transversal structures (such as dams and weirs) intended for flood protection, hydropower, agriculture, water supply, navigation and other hydro-engineering purposes. Out of the 975 water bodies in the Danube RBD, 357 are affected by significant interruptions for fish migration, out of which only 93 are passable for fish. Consequently, 264 water bodies in the Danube RBD, this is 27% of the total number of Danube RBD, are significantly altered by interruption of river continuity and are un-passable for fish. On the Danube River, only 35 out of 81 significant interruptions are passable for fish in 2021.

According to the International River Basin Management Plan for the Danube of 2021, Austria causes the largest number of interruptions for the migration of fish in the Danube. Progress has, however, been made as today 6 out of 10 migration barriers in the Austrian chain of hydropower dams on the Danube have been equipped with fish migration aid so far. However, the remaining interruptions due to hydropower dams hamper river continuity.[8]

Figure 2 Number of interruptions to fish migration in the Danube and its tributaries

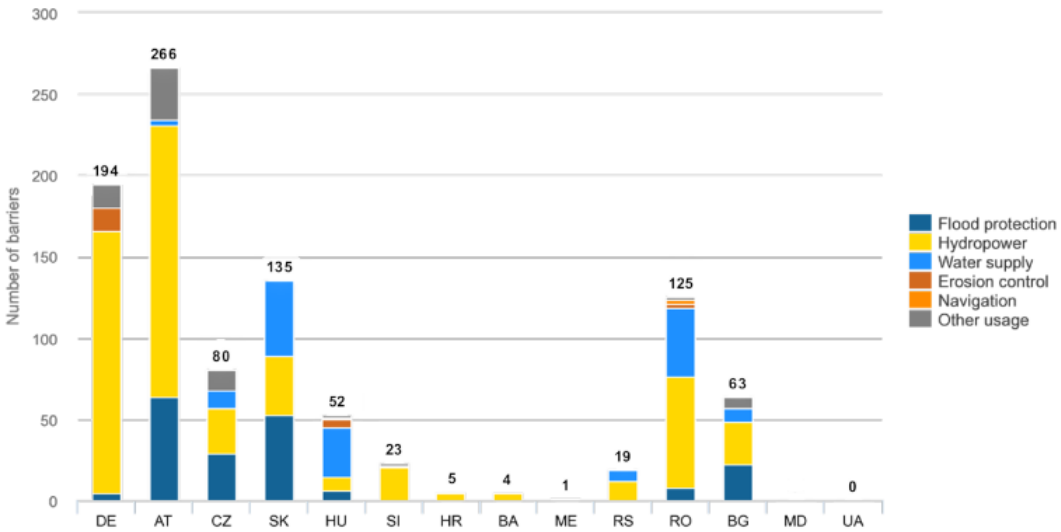


Figure 48: Number of interruptions and associated main uses in Danube River and tributaries per country[40]

[6] Water abstraction is a significant pressure for 6,4 %, 17,6 % and 2,3 % of surface water bodies in the Danube, Rhine, and Elbe RBDs, respectively.

[7] While there is no update on the break down according to countries for 2021, there are no indications either that the relative break down of such events between Austria and other riparian countries has changed.

[8] See section 2.1.6.2.1 Interruptions of River Continuity for Fish Migration of the International Danube RBMP 2021.

Source: International Danube RBMP 2021, page 99

The Commission is receiving complaints claiming that some of the last remaining spawning grounds of the declining Danube salmon *(Hucho hucho)*, a species protected under the EU Habitats Directive, are threatened by existing and new impoundments for hydropower in Austria.

Diffuse pollution from agriculture is another important ecological pressure on Austria's surface water bodies. Nutrients (nitrates) are after mercury the second most important pollutant of surface water bodies (13.4% of SWB) – see below section 4.3. Some of Austria's lakes suffer from invasive predatory fish species which were released by hobby anglers and lakes like Weissensee and Wörthersee are also under ecological pressure from tourism, for instance due to construction of boat jetties.



3.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

Austria designated 10.8 % of river bodies and 9.7 % of lake bodies in the 3rd RBMP as "heavily modified" and 1.1 % of river bodies and 30.6 % of lake bodies as "artificial". Strikingly, the number of heavily modified river bodies has increased since the 2nd RBMP (2015) from 627 to 880 in the 3rd RBMP, an increase by + 40%. 12.3% of all rivers measured by length (not in numbers of river water bodies) are by now heavily modified in Austria. Apparently, the increase of +40% is due to a re-classification of river bodies located in urban areas.

Table 2 Heavily Modified & Artificial Water Bodies in Austria

Modifications	Rivers	Lakes
Heavily modified	10.8%	9.7%
Artificial	1.1%	30.6%

According to Austria's 3rd RBMP, 44% of all rivers and lakes in Austria miss good ecological status because of morphological changes causing impacts related to sediment deposition, the amount of solid particles in circulation and other changes to the hydromorphological characteristics of surface water bodies such as the dynamics of water flow, the connection of surface water bodies to groundwater bodies, river continuity, river depth, river width and their variation in structure as well as the substrate of the riverbed structure of the riparian zone.

There are more than 28,435 obstacles blocking fish from migrating up and downstream in Austria's rivers and beaks. Austria also has over 5,200 hydropower plants, the majority of which are small and very small hydropower plants in beaks and rivers. Not surprisingly, Austria's 3rd RBMP underlines that insufficient flows hamper continuity. More than 80% of obstacles are located in smaller water bodies below 100 km2, 11% are due to hydropower dams, 85% are due to flood protections. Due to these disruptions, 34.6% of surface water bodies are at risk of failing good ecological status. The majority

of obstacles for fish migration are located in small surface water bodies.[9] The lack of sufficient flows and longitudinal continuity causes sediment pollution. Downstream to the dams, sediments are clogging the riverbed and destroying fish breeding habitats. [10]

In this context, it is of note that Austria plans to add until 2030 another 5 TWh of hydropower capacity to the grid as per Austria's Renewables Energy Law. This seems possible from a purely technical perspective, the capacity could – it seems – be increased by 8.69 TWh to 10.12 TWh. Austria, in particular, plans to substantially increase pump storage hydropower plants which already account for around 34 percent of the total power plant capacity of around 26,200 megawatts (MW) installed in Austria. These power plants are important for smoothening the intermittency of renewable electricity and for balancing power grids.

From an environmental perspective, it is important to note that some of these pump storage plants can be created by connecting existing lakes. This happens, for example, at the Limberg III and Tauernmoos power plants, or the Obervermuntwerk II and the Lünerseewerk II where pump storage capacity was added to an existing reservoir lake and ecological impacts remained more limited.[11] On the other hand there are also projects for building new pump capacity by flooding untouched Alpine valleys. These projects have substantial impacts on terrestrial and aquatic ecosystems alike and require scrutiny, amongst others, against the cumulative conditions of Article 4 (7) WFD which requires not only that a public interest is established but also that the beneficial objectives served by the alterations of a water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option. Where new dams are to be built in arid Alpine valleys, future-proofing of the hydropower project is advisable under the "no regrets" approach to climate adaptation.[12] As all pump storage hydropower plants release large volumes of water within short intervals, hydropeaking can destroy spawning grounds of local fish habitats (for hydropeaking pressures see above, section 3.1).

3.3 Groundwater bodies - have they sufficient water – quantitative status

Monitoring

The number of monitoring sites used for quantitative status assessment in the 2021 cycle was reported as 3 745. This is a decrease of 424 monitoring points (11.3%) compared to the 2nd RBMP reported number of locations.[13]

Status

All groundwater bodies monitored showed a good quantitative status in 2021. Four groundwater bodies are, however, under pressure and risk losing good quantitative status by 2027 because of abstractions:

[9] See Austria's Gewässerbewirtschaftsplan 2021 on page 50. *Insgesamt 1431 Restwasserstrecken wurden aufgrund unzureichender Dotation ebenfalls als nicht fischpassierbar bewertet. Ca. 80% aller Wanderhindernisse befinden sich in Gewässern < 100 km².*

[10] Pages 52 and 53 of Austria's 3rd RBMP contain a detailed analysis of the problem, but the programme of measures lacks specific actions to address the pressures which are identified in detail.

[11] Kraftwerk Tauernmoos - ÖBB-Infrastruktur AG (oebb.at).

[12] It is of note that one larger project in Kaunertal of Tyrol would be built in a valley that is known for its aridity, and hence represents a particular maladaptation risk.

[13] Because numbers of the 2nd RBMP (2016) reporting and the 3rd RBMP (2021) reporting are not comparable. In practice, according to Austria, monitoring stations for groundwater had not decreased.

- 2 deep GWBs in Styria "GK100168 TGWK Steirisches and Pannonian Basin" and "GK100169 TGWK East Styrian Basin"
- 1 shallow GWB in Carinthia, „GK100064 Krappfeld"
- 1 shallow GWB in Burgenland „GK100135 Seewinkel"

Pressures on deep groundwater bodies are of particular concern because the speed of groundwater recharge in deep groundwater bodies is very low, deep ground water can be hundred years old. It is therefore all the more regrettable that there is still no balance between groundwater recharge rates and water abstractions from these deep groundwater bodies.

A report of Austria's Court of Auditors moreover suggests that groundwater bodies in Lower Austria are coming under significant pressure from irrigation, and that there are insufficient controls of water abstractions in the region.[14]

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

29.2% of Austria terrestrial territory is designated as protected areas, slightly above the EU value of 26.4% and close to the EU Biodiversity Strategy of 30% protected area coverage.

Protected surface water areas have been identified for all relevant Directives (Habitats, Birds and Bathing). For groundwater, protected areas have been identified in relation to Article 7 - for drinking water - and for the Habitats and Birds Directives areas dependent on groundwater. Austria has not reported specific Nitrates Vulnerable Zones pursuant to the Nitrates Directives as a whole territory approach was applied. No protected area for economically important aquatic species has been designated.

There has been little change in ecological and chemical status of water bodies associated with protected areas since the 2nd RBMPs.

There are, however, concerns as regards the ecological status of lake Neusiedl, a Pannonian salt steppe lake famous for its birds' habitat in the region of Burgenland,[15] and among the most important Natura 2000 sites in Austria. To prevent floods, the region of Burgenland has in the past connected lake Neusiedl to the Danube downstream through a canal, draining waters form the lake in Winter and Spring. More recently, the region of Burgenland also launched plans for a second canal to pump water upstream from the Danube into the lake during dry months in Summer.[16] This raises environmental concerns for the ecological status of the lake as well as for the Natura 2000 protected area which the like nurtures. The infiltration of waters from the Danube could upset the balance of the saline steppe lake and jeopardise the viability of ecosystems linked to the lake, potentially reducing the lake's salinity and affecting turbidity, thereby causing eutrophication, unless the water from the Danube is treated before being introduced into lake Neusiedl.

It is noteworthy that these plans to abstract waters from the Danube would add to pressures on the Danube due to plans of neighbouring region Lower Austria for expanding irrigation of arable land (see below section 3.6). Such measures could exacerbate existing pressures on the ecological status

[14] https://www.rechnungshof.gv.at/rh/home/home/2024_1_Wasserwirtschaft_Niederoesterreich.pdf.

[15] By decree of Burgenland dated 19.1.2023, https://www.ris.bka.gv.at/Ergebnis.wxe?Abfrage=Lgbl&Lgblnummer=25/2013&Bundesland=Burgenland&BundeslandDefault=Burgenland&FassungVom=&SkipToDocumentPage=True.

[16] See at Die Presse 2023. As outlined in Article 6 of the Habitats Directive, the projected artificial injection of Danube water into Lake Neusiedl would require an appropriate assessment in view of the sites' conservation objectives. If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, the projected injection of Danube waters would nevertheless need to be carried out for imperative reasons of overriding public interest, Austria shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

of the Danube and may have compound impacts. A joint transboundary assessment of all these infrastructure measures together is advisable. Austria should cooperate with neighbouring countries to map all planned abstractions form the Danube in the next integrated river basin management plan of the Danube. The measures may qualify as "a new modification" to "the physical characteristics of a surface water body" within the meaning of Article 4 (7) WFD and consequently require environmental impact assessments.

3.5 What is being done to prevent/reduce hydromorphological pressures

a. Legally binding standard for e-flows not always implemented

It is welcomed that Austria has set a standard for e-flows that is legally binding for all regions in Austria. The relevant decree[17] is in force since 30 March 2010 and sets values for the biological, hydromorphological and general physical-chemical quality components for the ecological status of all surface waters. However, despite this decree, and according to Austria's 3rd RBMP, river flows remain often insufficient to prevent sediment deposition that destroy habitats.[18] Austria's water management authorities usually define ecological flows for river stretch between hydropower impoundments and the re-injection of water ("Restwasservorschreibung"). However, as Austria's court of auditors underlined in its 2024 report on water management in Niederösterreich, this legally binding standard is apparently not yet implemented in older water permits.[19]

b. Measures to reduce impacts of hydropeaking and improve river continuity

Austria has in the past mapped measures to reduce the impact of hydropeaking along the tributaries of the Danube. Not many of these projects have, however, been fully implemented so far, as hydropeaking maps of ICPRD[20] would suggest. Maps published by the ICPRD suggest that a large number of projects that are deemed "very important" for longitudinal river continuity on the Danube remain to be implemented in Austria's part of this international river basin.[21] 28,435 obstacles are blocking fish migration in Austria's rivers and beaks, and sediment deposition harms their spawning grounds.

c. Stretches of rivers with high ecological value identified, but not legally binding

Austria's Umweltbundesamt identified stretches of rivers that are particularly worth protecting from an ecological viewpoint.[22] This assessment on stretches of rivers that deserve protection due to their particularly high ecologic value is of relevance for defining duly justified and specific circumstances restricting the application of Article 16f Directive (EU) 2023/2413 of 18 October 2023 (RED III). The same report also finds that a significant part of additional hydropower potential could be realised by retrofitting existing hydropower plants, that is up to 4.73 TWh and almost as much as the 5 TWh of additional hydropower which Austria plans to add by 2030 under its Renewables Energy Law. Regrettably, however, these guidelines appear to be non-binding for Austria's Länder, as are the ICPRD Guidelines on sustainable expansion of hydropower[23]. It therefore remains to be seen whether and

[17] Verordnung über die Festlegung des ökologischen Zustandes für Oberflächengewässer (Qualitätszielverordnung Ökologie Oberflächengewässer), BGBl. II Nr. 99/2010, in the version of BGBl. Nr. 185/1993 zuletzt geändert durch BGBl. I Nr. 114/2020.
[18] See section 3.3. a) above.
[19] https://www.rechnungshof.gv.at/rh/home/home/2024_1_Wasserwirtschaft_Niederoesterreich.pdf, section 27.1.
[20] The map dates from 2021 and is available for download **here.**
[21] The map date from 2021 and is available for download **here**.
[22] Szenarien für realisierbare erneuerbare Stromerzeugung im Jahr 2030 und 2040, Begleitdokument zum integrierten Netzinfrastrukturplan, 2023, Bundesumweltamt.
[23] Die „Leitlinien zum nachhaltigen Ausbau der Wasserkraft im Einzugsgebiet der Donau", available for download here.

how far retrofitting of hydropower will take priority above new build to safeguard Austria's remaining stretches of rivers in pristine condition.

d. A target for "good ecological potential" defined, but not legally binding

It is welcomed that Austria's government started to develop practical guidelines for what it means to achieve a good ecological potential in river stretches affected by hydropower dams ("Ökoresch[24]"). However, the federal government has so far only issued recommendations, but no binding decree, for regional authorities to define the threshold of a "good ecological potential". The „Leitfaden zur Ableitung und Bewertung des ökologischen Potentials bei erheblich veränderten Wasserkörpern"[25] does not have the legal position of a binding administrative decree. Considering the large number of Austria's smaller hydropower plants, and the heterogeneity of local administrations, this is regrettable. Similar to the definition of ecological flows, it would be beneficial to define the standard for "good ecological potential" in a legally binding way to ensure achievement of WFD objectives.

e. Funding to reduce pressures has been earmarked

It is positive that Austria's Umweltförderungsgesetz earmarked since 2020 ca. EUR 200 million for measures to tackle hydromorphological modifications and reduce pressures until 2027, including also measures to improve longitudinal continuity (e.g. by establishing fish passes, demolishing old dams) and to mitigate sediment alterations. It is not clear how much of this funding has been spent already in practice and whether it suffices. To the contrary it is uncertain how far operators of hydropower plants are already contributing themselves to cover expenses for achieving a good ecological potential by removing sediments, repairing spawning grounds and building fish ladders. Article 9 WFD foresees the possibility of making polluters pay.

f. Transboundary cooperation works generally well

It is positive that Austria has a long tradition of cooperating with countries along the river Danube through the International Commission for the Protection of the River Danube. Austria also cooperates closely with Czechia through various Interreg projects to re-naturalise – with EU financial support – some stretches of transboundary rivers like Thaya, thereby restore spawning grounds for local fish populations.[26] Trans-boundary cooperation with riverine countries along the Danube will also be of importance if Austria proceeds with plans to abstract water from the Danube, see right below in section 3.6.

3.6 What Austria is doing for abstractions and water scarcity

As set out previously in section 3.2. all groundwater bodies in Austria still have enough water. That said, the 3rd RBMP for the first time flags four GWB at risk.

a. Measures defined for three of four GWB under pressure

The 3rd RBMP suggests that Austria has so far adopted measures for three of four GWB under pressure.

As regards two deep groundwater bodies in Styria at risk of failing good quantitative status by 2027, i.e.: GK100168 TGWK Steirisches and Pannonian Basin" and "GK100169 TGWK East Styrian Basin",

[24] https://dafne.at/projekte/okoresch.
[25] https://info.bml.gv.at/dam/jcr:94bddc31-4431-425f-83c0-748439bae762/20210104%20Leitfaden%20zur%20Bewertung%20des%20guten%20%C3%B6kologischen%20Potentials%20%20gsb.pdf.
[26] https://2014-2020.at-cz.eu/at/ibox/pa-2-umwelt-und-ressourcen/atcz7_dyje-2020-thaya-2020.

steps have been taken at the regional level. Austria's region of Styria passed a regulation in 2017 to secure the quality and quantity of its deep groundwater bodies.[27] Artesian wells without permits are being dismantled. Styria also cooperates with Burgenland to jointly protect the deep groundwater bodies they share, a good administrative practice.[28] It is also positive that no more new irrigation permits are being issued for these deep groundwater bodies.

In Carinthia, the good quantitative status of the shallow ground water body „GK100064 Krappfeld", may no longer be achieved in 2027. This deterioration is expected due to the already high degree of abstractions for irrigation in agriculture. The 3rd RBMP does not report which measures Carinthia will take to remove pressures on GK100064 Krappfeld.

In Burgenland, the shallow groundwater body „GK100135 Seewinkel" is also at risk, due to the bad status of surface water bodies linked to this groundwater body.[29] In the region around Seewinkel agriculture drains significant volumes of groundwater for irrigation. Since the 1990s, irrigation has steadily increased. Potentially between 40% and 100% of new water in these shallow groundwater body is being abstracted for irrigation.[30]

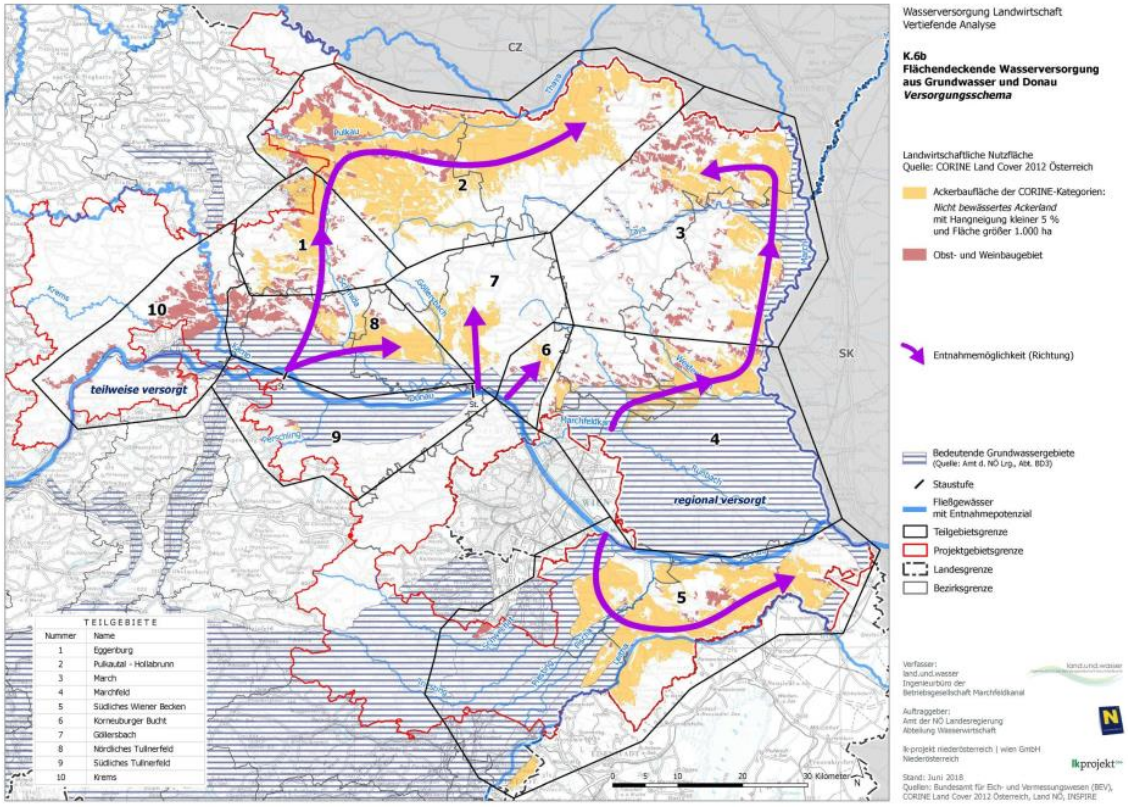
b. Increase of irrigation in reaction to water scarcity

Since 2018, the region of Lower Austria weighs plans to expand the existing surface area of irrigated farmland using water from the Danube ("flächendeckende Wasserversorgung").

According to Austria's Court of Auditors, Lower Austria is among the driest regions of Austria where 44% of Austrian crop production takes place.[31] According to this report, ca. 100.000 hectares are already being irrigated in Lower Austria and the regional government plans to expand the surface of irrigated land by another 159.400 hectares at the expense of EUR 140 million. To do so, water from the Danube would be pumped through pipes of 240 km longitude.[32]

[27] LGBl. No. 76/2017.
[28] 3rd RBMP of Austria, page 270.
[29] See page 261 of Austria's 3rd RBMP.
[30] According to estimates of WWF, Austria authorises water abstractions of ca. 20 million m3 every year in the region of Seewkinkel while only around 16 million m3 groundwater are being reproduced annually. This overabstraction is gradually draining the groundwater body. From WWF's estimates, the irrigation needs of the local agriculture sector appear unsustainable, ranging between 10.6 million m3 and 41.4 million m3 annually depending on the weather (WWF, *Machbarkeitsstudie Wasserbewirtschaftsungsplan*, 21.03.2023).
[31] Between November 2022 and March 2023, the Court reviewed challenges for water management in Lower Austria in the face of the climate crisis. The audited bodies were the Province of Lower Austria and the Federal Ministry of Agriculture, Forestry, Regions and Water Management.
[32] Report of Austria's Court of Auditors page 68, available here: https://www.rechnungshof.gv.at/rh/home/home/2024_1_Wasserwirtschaft_Niederoesterreich.pdf.

Figure 3: Tentative plans for expanding irrigation of arable land in Lower Austria (07/2018)



This infrastructure project may qualify as "a new modification" to "the physical characteristics of a surface water body" within the meaning of Article 4 (7) WFD.

From Austria's 3rd RBMP, it remains unclear how far and whether Austria is exploring alternatives to increased abstractions of water from the Danube, including, for instance, the use of economic tools (Article 9 WFD)[33] to enhance incentives for efficiency; and/or subsidies to change water hungry crops to reduce the total need for water consumption. Austria has also opted out from the European Regulation on Water Reuse.[34] There is clearly scope to ensure Austria's water resilience more long-term through better management of soils, more nature-based solutions to better retain water in the landscape, priority for less water-intensive crops and water reuse above investing in more water abstractions and increased irrigation.[35]

Large scale abstractions of water from the Danube may also have serious repercussions on the ecological status of the river as well as on terrestrial and aquatic ecosystems that depend on it, including ecosystems in downstream countries.[36]

[33] Article 9 WFD foresees economic tools which Member States should use to maintain the status of water bodies. Based on Austria's 3rd RBMP reporting, there is still potential to use economic tools for pricing groundwater. The risk of over abstraction is higher as long as users perceive groundwater as a resource that is "free to have".

[34] According to Article 10 of the Water Reuse Regulation, Member States can opt out to reuse wastewater. Austria has made of this possibility.

[35] See the Report from the Commission to the European Parliament and Council "Summary of CAP Strategic Plans for 2023-2027: joint effort and collective ambition", page 7 of 23.11.2023, COM(2023) 707 final.

[36] Article 4(8) WFD.

c. An inadequate system of controls

There also seem to be problems with the effectiveness of Austria's controls of water abstractions. According to Austria's Court of Auditors, in case of overexploitation of groundwater resources or acute water shortage, it should always be possible to modify existing water irrigation permits. This, however, appears quite difficult for practical reasons (the lack of digitalisation of permit registers) and legal reasons - very long duration of water abstractions permits for irrigation and the "grandfathering" of timely unlimited abstraction permits.[37] Austria's regions, it seems, do not sufficiently establish reliable water balances prior to granting water abstraction permits and/or do not link permits to water availability.

It is on the other hand positive that Austria operates a comprehensive regime for water abstractions and water impoundments as per its Wasserrechtsgesetz of 1958. Regional governors are in theory obliged to maintain regional registers ("Wasserbücher") of water abstraction permits. Regrettably, though, these registers are in practice not always complete and/or not always available in digital form and therefore cannot serve as a factual basis for curbing legal rights under existing water abstraction permits.

A point of concern is the duration of water abstraction permits. Austria's water law of 1958 still foresees in § 21 (1) that permissions to use water bodies shall be granted for the longest possible duration[38] taking into account the needs of the applicant, economic interests and the state of the technological development. Abstraction permits are to be granted for 90 years and 25 years for irrigation. As regards the 25 years duration, Austria's federal law was, it seems, amended in November 2018 to double the maximum duration of irrigation permits from then 10-12 years to 25 years. There are also still a significant number of old irrigation permits which were at the time granted for a timely unlimited period. In some regions these timely unlimited permits account for 11% of all permits in force ("grandfathering").[39]

The fact that irrigation permits can be obtained up to a quarter of a century despite increasing pressures on groundwater and that some permits remain timely unlimited may be in tension with Austria's requirement to ensure that relevant permits and authorisations are regularly "examined and reviewed" (Article 11 (5) WFD). Moreover, Austria's broadly formulated carve-outs from permitting in §§ 10 and 32 Wasserrechtsgesetz may lead to a significant number of water abstractions "under the radar", as they do not appear in permit registers (Wasserbücher) at all, making it more difficult if not impossible for water management authorities to establish the total water balance.[40] There is certainly scope for improving the monitoring of water balances by metering groundwater abstractions more comprehensively than is currently the case.

In conclusion, Austria's 3rd RBMP does not seem to adopt enough measures to respond to the concerns raised in Austria's own "Waterschatz" (see section 3.7 below) climate change analysis for groundwater. Austria does in particular not plan reforms to its legal framework for water permitting, in particular the long duration of water abstraction permits for irrigation, the significant carveouts from permitting, and measures to gradually phase out timely unlimited irrigation permits where they still exist. The ack of digitalisation weighs on the administration's ability to properly review permits

---

[37] Bericht des Rechnungshofes: Klimakrise - Herausforderungen für die Wasserwirtschaft in Niederösterreich.

[38] *"jeweils längste vertretbare Zeitdauer"*.

[39] See the report of Austria's Court of Auditors at 21.1.

[40] § 10 Wasserrechtsgesetz allows owners of real estate to abstract groundwater without a permit as long as volumes of groundwater abstracted are in proportion to the size of the real estate. This leaves a wide margin of interpretation when groundwater abstractions require a permit at all. The larger an estate, the more freedom the owner has to abstract groundwater without a permit.

and adapt them as needed. Austria has also, it seems, not mapped measures for reducing abstraction pressures on GWB Krappfeld in Carinthia.

3.7 Adaptation to climate change

As regards floods, 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 the FHRMs and the FRMPs can be found in Section B. However, considering the close relationship between overall water management and floods management and the importance of climate change on both, the considerations of climate change are jointly addressed in this section.

In Austria, climate change was already considered in the first FHRMs and the second HRMs feature no apparent change. Austria, however, updated the study "Climate Change - Adaptation Strategies for Austria's water management" in 2017. The SEA for the FRMP cites this climate change adaptation study and provides an overview of key effects of climate change on flood occurrences:

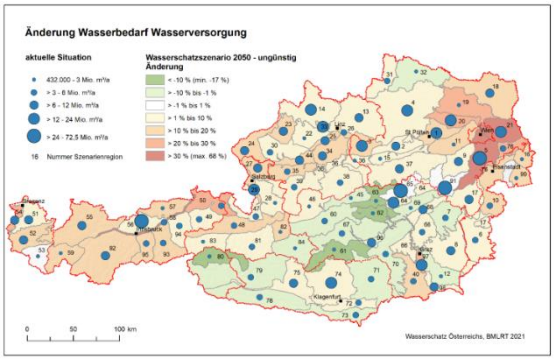
Firstly, over the last three decades, floods have increased in around one fifth of Austria's catchment areas. Also, a small shift towards winter floods can be observed, and these floods are increasing in frequency more than summer floods. Furthermore, although the increase in floods in recent decades is still within the range of natural variability, there are signs that climate change is behind the increase. In general, the variability of runoff is increasing. Lastly, regarding the discharge volume in the event of a 100-year flood recurrence, varying changes in discharges are to be expected regionally, ranging from +5 % to +8 %. The 2017 update[41] also concludes that an increase in precipitation volumes during intensive rainfall events can be expected[42], though the frequency of such intense rainfall events should remain the same for the next few decades.

Austria has taken no further measures to mitigate the expected effects of climate change on the likelihood and potential adverse consequences of flooding. The FRMP stated that no specific 'factor' regarding climate change and floods needed to be considered when designing measures. The FRMP also stated that all measures in the plan were in line with the recommendations made in the Austrian Climate Change Adaptation Strategy, and it referred to research reports and forecasts accompanying the strategy. The FRMP states that the results of this work were that the uncertainties regarding extreme events were very significant, and much stronger than the expected effects of climate change on extreme events. Consequently, the FRMP did not provide any indication on if or how climate change might affect the occurrence of extreme events or change the number of recurrences. In addition, there were neither concrete scenarios presented, nor any timeframes mentioned in the FRMP.

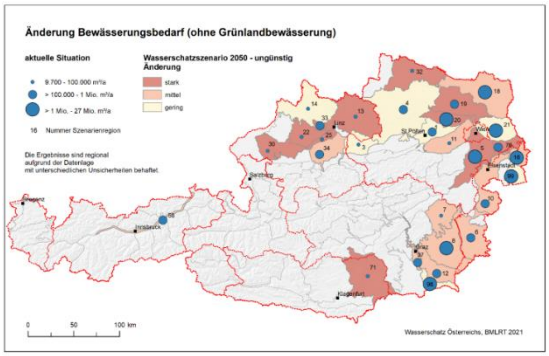
In regards of drought risks and water scarcity, Austria has traditionally been a water rich country, although landscape and geological characteristics may cause significant differences in the regional or local availability of fresh surface water and groundwater, compared to the country average.[43] Climatologic and demographic projections, however, suggest that Austria's ground water resources could drop by up to 23% until 2050 in a worst-case scenario.[44] Increasing air temperature, longer growing seasons, greater evaporation, more frequent heavy rain events in which water runs off the surface instead of seeping away, and comparatively less snow are consequences of climate change. Therefore, less groundwater will be formed in the future.

[41] SEA, p. 63.
[42] SEA for the FRMP, pp. 65-66.
[43] The average volume of renewable fresh surface water and groundwater is 10,000 m3/capita/year which was above the EU average between 2000 and 2021.
[44] See *Wasserschatz Österreich*, BMLfRW, 2023, page 8.

Figure 4 Groundwater Abstractions in a worst-case scenario by 2050



Public Water Supply (worst case, 2050)



Irrigation in Agriculture (worst case, 2050)

Source: Wasserschatz Österreich

In the worst-case hypothesis, pressures from public water supply and irrigation could significantly increase particularly in Eastern regions of Austria, Lower Austria and Burgenland. Farmland irrigation is predicted to then increase by up to 80% until 2050[45]. Note that 90% of irrigated farmland is concentrated in only nine areas of Austria amongst them Marchfed, Seewinkel, Weinviertel, Südliches Wiener Becken.

Austria's response to climate challenges and water scarcity could therefore be geared towards more abstractions of waters from the Danube. Climate change adaptation strategies should, however, follow a "no regrets" approach. Tapping more water from the Danube could have long term consequences for ecosystems dependent upon the Danube.

Austria does not consider a national drought management plan necessary at this stage. In view of Austria's own climate change predictions in *Wasserschatz*, however, this current orientation seems problematic, and a drought management plan advisable at least for regions where groundwater resources are under already pressure (Burgenland, Styria, Carinthia, Lower Austria). While not legally required, the establishment of a specific drought management plan is beneficial to enhance transparency about the magnitude of drought risks and measures that will be taken in case of prolonged droughts and water scarcity. Austria's strategy for the future of agriculture should also better consider drought risks and promote practices to change crops in the longer term in regions where water becomes scarcer. More sustainable soil management practices through organic farming would help reduce pressures, too. Nature-based solutions to restore soils and give them back their sponge function are advisable and would also help Austria achieve its goals under the Nature Restoration Law.

4. Policy elements contributing to zero pollution

4.1 Surface Water: what is their chemical status

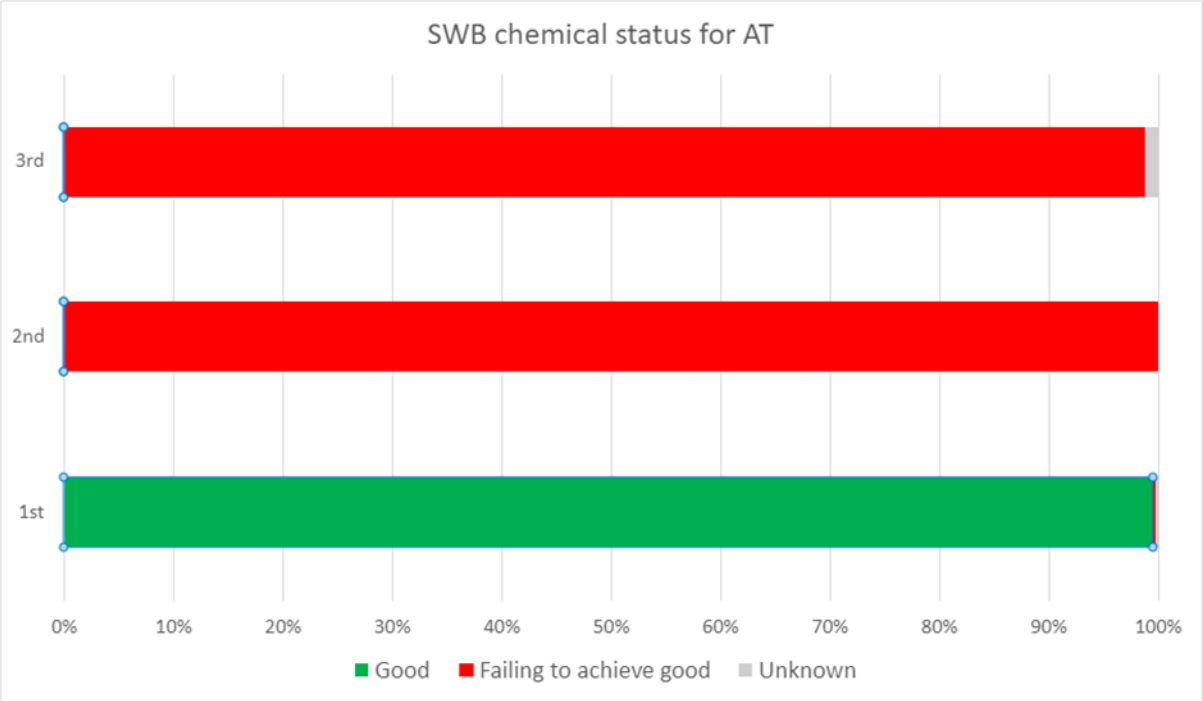
Monitoring: In the 3rd RBMP (2021), 98 % of surface water bodies were classified for chemical status with medium confidence and 0.8 % with high confidence. This represents an improvement from the

[45] See Wasserschatz Österreich, BMLfRW, 2023, page 15.

2nd RBMP (2015) where 98 % of water bodies were classified for chemical status with low confidence[46].

Gap to target: Austria reported 100% of surface water bodies in a poor chemical status.

Figure 5: Chemical Status SWB in Austria



Source: WISE electronic reports

The poor chemical status of surface waters in Austria is attributed to two specific priority substances: mercury and its compound as well as brominated diphenylethers. Both substances are uPBTs, ubiquitous, persistent, bioaccumulable and toxic substances.[47]

Other than for these two uPBTs, merely 51 water bodies, that is less than 1%, still exceed environmental quality standards (EQS), that is less than in the 2nd RBMP. Austria has successfully reduced pollution from ammonium, nitrate and hexachlorbutadien since 2015.

Polybrominated diphenyl ethers (PBDEs) are a group of man-made organobromine compounds. They have been used as flame retardants in polyurethane foams in upholstery and in polymer resins and plastics used as components in electrical equipment. These contaminants mainly occur in food of animal origin, such as fish, meat and milk. Foods contaminated with polybrominated diphenyl ethers

[46] Confidence ratings are defined in 2nd RBMP reporting from the 2016 as:
Low = no monitoring data.
Medium = limited or insufficiently robust monitoring data for some or all Priority Substances that are discharged in the RBD; and
High = good data for all Priority Substances that are discharged in the RBD.

[47] According to article 8(a) of the EQS Directive, eight priority substances and groups of priority substances are behaving like ubiquitous, persistent, bioaccumulable and toxic substances. These substances include mercury and PBDE. They are generally expected to cause widespread exceedances and their emissions can be challenging to tackle (e.g. due to long-range atmospheric transport and deposition). In order to show the progress made in tackling other priority substances, Member States have the possibility to present the information related to chemical status separately for these substances.

(PBDEs) pose a health risk to all age groups. Experts concluded that PBDEs may have an adverse effect on the reproductive and nervous systems. [48]

Mercury (Hg) presents the biggest risk in rivers, lakes and oceans where it takes a highly toxic form that is absorbed by animals, including fish. Mercury presents a particular and significant risk to the neurological development of foetuses, newborn babies and children.

The 3rd RBMP of Austria does not map measures to reduce PBDE and mercury in Austria's surface water bodies. Already in the 2nd RBMP, Austria took the view in relation to mercury and polybrominated diphenylethers (PBDEs) require action at an international level, only.



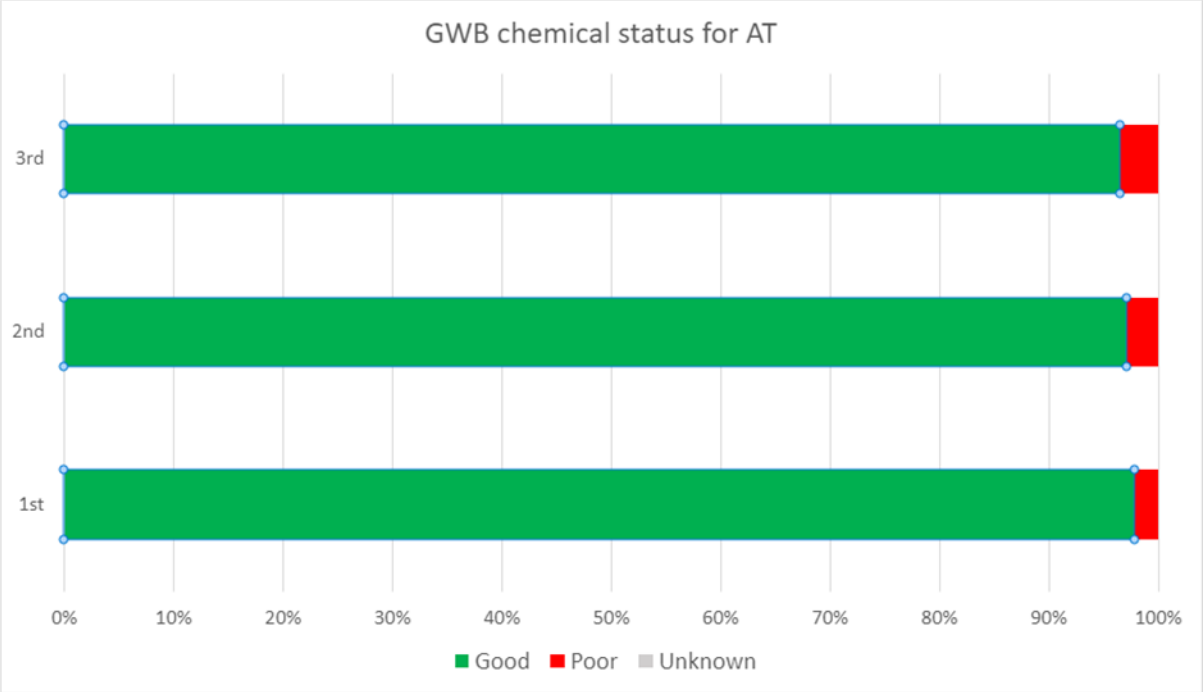
4.2 Groundwater Bodies: what is their chemical status

Monitoring: 95.7% of the groundwater body area is covered by chemical status monitoring. Austria's the confidence in the status assessment is high, with less than 7 % of water bodies classified with medium confidence. The criteria for confidence rating is not reported but is likely to be related to the presence or absence of monitoring data. Austria can take credit for considering groundwater dependent terrestrial ecosystems in the chemical status assessments of ground water bodies. Namely, a key criterion for assessing the good groundwater chemical status of a GWB is that the concentrations of pollutants are not at levels which would result in poor status of surface water bodies which are identified as groundwater associated aquatic ecosystems (GWAAEs) or lead to significant damage to groundwater dependent terrestrial ecosystems (GWDTE). There were 93 GWBs (or groups of groundwater bodies) containing groundwater-dependent habitat types that could be identified.

Gap to target: Compared to 2015 when 4 out of 138 GWB were in poor chemical status, by 2021 5 out of 142 groundwater bodies were at risk of failing good status until 2027.

[48] https://www.efsa.europa.eu/en/news/efsa-opens-consultation-health-risks-associated-polybrominated-diphenyl-ethers-food.

Figure 6: Chemical Status GWB in Austria (2021)



Source: WISE electronic reporting

While this appears to be a small deterioration in relative terms, it happened against the background of a high share of organic farming in the country (26%) with Austria being the sole EU Member State in 2020 reaching the 25% EU target for organic farming.

The groundwater pollutants posing risks are nitrates, pesticides, ammonium and sulphate.

The deterioration of the chemical status of GWBs may suggest that Austria's programme of measures for agricultural pollution after the 2nd RBMP needs a lot of time to take effect for groundwater, or it may imply that Austria's measures have simply been insufficient. While nitrates have declined in rivers and lakes, nitrates are still increasing in groundwater. More than 13% of Austria's groundwater bodies remain subject to this pressure. Overall, Austria expects that by 2027 the number of GWBs failing good status due to nitrates could double from 5 to 10 GWBs.[49]

4.3 What Austria is doing to combat pollution from agriculture

Austria's agriculture is characterised by small-scale structures, often in areas where farming is difficult. Except for Eastern Austria, the vast majority of farm holdings are located in mountain areas and areas facing natural or other specific constraints for farming. Of the total area, 32% is agricultural land while forests cover 44%. About half of the utilised agricultural area is arable land and the other half is mostly permanent grassland.[50]

[49] See section 2.2.5 Austria's 3rd RBMP.

[50] https://agriculture.ec.europa.eu/system/files/2023-08/csp-at-a-glance-austria_en_0.pdf

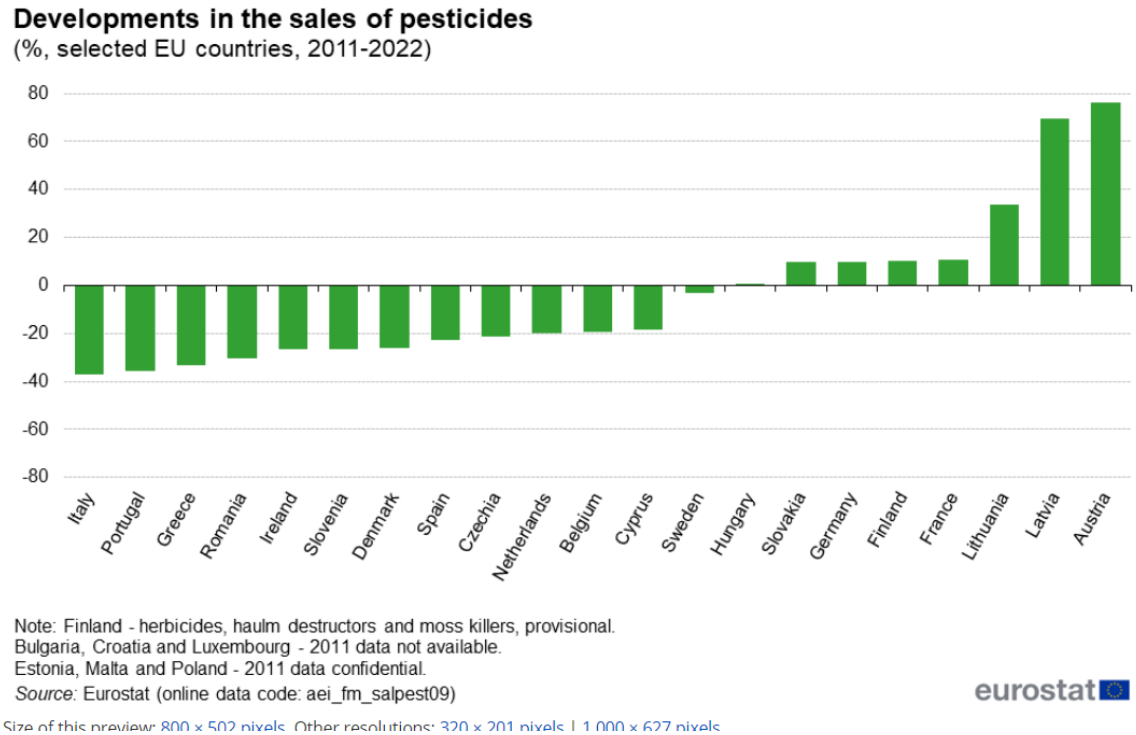
Nutrients (nitrates) and pesticides (dimethachlor) remain the most important pollutants of Austria's ground water bodies affecting 16% of GWB. Nitrates are also - after mercury - the second most important pollutant of surface water bodies affecting 13.4% of SWB.

According to Austria's 3rd RBMP, almost 10% of all measuring points exceed the threshold of 45 mg/l nitrate in groundwater bodies and in around 8% of drinking water areas the limit of 50 mg/l was exceeded, too (predominantly in the dry areas of Eastern Austria).

a. Austria used less pesticides than others but the trend is upwards

According to Eurostat, Austria used around 1.8 kg of pesticides per ha which is among the lowest values in the EU 27. However, data from 2021-22 also suggest that the use of pesticides in Austria is increasing. The high % in increased sales must be seen in correlation with the low amount sold before 2021. In total, Austria is still buying a low amount of pesticides. The increased use can however negatively affect the chemical status of Austria's surface and groundwater bodies.

Figure 7: Sales of pesticides in selected EU countries (2021-22)



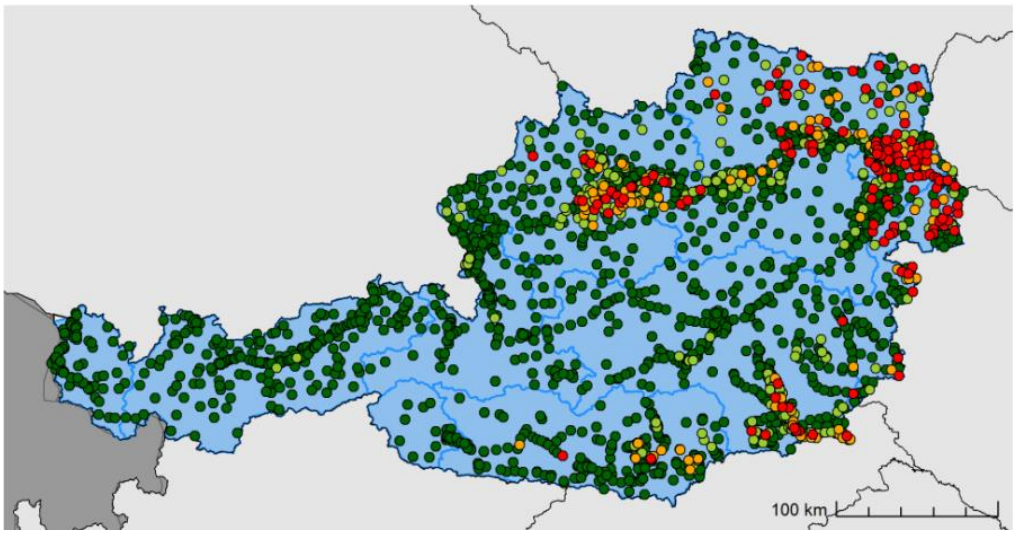
b. Austria's measures to reduce nutrients in surface water bodies

Austria attributes the improved ecological status of its surface water bodies to lower nutrient loads. The trend is, however, not entirely clear. On the one hand, pollution from nitrates has indeed decreased slightly compared to the 2nd RBMP. On the other hand, Austria's 3rd RBMP also warns that pressures on groundwater bodies (from 'diffuse – agricultural') are such that by 2027 the number of GWB failing good status due to nitrates could effectively double from currently 5 to 10 GWB; and the number of GWBs at risk of failing good status due to pesticides pollution may increase from 4 to 7 GWB.[51]

[51] See section 2.2.5 Austria's 3rd RBMP.

In terms of regional concentration, according to Austria's 3rd RBMP, nitrates pollution of groundwater occurs mainly where agriculture is intensive and where there is comparatively less precipitation. In these regions (for instance Parntorfer Platte, Marchfeld, Ikvatal etc), nitrogen excess not absorbed by agricultural crops regularly contaminates the groundwater.[52] Data reported under the Nitrates Directive moreover suggest that nitrate concentrations are also high in Upper Austria and in parts of Styria.

Figure 8: Groundwater Bodies polluted with ≥ 50 NO3 mg/l (2021) (in red)



Source: JRC Nitrates Directive at NUTS Level 2

Austria's new Nitrate Action Programme Ordinance applies as from 1 January 2023. The previous version already included certain requirements concerning the application of nitrogenous fertilisers in agricultural areas and comprises:

- Time restrictions on the application of fertiliser (prohibition periods)
- Quantitative restrictions (on the use of farmyard manure and upper limits for the quantity of fertiliser that may be applied per crop)
- Local restrictions (e.g. in the vicinity of waters)
- Provisions on the way of application
- Requirements on the capacity of manure storage facilities
- Farm-related recording obligations in connection with the application of fertilisers

The amended decree now also foresees the increased consideration of the N content in irrigation water, revised upper limits for fertiliser use on vegetable crops and wine; a ban on the application of fertiliser on arable land in autumn after harvesting (some exceptions apply), the specification of the storage of farmyard manure on technically impermeable surfaces; a buffer strip at least 3 metres wide besides water bodies, cover with living plants all over the year is required. Notably, the new ordinance also obliges water authorities to conduct checks on at least 1.5 % of all holdings that are subject to recording of N.

[52] See Austria's 3rd RBMP, page 69.

The CAP Strategic Plan of Austria spends 60% of the country's rural development budget on environmental and climate objectives, such as area-based payments for environmentally friendly practices beyond those legally required. Austria has one of the highest shares of organic production in the EU, but aims to further increase this to 30% of the agricultural land in 2030 with the help of CAP support[53]. In the CAP Strategic Plan it is also planned that over 56% of the agricultural area will be covered with commitments to improve water quality between 2023 and 2027.[54]

The 3rd RBMP, however, is less clear on Austria's measures to effectively monitor compliance with the Nitrates Directive. Controls of nitrate use in agriculture are currently foreseen only for 1.5% to 10% of total arable land, the so-called "hot spot" regions, of the Nitrates Directive.



4.4 What Austria is doing to combat pollution from other sectors

As regards priority substances, pollution from nickel, nonylphenols and tributyltin compounds were identified due to emissions from point sources. In the category of nationally regulated pollutants the 3rd RBMP mentions ammonium and EDTA.

The RBMPs include 18 national basic measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances.

It is welcome that in the 3rd RBMP the total number of measures for the control of industrial and wastewater pollution has increased. Austria's programmes of measures mapped measures against all pollutants causing failure of objectives in groundwater and surface water.

Using state-of-the-art wastewater emission controls and upgrading old waste-water treatment plants have allowed Austria to reduce pollution from point sources significantly. This is particularly evident regarding exposure to ammonium. In the 2nd RBMP there were still 15 water bodies downstream of sewage treatment plant discharges failing to meet the targets for ammonium. This is currently only the case in two water bodies.[55]

From 1993 to 2019 in average an annual investment volume of around 740 million euros was spent for improving wastewater treatment. These measures focused on the construction of new wastewater treatment infrastructures and the adaptation of existing plants older than 40 years. However, the funding guidelines for wastewater have meanwhile expired with some final payouts still taking place.[56] According to the 3rd RBMP, measures have already been taken to address the remaining point pollutions from wastewater treatment plants that should show results soon.

Some water bodies are apparently also polluted with PFOS. PFOS was identified as a priority substance by Directive 2013/39/EU and was introduced for the first time in the 3rd RBMP. The analysis

[53] Under the CAP Strategic Plan 24% of the utilised agricultural area (UAA) is planned to receive support for organic farming (Mapping and Analysis of CAP Strategic Plans. Assessment of joint efforts for 2023-27)
[54] At a glance: Austria's CAP Strategic Plan (europa.eu)
[55] See Austria's 3rd RBMP page 180.
[56] See Austria's 3rd RBMP page 179.

suggests that PFOS pollution results often from point sources. However, measurements are still not complete, and estimations were used for the 3rd RBMP. As Austria started monitoring PFOS only more recently, no key types of measures (KTMs) were mapped yet for point pollution with PFOS.

In this context, Article 11(3) WFD enumerates the "basic measures", the minimum requirements the programmes of measures shall comply with. Among these basic measures are included (g) the requirements for prior regulation/prior authorization for point source discharges liable to cause pollution, including controls that shall be also periodically reviewed and, where necessary, updated.

Austria should continue efforts to reduce chemical pollution from priority (hazardous) substances, for which EU wide environmental quality standards – EQS – have been set, already on a good downward trend from 0.89% (2015) to 0.62% (2021). Austria should also identify remaining point source pollutions of PFOS in SWBs and GWBs and address point pollutions with concrete measures.

Austria's programmes of measures to reduce mercury is not ambitious enough. The uPBT mercury can be reduced at a regional level as emissions from combustion processes matter, too. It should be explored if the regional concentration of mercury is correlated to traffic and the combustion of biomass.

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

Gap assessment: The RBMP includes a quantitative and qualitative gap assessment.

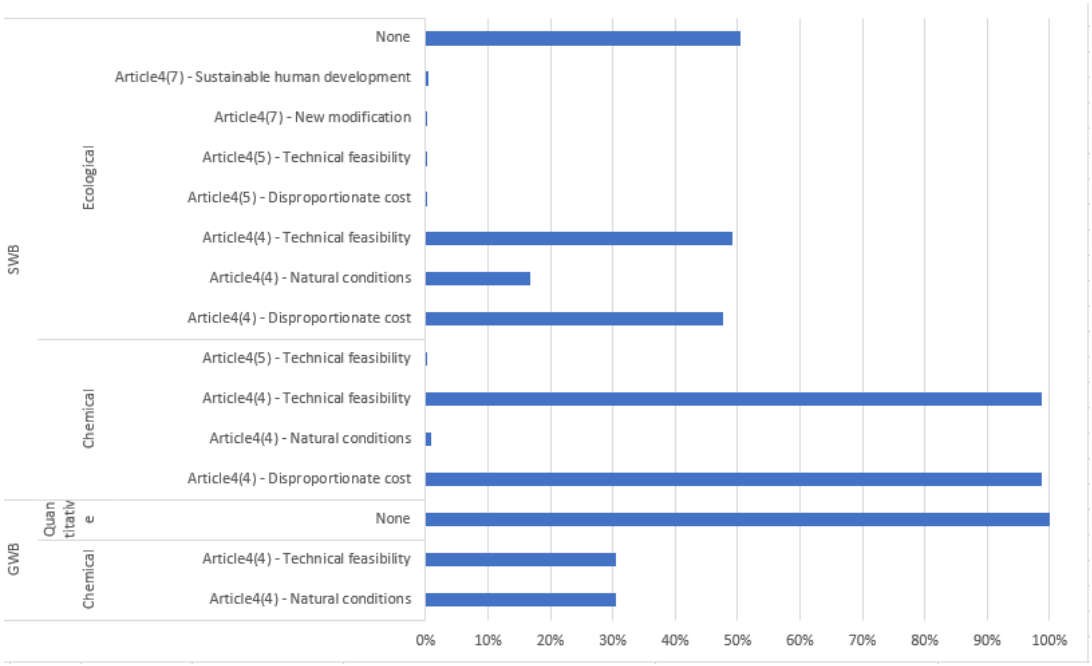
Cost-effectiveness: The RBMP includes a cost-effectiveness analysis, using qualitative, quantitative or a combination of both qualitative and quantitative assessments. In general, the cost-effectiveness analysis is based on a solid impact assessment of main pressures/impacts, a thorough assessment of the effectiveness of existing measures and an identification of the main shortcomings (gap analysis), and the identification of a longlist and selection of possible additional measures (shortlist) based on effectiveness, technical feasibility, support, costs and benefits.

5. Exemptions and economics

5.1 To what extent are exemptions applied in Austria

The 3rd RBMP applies exemptions under Article 4(4), Article 4(5) and Article 4(7) WFD.

Figure 9: Type of exemptions for SWB and GWB in Austria



Article 4(4) exemptions were applied for surface water ecological status/potential to 49.4 % of SWBs (4044 SWBs) decreasing from 53 % of SWBs in the 2nd RBMPs. For chemical status 98.8 % (8077 SWBS) have been exempted in the 3rd RBMP (largely due to ubiquitous substances) down from 100 % in the 2nd RBMP. Article 4(4) exemptions for groundwater chemical status have been applied to five groundwater bodies (3.5 % of GWBs) increasing from zero in the 2nd RBMPs. No exemptions were applied to groundwater quantitative status in the 3rd and 2nd RBMPs.

Article 4(5) exemptions have been applied to 18 surface water bodies (decreasing from 17 in the 2nd RBMPs). Austria has not applied Article 4 (6) WFD to any water body. Importantly, Article 4(7) has been applied in 28 surface water bodies in the 3rd RBMPs increasing from 11 water bodies in the 2nd cycle. A critical factor in the success of the implementation of the PoM and reaching set objectives is the availability of funding to support the measures required. There is clear information on the prioritisation of measures, including those for which funding is already available distinguishing between costs to the public budget and for private operators. In this respect, Austria fulfilled a Commission recommendation in the 2nd RBMP.

However, only limited details are provided on justifying Article 4 exemptions. Austria achieved only limited progress with justifying the application of Article 4(4), 4(5) and 4(7) as detailed justifications are still lacking.

5.2 Use of economic analysis and water pricing – cost recovery

Progress regarding improvements in the economic analysis is reported both in WIFO (2021) and in the 3rd River Basin Management Plan, but only generally, without specifying what has been improved. Nevertheless, the analysis of economic significance of water use sectors is based on the most recent datasets (i.e., after 2015).

As regards requirements under Annex III of the WFD, the 3rd RBP contains:

- Long term forecasts of water supply and demand, differentiated over source type: water supply projections could not be found in WIFO or the National Water Management Plan.

- Long term forecasts of water demand, differentiated over source type: some forecasts to 2030 are provided. In the case of agriculture, WIFO and the National Water Management Plan include forecasts on the development of the sector, taking into account measures from the CAP and the Rural Development Programme; however, these forecasts do not include water use projections to 2030. Estimates of the future need for irrigation in agriculture around 2050 were presented in the BMLRT study Austria's Water Treasure (2021) and reported in the National Water Management Plan. For water supply and sanitation, the two documents provide water consumption forecasts from 2018 to 2030 under different scenarios, based on population growth and water technologies projections – also with the objectives of determining future investment needs in the sector. Other forecasts are not provided; forecasts to 2030, however, cannot be considered as long-term.

- Volume estimates associated with the various water services: WIFO provides volumetric estimates of the followings (based on 2019 data): total water resources available in the country each year, volumes abstracted each year, in total and by sector (households, industry and commerce as one sector, and agriculture); average consumption per person per day and average consumption per household per year.

- Cost estimates associated with the various water services, although not differentiated by use types / sectors, are included in WIFO and the National Water Management Plan.

- Price estimates associated with the various water services, although not differentiated by use types / sectors, are included in WIFO and the National Water Management Plan.

- Estimates of relevant investment including forecasts of such investment: both WIFO and the National Water Management Plan report estimates of investment needs in water supply and wastewater collection and treatment to 2030. Estimates of investment needs for other use sectors could not be found.

The economic analysis does not discuss the effects of policy measures and water pricing on water use efficiency, neither combined or individually.

In Austria, the provision of water services is ensured by public operators, which charge fees on customers. These fees are divided into ongoing fees (usage fees), recovering operating costs, and one-off fees (connection fees – the document does not specify whether such fees are only paid once, or rather once per period. Cost recovery rates vary a lot across the country (in line with water and sanitation tariffs, which also show large variations at the local level). On average, settlement with 1 000 to 10 000 inhabitants achieve full financial cost recovery, larger settlements can achieve even higher rates, whereas settlements with less than 1 000 inhabitants generally remain (even well) below full financial cost recovery.

6. WFD recommendations

Recommendations - Austria should:

1. Austria should accelerate action and enhance the overall level of ambition for restoring to good ecological status (natural water bodies) or good ecological potential (heavily modified water bodies) all rivers and lakes. This presupposes that Austria increases resources to:
    a. implement Austria's legally binding guidelines for ecological flows by removing barriers that are no longer needed and that should be removed to restore ecological flows in rivers and beaks where the speed of flows has become insufficient for a good ecological status; and
    b. adopt a legally binding standard for the ecological *potential* of river stretches that are qualified as "*heavily modified*" within the meaning of Article 4 (7) WFD to induce more measures at regional and local level; and implement this standard in water permits;
    c. define the ecological flow in all water permits for hydropower, without exception, and assess comprehensively their impact on ecosystems; fund the removal of sediments, the restoration of fish spawning grounds and other measures for reducing the impact of hydropeaking on habitats bearing in mind the need to safeguard in particular protected species; and
    d. oblige operators of hydropower plants through conditions in permits to contribute financially over the lifetime of the permit to fund the mitigation of adverse impacts on the ecological status of the surface water body concerned, including the removal of sediments and the restoration of fish spawning grounds and other appropriate measures for reducing as far as possible also the impact of hydromorphlogical changes and hydropeaking on habitats, unless public funding is earmarked and suffices to cover such expenses in the long term; and
    e. carefully future-proof new projects for additional impoundments in Alpine valleys bearing in mind changing precipitation patterns and the repercussions of glacier melting ("no regrets" approach);
    f. retrofit where technically possible existing hydropower plants to realise as much of the additional 5 TWh hydropower capacity needed to reach Austria's climate neutrality goals as opposed to building additional impoundments that would deteriorate the ecological status of rivers and beaks concerned; and
    g. monitor and contain more aggressively invasive alien species and in particular adopt measures to constrain the spreading of North American crayfish.

2. To reach good status objectives for the chemical status of Austria's surface and groundwater bodies, Austria should increase its ambition by:
    a. conducting a more comprehensive gap assessment for diffuse pollutant loads from agriculture (nutrients, agri-chemicals, sediment, organic matter) across waters in RBDs and link them clearly and directly to mitigation measures in the 3rd RBMPs (as per WFD Article 11(3)(h)), to facilitate the achievement of WFD objectives; and
    b. where necessary to meet WFD objectives reduce nitrates beyond measures required under the Nitrates Directive and adopting more nutrient related measures funded the Common Agricultural Policy;
    c. identifying and removing remaining point sources of pollution for ubiquitous PBTs such as mercury and brominated diphenylethers as well as PFOS

3. On the use of economic tools, Austria should apply the polluter pays principle and consider a better pricing of water related service according to Article 9 WFD where public funding or other WFD tools are not enough to achieve good status or good potential of water bodies; this applies in particular for measures to enhance river continuity, to remove sediments and to reduce the impact of hydropeaking on river stretches affected by hydropower plants where plant operators should contribute to cover related expenses if needed to achieve WFD objectives;

4. As regards adaptation to climate change, it is recommended that Austria:

    a. Explores in more detail repercussions of accelerated glacier melting and reduced snow fall in Alpine areas on Austria's surface and groundwater bodies and in particular how this could influence the biological quality elements of surface water bodies and how far it will reduce flows in surface water bodies like eth Danube and the groundwater resource; and related to this which measures are needed as a consequence to further decrease anthropogenic pressures when accounting for these climatologic developments?;
    b. verifies more comprehensively if there is a need to adapt water permits for reducing ongoing abstractions of groundwater at least in regions affected by water scarcity (e.g.: in Burgenland, Carinthia, Styria, Lower Austria) such that ground water bodies under pressure/at risk do not lose their good quantitative status; and
    c. financially supports additional irrigation projects in rural areas only after establishing a water balance; abstains from funding the expansion of the net surface of irrigated arable land in regions where additional irrigation projects would put groundwater bodies and/or terrestrial or aquatic ecosystems connected to them at risk;
    d. amends its Wasserrechtsgesetz 1958 such that water management authorities can more easily adapt the volume of water abstractions during the lifetime of the permit, reviews the duration of irrigation permits in regions that are at risk of water scarcity and ensures a more regular review of abstractions and of the effectiveness of their controls; phases out timely unlimited water irrigation permits and makes irrigation permits dependent on the existence of sufficient water in the sub-basin concerned which in turn presupposes better (digital) metering of abstractions;
    e. ensures that regional water authorities more regularly verify the compliance of users with water abstraction permits; digitises all of Austria's registries of permits ("Wasserbücher"); regularly update the water balance in each river sub-basin based on reliable data;
    f. Reviews, and where appropriate, tightens the scope of carve-outs from the requirement of water permitting for abstractions in Austria's *Wasserrechtsgesetz*;
    g. adopts measures to reduce abstractions to preserve the good status of groundwater body Krappfeld in Carinthia which the 3rd RBMP flags as being "at risk";
    h. carefully impact assesses plans to abstract more water from the Danube in response to climate change, be it for expanding the net irrigated surface of arable land in Austria (and Southern Czechia) , be it for regulating the level of lakes or building new canals; this assessment should take into account repercussions on ecosystems downstream to abstraction including in neighbouring countries such as Slovakia, Hungary etc, and coordinate such assessments through transboundary river basin management planning (ICPDR);
    i. adopts measures to reduce the sealing of soils in regions where groundwater bodies are under pressure due to over abstractions and/or where climate change predictions suggest that pressures will increase significantly;

j. adopts drought management plans in river sub-basins where ground water bodies are at risk (Burgenland, Styria) or may soon be at risk due to the evolution of pressures (e.g.: Lower Austria); and
k. for agriculture explores climate adaptation measures other than the sole expansion of irrigation, in particular also crop diversification and more sustainable soil management techniques and reduced sealing of soil to allow for a better retention of rainwater; consider better using economic incentives such as volumetric pricing to prevent water waste.

5. As regards Austria's progress with applying the Water Framework Directive, Austria should in the next cycle of River Basin Management Planning in particular improve the monitoring of the ecological status of lakes and rivers by

    a. more consistently measuring hydro morphological pressures on lakes and also assess river continuity as a hydromorphological quality element for classifying the ecological status and potential of all river water bodies, including those that are heavily modified and artificial; and
    b. better monitoring the river basin specific pollutants in rivers (eg.: EDTA, zinc and ammonia), currently measured in only 1.3% of all river bodies, to identify point sources of pollution; and
    c. improving the monitoring of water abstractions from groundwater and surface water through continuous digital metering at the point of abstraction, in particular for irrigation;

6. As regards the use of exemptions, Austria should generally improve the transparency and enhance the details of its justifications to apply Article 4 exemptions. Austria is also advised to carefully review the environmental impact of large-scale infrastructure projects that abstract waters from transboundary rivers or create large new impoundments against the four cumulative conditions of Article 4 (7) WFD. In view of the high number of existing impoundments (dams, barriers etc) along Austria's rivers, and their impacts, it is recommended that Austria defines in a binding manner those stretches of rivers which should not be further deteriorated by building additional impoundments. When classifying a river body as "heavily modified", Austria should always determine in the permit and thus in a legally binding way which good ecological potential this water body must achieve precisely – not in abstract generic terms – and permits for the construction of new impoundments should request operators to fund measures that are needed to achieve the good ecological potential such as fish passes and the removal of sediments.

7. Regarding transboundary cooperation, it is recommended that Austria involves neighbouring countries affected by potential future large-scale water abstractions from the Danube, such as through involvement of the International Commission for the River Danube, and the transboundary cooperation process leading to the establishment of the Danube's river basin management plan.

SECTION B:

FLOODS DIRECTIVE

7. Flood risk management under floods directive (FD)

The Directive requires each Member State (MS) 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 three Units of Management (UoMs) in Austria, which are the same as the Water Framework Directive's River Basin Districts (RBD). Fluvial and pluvial floods are considered as potentially significant sources of flooding in Austria. Austria has designated 416 Areas of Potential Significant Flood Risk (APSFRs)[57]. The impacts of climate change on flood risk have been considered in Austria at the time of the second preliminary flood risk assessment, mainly in the form of an updated study on the consequences of climate change for the Austrian water management sector (originally from 2011, updated in 2017). The study - and the PFRA document - concludes that both fluvial and pluvial floods will show greater variations in the future, both upwards and downwards (i.e. reduced flood peaks) in terms of quantities.

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'.

7.1 Flood hazard and risk maps

Austria is using an open access GIS-portal[58] for their FHRMs. FHRMs were prepared at the national level and covered two out of three UoMs, since for the Elbe, no APSFRs were identified, and, consequently, no hazard and risk maps have been reported. All APSFRs are covered by the FHRMs. Maps for floods with low probability (1/300 years), with medium probability (1/100 years) and with high probability (1/30 years) are provided, with legends and explanation of features. Flood extent is clearly shown on all maps. Water depth is clearly shown on all maps, with a clear legend. Number of inhabitants is clearly shown on all maps, with a clear legend. The type of economic activity potentially affected is shown on the flood risk map in terms of land use. IED installations are shown. Potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC are depicted but not clearly distinguishing between them (e.g. not distinguishing between drinking water protected areas and other protected areas, although Natura 2000 areas and "water preservation" areas are highlighted).

The main change in the contextual information (i.e. the way in which information about the maps is conveyed to the public) found in the second FHRMs compared to the first FHRMs is to have in place only a single GIS portal instead of several maps for each APSFR. Besides, several aspects have been changed since the first FHRMs, e.g., a disclaimer has been added, as well as a tutorial for the general public (e.g. to check if their home/work is threatened in a flood event). A minor issue identified in the first FHRMs was to add contact information: a general email address is now provided. Furthermore, the technical language was identified as an issue in the assessment of the first FHRMs; some improvements are visible in the tutorial, but for example the title(s) of the map (the tabs) are possibly still difficult to understand for non-experts.

[57] In the first cycle, 391 APSFRs were reported. The 416 APSFRs reported for the second FHRMs correspond with the number of APSFRs as identified in the second PFRA.

[58] https://maps.wisa.bml.gv.at/gefahren-und-risikokarten-zweiter-zyklus?g_card=hwrisiko_gefahren_ueff

There have been no obvious changes to the methodologies used to prepare flood hazard maps since the first FHRMs in Austria. Still, besides the move from pdf maps to a GIS portal there have been improvements in the accessibility of the maps' content, e.g. from a fixed scale to a dynamic scale, from generalised background layers to single object info, tutorials have been added and information is based on buildings not on grids. More importantly, of relevance to pluvial flooding, Austria produced an indicative hazard map that shows surface water flows due to heavy rain events.

In terms of changes in methodologies used to prepare flood risk maps since the first FHRMs, the database has been improved in some cases (e.g. the housing registry, and inhabitants exposed). Also, bathing waters are not depicted as point symbols anymore, and National Parks and Natura2000 areas are now depicted separately (in the first FHRMs, the same colour coding was used).



7.2 Flood risk management plans

Objectives and measures

Austria submitted a single FRMP for the whole country. The FRMP was prepared by the Ministry for Agriculture, Forestry, Regions and Tourism[59]. The FRMP and accompanying documents can be downloaded online60.

Austria's FRMP sets four objectives for flood risk management. The objectives do not refer directly to the reduction of adverse consequences of flooding, though they do refer to reducing new and existing risks and improving preparedness and awareness: these elements should reduce adverse consequences. Austria's first two objectives refer to the reduction of new and existing flood risks, which include the reduction of the likelihood of flooding. The third objective calls for improving preparedness, and the FRMP explains that this includes operational planning for emergencies. The fourth objective calls for strengthening awareness. Neither of the four objectives of the FRMP nor the explanations for these objectives refer directly to human health, economic activity, environment or cultural heritage. The FRMP and its Programme of Measures (PoM) describe 36 nationally defined measure types. For 18 'individual' national measure types, the PoM indicates where measures are planned for implementation in Austria's 416 APSFRs. Austria has reported 3 260 measures to EIONET: these appear to include the national measure types and the measures planned in the individual APSFRs. Austria indicated the priority for all the measures reported to EIONET. The PoM provides a prioritisation of individual measure types and the FRMP indicates factors considered in the prioritisation. The great majority of measures (2 656 measures or 80 % of the total) are classed as high priority, while there are 436 measures (13 %) classed as very high priority, and 210 (6 %) classed as moderate priority. For measures classed as high priority, 2 498 (94 % of the high-priority measures) are for the Danube UoM (AT1000).

The FRMP provides ranges of costs for some measure types. The FRMP refers to a consideration of costs and benefits and of cost-effectiveness as factors for the establishment of priorities for measures, but without going into detail. Qualitative statements concerning cost-effectiveness are provided for some measure types. The FRMP indicates that the FHRMs are the basis for planning measures but does not provide details on this process. Two measure types, for agriculture and forestry, are primarily nature-based measures, while three further measure types include links to nature-based measures such as water retention. Austria reported to EIONET 1 039 measures which include natural water retention measures. Nature conservation is specifically considered in two measure types, while another two refer to nature conservation. The FRMP includes measure types from the RBMP and coordination between the FRMP with the WFD's objectives and the River Basin Management Plan (RBMP) is presented. Austria reported that coordination with the WFD's objectives is addressed in its FRMP. Austria's first objective calls for avoiding new (flood) risks, to that effect Austria reported 520 prevention measures to EIONET. Austria reported 2 192 protection measures to

[59] Since July 2022, the Ministry is called: 'Ministry for Agriculture, Forestry, Regions and Water Management'.
[60] https://info.bml.gv.at/themen/wasser/wisa/hochwasserrisiko/risikomanagementplan.html

EIONET. One of Austria's four objectives calls for improving preparedness, in line to this Austria reported 578 preparedness measures. In the FRMP and its PoM, two measure types are related to emergency planning. Four measure types relevant to land use and spatial planning are included in the FRMP and PoM. The FRMP refers to the Austria's adaptation strategy and provides an overview of projected climate impacts on flood risks. Adaptation is considered in the prioritisation of measures.

While the objectives have been revised, they are not linked to timeframes or indicators. The second FRMP links the objectives to measure types. The second FRMP explains that the progress of measures is monitored, and it provides an overview of the progress of measures in the first FRMP. The FRMP states that progress towards the achievement of the objectives in the first FRMP are assessed on the basis of the progress of the implementation of measures. Austria has reported on the progress of implementation of measures for the second FRMP. The measures were reported under three categories of progress: completed, ongoing construction and in preparation. The majority of the measures, 2 356 measures (71 % of the total) were reported as completed. Among the completed measures, 1 383 are protection measures (59 %), 449 are prevention (19 %), 512 (22 %) are preparedness, nine are recovery and review, and three are 'other' (both less than 1 % of the total). 173 measures (5 % of the total) were reported as ongoing construction; all of these are protection measures. 773 measures (23 % of the total) were reported as 'in preparation'. Of these, 636 are protection measures (82 % of the total), 71 (9 %) are prevention measures, and 66 (9 %) are preparedness measures. For the Danube UoM (AT1000), which has 95 % of all measures, the breakdown of categories of progress is very similar to the national averages. The Rhine UoM (AT2000) has a higher share of measures in ongoing construction (14 %) than the national average (5 %). In the Elbe UoM (AT5000), all 14 measures are listed as completed.

The FRMP61 provides an overview of the planned implementation status of measures in the 391 APSFRs of the first FRMP as compared to their actual implementation status in 2021, through two charts per measure type (based on the measure types of the first FRMP). The different classes for the change in implementation status from 2015 to 2021 are: already implemented in 2015, planning completed in 2015, planned status was not achieved, planned status was achieved, planned status was over-achieved, periodic implementation. The FRMP[62] indicates that in the monitoring approach of the first FRMP, the non-achievement of status developments is often due to the aggregation of measures at APSFR level. If, for example, three retention basins were planned for an APSFR and one of them could not be implemented due to a lack of available land area, the measure is assessed as 'Status development was not achieved' for this APSFR[63]. The FRMP explains that this approach has since been updated, and moreover that some of the categories used have been modified. The FRMP[64] states that a further update to the second FRMP draws on the experience from the first FRMP, which showed that the interpretations regarding the status definition per measure type could be subject to uncertainties. Thus, implementation status was formulated using a shorter set of closed categories to provide clear information in the future rather than broad, interpretable categories such as 'periodic implementation' or 'partially implemented' are no longer used. A clearer reference to the overall process is ensured by dividing some measures into the sub-processes 'planning' and 'implementation'[65].

---

[61] FRMP, chapter 6.6, pp. 304-326.

[62] FRMP, pp. 304-305.

[63] The second FRMP moreover notes that, 'status development not achieved' can indicate an ambitious planning approach. A balance of 'status development not achieved' and 'status development exceeded' indicates an adjustment of priorities to the current framework conditions and shows that the forward-looking planning for the six-year reporting period was reliably designed, but requires regular review and updating during the implementation period.

[64] FRMP, chapter 6.4, pp. 301-302.

[65] The FRMP notes that the biggest differences between the planned status development and the actual status achieved can be seen in the measure types requiring lengthy preparation and implementation, such as technical structures. In the approach chosen in the first FRMP, both the planning process, including obtaining all necessary approvals, and the implementation process, including land acquisition and funding applications, were recorded as one measure type. Better monitoring can be provided by the revised and updated division of measures into 'planning' and 'implementation' in the second FRMP.

The second FRMP[66] provides information on the results of measures under the first FRMP: key figures are presented regarding funding for structural flood protection measures. A table shows for each year from 2014 to 2020: the number of (additionally) protected persons and protected buildings during a 100-year flooding event, new retention areas and new water-body areas (in ha), new retention volumes (in million m3), number of transverse structures made passable, linear measures (in km) and created/preserved green jobs. Similar information is not provided for non-structural measures: the FRMP[67] notes that an assessment of organisational measures, ecologically oriented measures and measures for raising awareness and for disaster prevention can only be carried out through the implementation of the measures themselves.

Regarding measures under the second FRMP, the PoM provides, for all the measures planned in the APSFRs, their status in 2021 and their envisaged status in 2027. The possible status indications are: 0 (not relevant or not planned), 1 (planned), 2 (in development), 3 (in implementation) or implemented (for physical measures). The PoM presents this information per measure type for the 18 individual measure types, for measures at APSFR level, in four sub-sections. These are: section A (measures with status 1 or 2 with status developments until 2027); section B (measures with status 1 or 2 without status developments until 2027); section C (measures with status 3, so no further consideration for the current, second FRMP) and D (measures with status 0 due to missing framework/unfavourable conditions or a lack of need).

Governance

The FRMP sets out the international coordination that took place via the relevant international commissions leading to coordinated international FRMPs.

The second FRMP presents a summary of the approach to public information and consultation. Regarding information, the FRMP mentions that the information for the different implementation steps of the Floods Directive has been published through the dedicated water information system (Wasserinformationssystem Austria). The Ministry's website highlights coordination on measures with Austria's federal states, in particular in policy areas where they have competence, including spatial planning, building regulations, disaster preparedness and nature conservation. The second FRMP indicates that replies to the reactions/comments received, as well as a summary of how these have been considered, have been published online in a report that lists the comments received from stakeholders and the public.

Consideration of climate change

Information on how climate change has been taken into account in the development of the FRMPs can be found in section 3.7.

Progress identified in the second FRMPs

The FRMP is better connected to the previous steps, i.e. the PFRA and the FHRM. The objectives have been revised (e.g. links to civil protection measures were made clearer) and the second FRMP links the objectives to measure types. the restructuring of measure types –separating aggregated measures to be implemented at national/federal state level from individual measures that are implemented as APSFR-level – increases the clarity of the Programme of Measures. The priority of each measure is now indicated. The second FRMP provides more information on the effects of climate change on flooding, including on pluvial floods linked to intense rainfall events. In addition, connections between each measure type and the action plan of the national adaptation strategy are described. Although the report does not describe the specific changes made to the final FRMP, in response to the comments from the public consultation, the measures who were reviewed based on the consultation are listed (157 measures overall).

[66] FRMP, chapter 6.7, p. 327.
[67] FRMP, p. 327.

8. FD recommendations

On the basis of the assessment performed and in addition to the progress already achieved, Austria should:

make its FHRM portal more user friendly by facilitating access to documents that contain background information.

provide details on how the FHRM was used in the choice of objectives and measures in the FRMP.

make the FRMP's objectives more specific and where possible linked to quantitative indicators and be timebound.

include an assessment of the progress made towards the achievement of the objectives in the FRMP.

provide information on the cost of measures in the FRMP

provide information on the methods used to prioritise measures.

where relevant incorporate Cost Benefit Analysis for the prioritisation of measures that lend themselves to it and provide a clear description of the methodology used.

base the likely impact of climate change in the FRMP also on future climate scenarios.

where appropriate, consider flow velocity or relevant water flow in the FHRMand flood conveyance routes in the FRMP, as these are relevant to emergency response.