

DELIVERABLE D.1.1.1

Analysis of EU Water Directive adoption in relation to the
cultural/natural heritage site protection

Version 1
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cultural/natural heritage site protection

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A. Introduction

This deliverable is part of the project activity A1.1, which aims at investigating the policies and strategies taken by Central European authorities to mitigate the impact of climate change. More specifically, the report analyses the adoption of the EU Water Directive at national/regional level among the partner countries involved in the project, outlining the strengths and weaknesses and the existing gaps for the protection of cultural and natural heritage (CNH) assets sensitive to climate change risk.

The methodology employed is based on the active engagement of project partners in data research and collection, including local site managers of selected project case studies. The research focuses particularly on the following points:

1. The current state of the EU Water Directive adoption process in each country.
2. If adopted, strengths and weaknesses of the Directive applied to each local context. Challenges and barriers that prevent adoption.
3. Regardless of the adoption of the Directive, existing gaps for the protection of CNH assets sensitive to climate change risk

The deliverable is structured as follows: section B outlines the current state of EU Water Directive adoption for each partner's country; section C details major challenges and barriers as well as existing gaps preventing its adoption and adequate protection of CNH. Finally, part D summarises the main findings at the research and possible future work useful for the development of appropriate tools in the following phases of the project.

B. Current state of EU Water Directive adoption in partner countries

The Water Framework Directive (WFD)¹ 2000/60/EC is a European Union directive aimed at creating a framework for the protection of all water bodies, including marine waters extending up to one nautical mile from the coast, by the year 2015. It outlines a program and timeline for Member States to develop River Basin Management Plans by 2009. Its goal is to improve the quality of all water bodies, including all surface waters (rivers, lakes, transitional waters, coastal waters, etc.) and the amount of groundwater in all European countries. The WFD pushes for EU members to acknowledge water bodies as ecosystems and sets goals for improving the status of waters with established deadlines. Core of the directive is the systematic improvement of the status of all water bodies with the aim to protect these water bodies in the long term. The goal for all surface waters is to achieve a "good ecological status" and "good chemical conditions". Likewise, for groundwater the goal is to achieve the status of "good condition in terms of quantity" and also "good chemical conditions". These potentials should have been reached by 2015 with exceptional cases by 2027. However, according to a study done in 2022² the results on the status of European surface waters

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

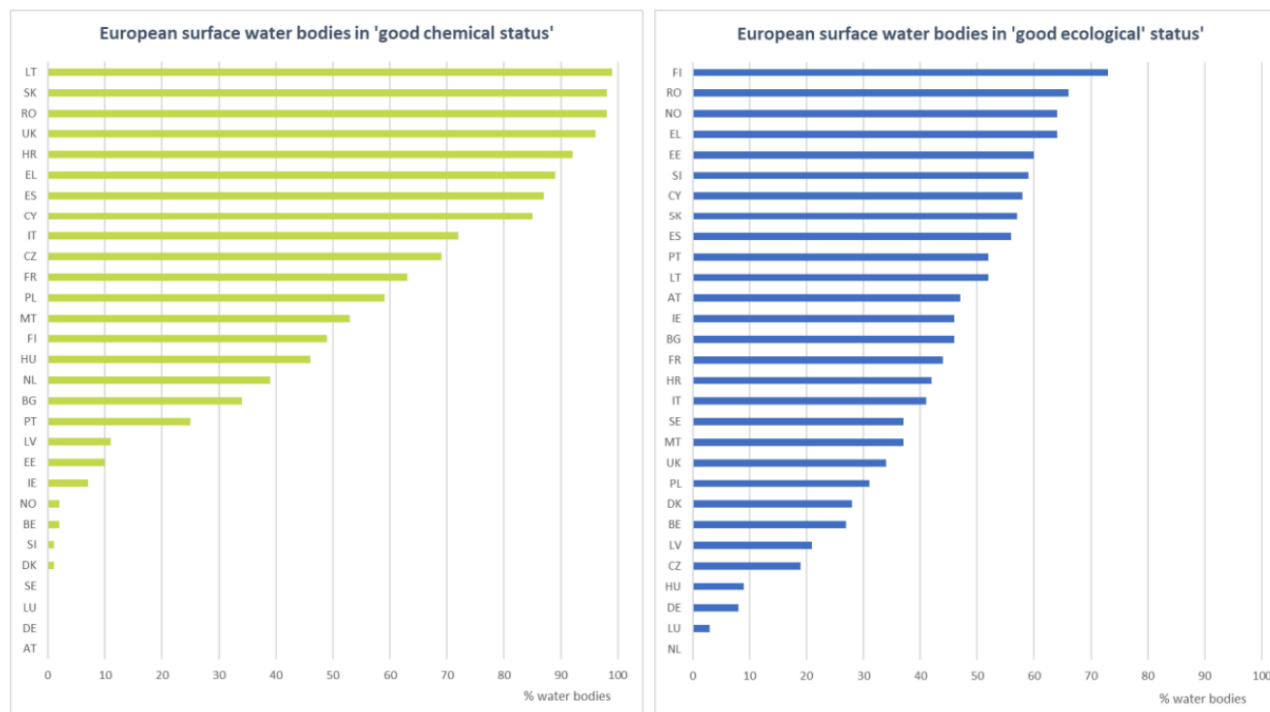
² Oliver Weisner, Jens Arle, Liana Liebmann, Moritz Link, Ralf B. Schäfer, Anke Schneeweiss, Verena C. Schreiner, Philipp Vormeier, Matthias Liess, Three reasons why the Water Framework Directive (WFD) fails to identify pesticide risks, Water Research, Volume 208, 2022, 117848,

submitted by the member states reveal that at least 35 % of surface waters fail to achieve a good chemical status and 51 % show an insufficient ecological status (moderate, poor or bad). The following paragraphs highlight the current situation concerning the WFD adoption in the Central European countries represented in INACO, namely: Italy, Austria, Czech Republic, Hungary, Germany, Poland, Slovakia and Croatia.

Summary of WFD adoption in project partners' countries:

Participants to INACO	WFD transposed to national law	RBMPs
ITALY	yes, 3 April 2006	3rd fully reported
AUSTRIA	yes, 22 December 2003	3rd fully reported
CZECH REPUBLIC	yes, 26 November 2007	3rd fully reported
HUNGARY	yes, Government Decree 221/2004 (VII. 21.)	3rd reported
GERMANY	yes, 31 July 2009	3rd reported
POLAND	yes, 18 July 2001	3rd reported
SLOVAKIA	yes, 2004	3rd reported
CROATIA	yes, 4 May 2023	3rd fully reported

Summary of water status³

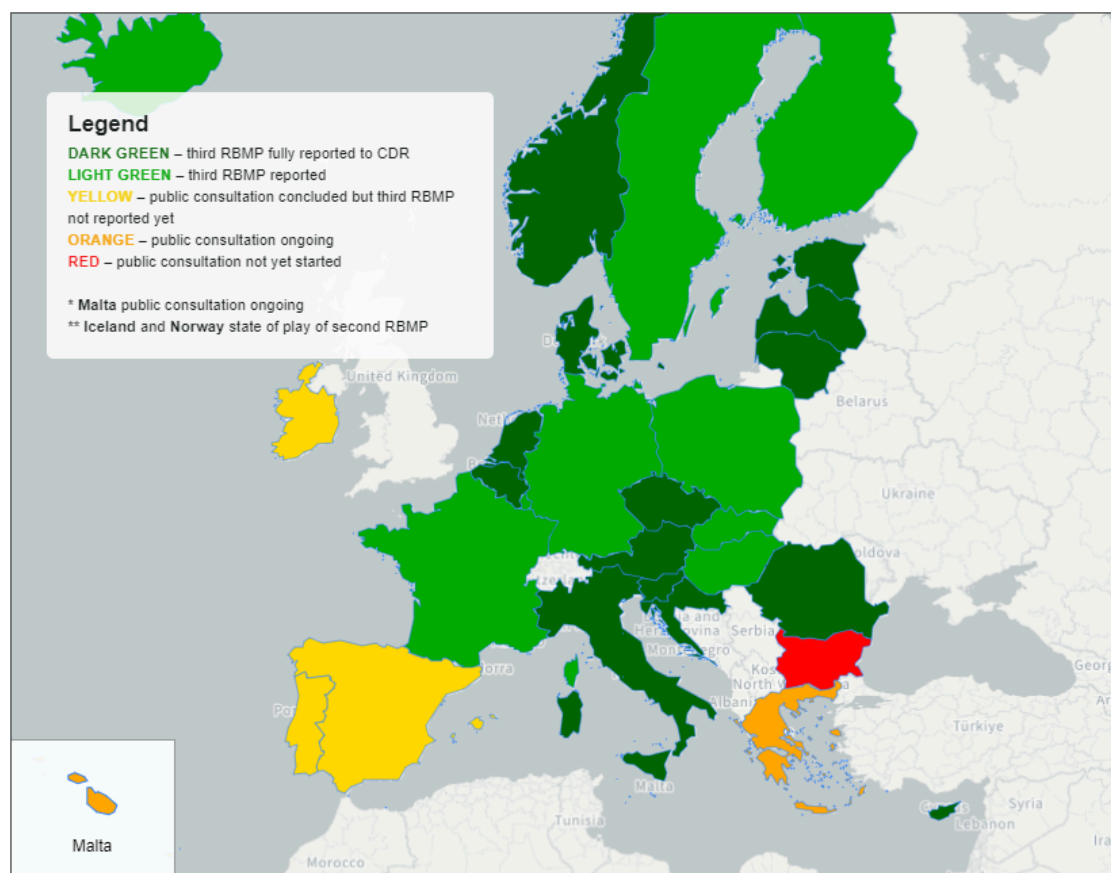


Number of surface water bodies in good ecological status (right) and good chemical status (left)

State of play of 3rd RBMP adoption in EU27⁴ (update: 20 December 2023)

³ Sara Johansson (2023). The Water Framework Directive, the forgotten tool to fix Europe's water crisis: State of play on implementation and enforcement of EU's main water law

⁴ https://environment.ec.europa.eu/topics/water/water-framework-directive_en#law



C. Italy

Italy adapted to the European legislation on water protection through the enactment of Legislative Decree No. 152, 3 April 2006, '*Norme in materia di difesa del suolo e lotta alla desertificazione, di tutela delle acque dall'inquinamento e di gestione delle risorse idriche*'. This was followed by three implementing ministerial decrees prepared pursuant to Article 75, paragraph 3, of the same Legislative Decree 152/2006:

- 'Typification Decrees DM 131/200,, containing "technical criteria for the characterization of water bodies (typification, identification of water bodies, pressure analysis)";
- 'Monitoring Decrees DM 56/2009, containing "the technical criteria for monitoring water bodies and identification of reference conditions";
- 'Classification Decrees Ministerial Decree 260/2010, containing "technical criteria for the classification of the status of surface water bodies".

In addition, Italy is divided into six water basin districts, each with its own management plan, strategic instrument for water protection and conservation:

- Eastern Alps River Basin District⁵,
- Po River Basin District⁶,

⁵ http://www.alpiorientali.it/documenti_piani_gestione_2021_2027.html

⁶ <https://pianoacque.adbpo.it/piano-di-gestione-2021/>

- Northern Apennines River Basin District⁷,
- Central Apennines River Basin District⁸,
- Southern Apennines River Basin District⁹,
- Sardinia's River Basin District¹⁰,
- Sicily's River Basin District¹¹.

The Emilia-Romagna Region, furthermore, has adopted a Water Protection Plan (PTA) that is the main instrument for governing and managing water resources on a regional scale, under the dual profile of qualitative and quantitative protection of the resource¹². The objectives of the PTA, in compliance with the provisions of Legislative Decree 152/06 'Environmental Regulations, are to implement the remediation of polluted water bodies to achieve the improvement of the state of water and to identify adequate protection of water intended for particular uses encourage the reduction of consumption in all water-demanding sectors; pursuing sustainable, efficient and sustainable uses of water resources, with priority given to drinking water resources; ensuring the right balance between resource use and protection of aquatic ecosystems in a context of severe water scarcity; maintain the natural self-purification capacity of water bodies, as well as their ability to support large and well-diversified animal and plant communities. In the Italian pilot site selected for the INACO project (Parco delta del Po, see D.1.2.2), there are two drainage consortia in charge to manage streams, channels and water bodies with their infrastructures and plans following the Legislative Decree 152/06 and regional laws.

D. Austria

The WFD was transposed into national law in Austria with the Water Law Amendment Act 2003, Federal Law Gazette I No. 112/2003, which came into force on 22 December 2003. Furthermore, there are other municipal, state, and national regulations and laws that cover aspects of the WFD and other relevant directives. The Water Law Act 1959¹³ is the legal basis for all water management aspects and establishes the Federal Minister for Agriculture, Regions and Tourism (BMLRT) as the competent authority for the preparation and implementation of the river basin plans and for coordination within the international river basin districts. The WFD is implemented on the basis of a National Water Management Plan¹⁴ (NWMP), which is revised every six years and is legally set out in the National Water Management Plan Ordinance. The last NWMP (and ordinance) was published in 2021 and is in effect until 2027. The NWMP is prepared according to

⁷ https://www.appenninosettentrionale.it/itc/?page_id=2904

⁸ <https://www.autoritadistrettoac.it/pianificazione/pianificazione-distrettuale/pgdac/pgdac3-secondo-aggiornamento-adottato-dalla-cip-del-20122021>

⁹ <https://www.distrettoappenninomeridionale.it/index.php/piano-iii-fase-2021-2027-menu/piano-di-gestione-acque-iii-ciclo-2021-2027-menu>

¹⁰ <http://www.regione.sardegna.it/index.php?xsl=509&s=1&v=9&c=93824&tb=6695&st=7>

¹¹ <https://www.regione.sicilia.it/istituzioni/regione/strutture-regionali/presidenza-regione/autorita-bacino-distretto-idrografico-sicilia/piano-gestione-distretto-idrografico-sicilia-3deg-ciclo-pianificazione-2021-2027-a-dottato>

¹² <https://ambiente.regione.emilia-romagna.it/it/acque/pianificazione/piano-di-tutela-delle-acque>
<https://ambiente.regione.emilia-romagna.it/it/acque/norme-documenti/documenti/piano-di-tutela-delle-acque-2005/water-protection-plan-strategic-contents-of-policies>

¹³ Wasserrechtsgesetz 1959 |

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10010290&FassungVom=2017-04-25>

¹⁴ Nationaler Gewässerbewirtschaftungsplan |

https://info.bml.gv.at/themen/wasser/wasser-oesterreich/wasserrecht_national/wasserrechtliche_kundmachungen/ngp-2021.html

a process defined in the Water Law Act in close cooperation with the provincial governors, who are responsible for regional water management, and in cooperation with other bodies involved, in particular the Ministry of Social Affairs¹⁵ and the Ministry of Climate Action¹⁶, as well as the nature conservation authorities of the provinces.

Detailed information, data, and documents on the WFD and the NWMP can be found on the websites of the Ministry (BMLRT¹⁷) and the Federal Environmental Agency¹⁸. The central source of information is the Water Information System Austria (WISA) on the BMLRT website. All relevant documents and information on the NWMP can be found there. It contains the documents of the current NWMP 2021, as well as the NWMP 2015 and 2009.

Austria has only transnational river basin districts - the Danube, Rhine, and Elbe. The Danube river basin district is by far the largest with 80,593 km², which is more than 96 % of the area of Austria. The Rhine and Elbe districts are much smaller, with 2,366 km² (about 3 % of Austria's area), and 920 km² (1 %), respectively. The international river basin management plans are updated every 6 years by the international river commissions ICPDR¹⁹, ICPR²⁰, and ICPER²¹, respectively. The last update of the management plans was in 2021, which is now effective from 2022 to 2027. The case study site at Lake Neusiedl is protected and managed by various conservation categories. Many of these make direct reference to the Water Framework Directive (WFD) in their management plans, e.g., the World Heritage site strategy or the Austrian Ramsar wetland strategy. The national monitoring, which is primarily based on the requirements of the WFD, also covers Lake Neusiedl, which, however, also has some additional biotic and abiotic monitoring programmes.

E. Czech Republic

On November 26, 2007, Directive 2007/60/EC of the European Parliament and Council on flood risk assessment and management—known as the "Floods Directive"—took effect. This directive complements the Water Framework Directive (2000/60/EC), and the implementation and planning cycles of the two directives are intended to be consistent. Created in response to the severe floods in Central Europe in 2002, the Floods Directive was incorporated into Czech law in 2009 via the Water Act.

As of 2022, the Ministry of the Environment, in collaboration with the Ministry of Agriculture, had already completed two updates to the River Basin Management Plans.

The first planning period began in 2010, during which specific measures were proposed, and changes in water quality were assessed relative to defined water bodies as the fundamental planning unit.

The second planning cycle update was conducted between 2011 and 2015. During this phase, the goals and associated Programmes of Measures were reviewed and revised. With a new surface

¹⁵Bundesministerium für Soziales, Gesundheit, Pflege und Konsumentenschutz

¹⁶Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie

¹⁷Bundesministerium für Land- und Forstwirtschaft, Regionen und Wasserwirtschaft | <https://www.bml.gv.at/>

¹⁸Umweltbundesamt | <https://www.umweltbundesamt.at/>

¹⁹<https://www.icpdr.org/>

²⁰<https://www.iksr.org/de/>

²¹<https://www.ikse-mkol.org/>

water classification system, surface water bodies were extensively redefined, including adjustments to the values—and in some cases, indicators—of ecological status/potential based on general physico-chemical elements. Monitoring data quality and scope were significantly expanded, with an increase in monitored profiles, water bodies, and biological elements. Consequently, enhanced data collection in the second planning period allowed for more comprehensive evaluations of water bodies, including those previously assessed using alternative methods or expert estimates.

In January 2022, the Government of the Czech Republic approved the second update to the River Basin Management Plans for the third planning cycle, covering 2022-2027.

National river basin plans aim at: 1) the protection and improvement of the condition of surface and underground waters and aquatic ecosystems; 2) reduction of the adverse effects of floods and droughts; 3) the management of surface and underground waters and the sustainable use of these waters to ensure water management services and for improving water conditions and for protecting the ecological stability of the landscape.

National river basin plans also contain summaries of programs of measures to achieve the stated goals and establish a strategy for their financing. The basic content of the national basin plan is determined by Decree No. 24/2011 Coll., on basin plans and flood risk management plans, as amended.

The Czech Republic is situated within three transnational river basins, which means that the implementation of the Flood Directive is also tackled through international commissions focused on the protection of the Elbe, Danube, and Oder rivers. Hence, National basin plans are supplemented by ten sub-basin plans:

- The national plan of the Elbe basin is supplemented by 5 sub-basin plans, namely for the Upper and Middle Elbe sub-basins, the Upper Vltava sub-basin, the Berounka sub-basin, the Lower Vltava sub-basin and the Ohře, Lower Elbe and other tributaries of the Elbe.
- The National Plan of the Danube Basin is supplemented by 3 sub-basin plans, namely for the sub-basin of the Morava and Váh tributaries, the Dyje sub-basin and the sub-basin of other Danube tributaries.
- The national plan of the Odra basin is supplemented by 2 sub-basin plans, namely for the sub-basin of the Upper Odra, the sub-basin of the Lužická Nisa and other tributaries of the Odra.

Regional basin managers have prepared "regional summaries," which provide essential details on sub-basin plans and measures for the relevant administrative regions. These summaries compile information from individual sub-basin plans that apply to each region. The Vltava River Basin, included in the INACO project as the Czech case study (see D.1.2.2), is governed by the Vltava River Basin state enterprise, that oversees the preparation of regional summaries for the Capital City of Prague, the South Bohemian Region, the Pilsen Region, and the Central Bohemian Region. Regional summaries for the Karlovy Vary Region and the Ústí Region are available on the Povodí Ohře state enterprise website, while the summary for the Vysočina Region is accessible on the Povodí Morava state enterprise website.

All relevant information about the implementation of the WFD and the National Flood Risk Management Plan on the Flood Information System²².

F. Hungary

The first River Basin Management Plan of Hungary (VGT1²³) was prepared in April 2010, and it was published by the Government in the Government Decision 1042/2012 (23.II.), which contains the programme of measures for the period 2010-2015. According to Article 13 of the WFD, the Member States of the European Union had to revise their river basin management plans for the first time by 2015, and therefore the first updated and revised version of the VGT1, i.e. the VGT2²⁴, was prepared between 2013 and 2015 (approved by the Government Decision 1155/2016 (31.III.2016)). As a result of the revision of the second version of the VGT, the VGT3²⁵ was prepared for the period 2022-2027 by 22 December 2021 (approved by the Government Decision 1242/2022 (28.IV.2022)).

The VGT is closely linked to spatial and urban development plans and other sectoral plans: in order to achieve the objectives targeting the improvement of water status, it proposes measures, which are related to settlements, agriculture, fisheries, land use, industrial and mining activities, tourism and shipping.

In Hungary, the Minister responsible for water management is in charge of managing the implementation of the Water Framework Directive and preparing the river basin management plan. Within the Danube River Basin, Hungary shares three international sub-river-basins (the Danube sub-river-basin, the Tisza sub-river-basin and the Dráva sub-river-basin) with neighbouring countries. The areas of these sub-river-basins form the so-called sub-basin planning areas. In addition, the Lake Balaton sub-river-basin is a significant sub-river-basin of the Danube sub-river-basin, making it the fourth sub-river-basin in regional planning.

In order to meet the international and national requirements and to ensure effective public consultation, planning is carried out at several levels in Hungary:

- at national level: the National River Basin Management Plan
- at river basin level: 4 sub-river-basin plans
 - Danube sub-river basin
 - Tisza sub-river basin
 - Drava sub-river basin
 - Lake Balaton sub-river basin
- planning at sub-unit level (42 sub-unit plans in total)
- at the level of water bodies (889 watercourse sections, 189 standing water bodies and 185 groundwater bodies delimited according to the WFD provisions).

The planning tasks are carried out as follows:

²² <https://www.povis.cz/html/index.html?pzpr2.htm>

²³ <https://vizeink.hu/korabbi-vizgyujto-gazdalkodasi-tervek/vizgyujto-gazdalkodasi-terv/>

²⁴ <https://vizeink.hu/korabbi-vizgyujto-gazdalkodasi-tervek/vizgyujto-gazdalkodasi-terv-2015/>

²⁵ <https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-reszvizgyujto-tervek/>

- The Ministry is responsible for strategic management, coordination and finalisation of the plan, its adoption by the Government, liaison with the institutions of the European Union, contribution to the preparation of the international plan for the Danube river basin and preparation of implementation reports.
- The General Directorate for Water Management is responsible for the preparation of the national plan and the national coordination of planning.
- The preparation of the sub-river-basin plans and the coordination of planning within the sub-river-basin is the responsibility of the competent water management directorates
 - o Danube sub-river basin: North Transdanubian Water Management Directorate,
 - o Tisza sub-river-basin: Central Tisza Water Management Directorate,
 - o Dráva sub-river-basin: South Transdanubian Water Management Directorate,
 - o Lake Balaton sub-river-basin: Central Transdanubian Water Management Directorate.
- The preparation of the sub-unit plans and the involvement of stakeholders at local level belong to the responsibility of the 12 territorially competent water management directorates.

Information on the adopted river basin management plan of Hungary is available at: <https://vizeink.hu/>;

The Danube Flood Risk Management Plan in English can be found at: <https://www.icpdr.org/tasks-topics/tasks/river-basin-management/2021-updates-danube-river-basin-flood-risk-management>

Sub-basin management plans have been prepared for Lake Balaton, the Hungarian case study involved in INACO (see D.1.2.2). The Balaton sub-basin river basin management plan (in line with the national plan) contains all the necessary information, which are available on water bodies and protected areas, the pressures and impacts on water bodies, the results of status assessments, environmental objectives or exemptions for water bodies, and the justification for these. It also includes how VGT is related to the programmes of other sectors. Moreover, it also includes the technical and regulatory measures, financial support and incentives, which are required to achieve good status/potential.

G. Germany

In Germany, the WFD is included in the Federal Water Act (“Wasserhaushaltsgesetz”) (WHG) from 1957, that came into force in June 2002 and was last amended by Article 1 of the Act of June 19th, 2020 (Federal Law Gazette I page 1408). It is also included in the new Ordinance on the Protection of Surface Waters (“Oberflächengewässer”) (OGewV) which continues the provisions of the OGewV from 2011 and the Groundwater Ordinance (“Grundwasserverordnung”) (GrwV) from 2010 (Federal Law Gazette I page 1513), last amended by Article 1 of the Ordinance of May 4th, 2017 (Federal Law Gazette I page 1044). The directive 2006/118/EC of the European Parliament and of the Council in December, 2006 on the protection of groundwater against pollution and deterioration (GWRL) is currently in force. It came into force in January 2007 and is a daughter directive of the WFD. In order to implement the objectives of the WFD, detailed information on the status of our water bodies are collected and correlated with the various types of pollution. Measures to improve the condition of water bodies are developed on the basis of

this knowledge and documented in management plans and measure programs. These plans and programs form the basis for action for water conservation in Germany and the European Union. The WFD has made it possible to perform water conservation from its source to its mouth in the water area. In Germany, 10 river basin districts have been designed for this purpose. These are the following large watersheds of Germany:

- Danube:
 - improving the watercourse structure, the river continuity, the water budget, wastewater treatment
 - reducing the input of nutrients from agriculture
 - https://www.fgg-donau.bayern.de/wrrl/bewirtschaftungsplaene/doc/bewirtschaftungsplan_fggdonau.pdf
- Eider:
 - measures to reduce nutrient losses during fertilisation and soil cultivation, including the extensification of agricultural use
 - rewetting of wetlands and create riverbank strips
 - increasing the retention effect of watercourses through measures to improve hydromorphological conditions
 - advanced nutrient elimination during wastewater treatment
 - improving wastewater treatment in rural areas
 - https://www.schleswig-holstein.de/DE/fachinhalte/W/wasserrahmenrichtlinie/Downloads/Bewirtschaftungszeitraum1/13_BWP_Eider/PDF/Massnahmenprogramm/MNP_Eider.pdf?__blob=publicationFile&v=1
- Elbe:
 - improving the water structure of surface waters, the continuity of watercourses, the water balance (only where relevant), wastewater treatment,
 - reducing of nutrient inputs from agriculture into water bodies, of polluted sites (only where relevant), the impact of mining on water bodies (only where relevant)
- Ems:
 - Improving nutrient and pollutant inputs from point sources and diffuse sources into surface waters and groundwater, the hydromorphological deficits in surface waters, the lack of river continuity
 - consideration the consequences of climate change
 - https://www.ems-eems.de/fileadmin/co_theme/Default/Media/pdfs/2022_03_22_int_BWP_Ems_DE.pdf
- Maas:
 - improving the waste water disposal, the river continuity, the water budget, water body structure,
 - reducing the input of nutrients from agriculture, the input of substances from mining,
 - restoration measures at contaminated sites
 - https://www.flussgebiete.nrw.de/system/files/atoms/files/bewirtschaftungsplan_nrw_2022-2027.pdf
- Oder:
 - improving the water structure of surface waters, the continuity of watercourses, the water balance, wastewater treatment,

- reducing of nutrient inputs from agriculture into water bodies, of polluted sites, the impact of mining on water bodies
- <https://mluk.brandenburg.de/w/kfge-oder/BWP-2021-27-deutscher-Teil/ODER-Bewirtschaftungsplan-2021-2027.pdf>
- Rhine:
 - Improving the watercourse structure, the river continuity, the water budget, wastewater treatment and reducing the input of nutrients from agriculture
 - https://www.lfu.bayern.de/wasser/wrrl/doc/1_bwp3_rhein_text.pdf
- Schlei/Trave:
 - improving the water body structure and river continuity
 - reducing the input of significant nutrient and pollutant loads
 - consideration the consequences of climate change
 - https://www.wasserblick.net/servlet/is/214514/BP_SchleiTrave_3BWZ.pdf?command=downloadContent&filename=BP_SchleiTrave_3BWZ.pdf
- Warnow/Peene:
 - improving the water body structure and ecological migration
 - reducing the input of significant nutrient and pollutant loads
 - consideration the consequences of climate change
 - [https://www.wrrl-mv.de/static/WRRL/Dateien/Dokumente/WRRL/BMU/bwz3/War nowPeene/WP_BZR3_BP_Text red Änderungen 2023.pdf](https://www.wrrl-mv.de/static/WRRL/Dateien/Dokumente/WRRL/BMU/bwz3/War nowPeene/WP_BZR3_BP_Text_red_Anderungen_2023.pdf)
- Weser:
 - improving the water body structure and river continuity
 - reducing the input of anthropogenic nutrient and pollutant inputs, the salt pollution in the Werra and Weser
 - consideration the consequences of climate change

The national planning areas in which the WFD is implemented from these units. The WFD is constantly on an ongoing basis. The management plans and programs of measures required for this are regularly updated. Every six years the implementation steps are carried out. Each cycle corresponds to a separate management period. In Germany the federal states are primarily responsible for implementing the WFD. But the federal government is also responsible for implementing the WFD for the federal waterways. The first management period was from 2009-2015 and the second one from 2015-2021. At the moment, the third management period is rolling, which will last until 2027.

For the case study, the flooding meadow project at the river basins of Regnitz and Wiesent, in cooperation with the water management authority Kornach, it is ensured that the WFD is fulfilled. This applies to possible restoration measures and also to the revitalisation of old rights, such as the reactivation of the old water rights of the water cooperatives

H. Poland

In Poland, the WFD was implemented into national law primarily through the Water Law Act of 18 July 2001. This act laid the groundwork for integrating WFD requirements into Poland's legal framework, addressing water management on a river basin scale, water quality standards, and the goal of achieving "good status" for all waters.

However, full alignment with the WFD's goals required additional amendments over time. Poland continued to update its water legislation to address specific requirements from the WFD, with significant revisions in:

- 2005 and 2006, to improve water management practices and monitoring,
- 2011, to enhance environmental protection standards,
- 2017, with the new Water Law Act, which further adjusted the legal framework to comply more fully with WFD obligations.

Flood risk management plans (FRMPs) are revised every six years, with Poland currently in the third cycle (2022-2027). These plans integrate flood hazard mapping, flood risk mapping and coordinated management plans, aiming to mitigate the risks to human health, property and the environment.

In Poland, flood hazard maps (FHM) and flood risk maps (FRM) were developed on the basis of the provisions of the Floods Directive, the provisions of which were implemented into Polish legislation by the Water Law Act. As mentioned above, this process is cyclical, taking place every 6 years. In Poland, the 2nd cycle of planning finished (2016-2021), and right now the 3rd cycle (2022-2027) is currently underway. Their image results in flood risk management plans and actions to improve the country's level of flood protection.

Flood hazard maps (FHM) and flood risk maps (FRM) can be consulted online²⁶

Poland has ten River Basin Districts, designated under the Water Framework Directive (WFD): Danube, Vistula, Swieza, Jarft, Elbe, Oder, Ucker, Pregolya, Nemunas and Dniester. Areas of potentially significant flood risk (APSFs) have been identified in only three districts, and Poland has developed three FRMs for, namely: Vistula (Wista, PL2000), Oder (Odra, PL6000) and Pregolya (Pregola, PL7000).

The Polish pilot site investigated in this project, Jelenia Góra, falls within the Odra River basin district. The body responsible for flooding risks in this region is the Regional Water Board in Wrocław. The risk management plan for the Odra basin can be found online (in Polish)²⁷.

I. Slovakia

The EU Water Framework Directive (2000/60/EC) has been transposed into Slovak law through Act No. 364/2004 Coll. on Water. This directive provides the legal framework for the sustainable management and protection of all water resources with the goal of achieving good ecological status for waters. It emphasises an integrated river basin management approach to water protection and pollution prevention. In addition, Slovakia has implemented the EU Floods Directive (2007/60/EC) through Act No. 7/2010 Coll. on Flood Protection, which aims at reducing flood risks and mitigating their impacts on human health, the environment, infrastructure, and cultural heritage.

The key focus of the directive's implementation in Slovakia is the development of River Basin Management Plans (RBMPs) and Flood Risk Management Plans (FRMPs), which are updated every

²⁶ https://wodv.isok.gov.pl/imap_kzegw/?gpmmap=gpmZP

²⁷ https://www.powodz.gov.pl/biblioteka/PZRP/Rozporzadzenie_RM_18-10-2016_w_sprawie_przyjecia_PZRP_dla_OD_Odry.pdf

six years. The RBMPs were first adopted in 2009 and updated in 2015 and 2021. Similarly, flood risk maps and management plans were created in 2015 and updated in 2021, although there were delays caused by administrative and technical barriers.

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J. Croatia

In the Republic of Croatia, the Water Act has been in force since 4 May 2023, transposing, among 12 European Union directives, also the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (WFD). In particular, Article 10 of the Water Act envisages the drafting of the Regulation on Water Quality Standard (Official Gazette, No. 96/19, hereinafter: the Regulation), which refers to surface waters, including transitional waters, coastal waters and waters of the territorial sea, as well as groundwater.

The Water Act regulates the legal status of waters, water resources and water structures, water quality, and quantity management, protection against the harmful effects of water, detailed ameliorative drainage and irrigation, special activities for the purposes of water management, the institutional structure of performing these activities and other issues related to water and water resources.

Croatian Territory is divided into two major water basin districts—the Adriatic Sea and the Black Sea—with the subdivision into the Adriatic Sea Basin District, the Sava River Basin District, and the Drava Dunav River Basin District.

The Water Area Management plan was adopted in June 2023 for the 2022-2027 period, following two earlier plans for 2013-2015 and 2016-2021.

The Water Area Management Plan 2022 - 2027 consists of two components of water area management with the necessary supporting documents and data:

- Management of the state of water, substantively harmonized with the provisions of Article 39 of the Water Act and Article 13 and Appendix VII. Directive 2000/60/EC of the European Parliament and the Council of October 23, 2000, on the establishment of a framework for Community action in the field of water policy
- Flood Risk Management Plan, substantively harmonized with the provisions of Article 127 of the Water Act, and the provisions of Article 7 and the Appendix of Directive 2007/60/EC of the European Parliament and the Council of October 23, 2007, on the assessment and management of flood risks

<https://voda.hr/sites/default/files/2023-07/PLAN%20UPRAVLJANJA%20VODNIM%20PODRUCJIMA%20DO%202027..pdf>

It has been reported to the central EIONET database of the European Environment Agency in accordance with the requirements of the Water Framework Directive and the Flood Risk Assessment and Management Directive.

Planning documents of the International Commission for the Protection of the Danube River and the International Commission for the Sava River Basin

Danube River Basin Management Plan (DRBMP) Update 2021
https://www.icpdr.org/sites/default/files/nodes/documents/dr bmp_update_2021_final_lores.pdf

Danube Flood Risk Management Plan (DFRMP) Update 2021

https://www.icpdr.org/sites/default/files/nodes/documents/df rmp_update_2021_hires_0.pdf

Framework Agreement on the Sava River Basin

<https://www.savacommission.org/en/basic-documents/231>

In Croatia, *Hrvatske vode* is a legal entity for water management established by the Water Act. It is organized according to the functional and territorial principles. The Water Management Department for the basins of the southern Adriatic is in charge in the Croatian pilot site selected for the INACO project (River Ombla).

K. Strengths and weaknesses of the Directive in local context

This section summarises the findings reported for the 8 countries participating in the project. It includes the advantages and limitations found at national/regional level (e.g. strength/weaknesses) for the WFD as well as the challenges and barriers that prevent the Directive's partial or full integration into local legislation. It also outlines the shortcomings of the WFD in addressing CNH protection.

L. Challenges and barriers that prevent adoption

The WFD intends to achieve important goals in terms of water quality throughout Europe, introducing significant principles and requirements in risk management of water bodies. The advantages of its adoption and the benefits stemming from its implementation are multiple.

Among other aspects, these are the ones that emerge from the research as the most characterising the positive impact of the WFD's adoption:

- **Comprehensive water resource protection:** The implementation of the Water Framework Directive ensures systematic protection of river basins and water quality. The legal framework enables effective water management to minimise pollution and maintain good ecological water status. Sub-basin management plans, prepared for Lake Balaton in Hungary, for example, contain all the necessary information, which are available on water bodies and protected areas, the pressures and impacts on water bodies, the results of status assessments, environmental objectives or exemptions for water bodies, and the justification for these. It also includes how VGTs related to the programmes of other sectors. Moreover, it also includes the technical and regulatory measures, financial support, and incentives, which are required to achieve good status/potential.
- **Integrated river basin management:** the directive promotes an integrated approach to basin management, coordinating sectors such as agriculture, urban development, and

nature conservation. This supports the long-term protection of cultural and natural heritage located in flood-prone areas. In Poland, the availability of risk management tools for the Odra Basin (e.g., flood risk maps) allowed local authorities to better understand and mitigate the specific flood risks in Jelenia Gora valley, where river flooding is common. Stormwater drainage facilities, stormwater retention facilities and areas with associated planting can also form part of the urban landscape (e.g., tree planting on the sides of canals, filtering green fields, green roofs and green facades, inland stormwater storage). The presentation of good practice in urban stormwater management also rightly emphasises the importance of linking urban stormwater management and green space design, which together can contribute to the development of liveable settlements.

- **Improved flood protection:** The Floods Directive provides tools for predicting and mitigating flood risks, enhancing the protection of vulnerable areas, including cultural and natural heritage sites. Several projects have been implemented to help flood mitigation in southern Poland and Jelenia Gora Valley: e.g. the early warning system for the population, raised embankments, and retention reservoir in Raciborz. A lot has been done after the catastrophic flooding in southern Poland in 1997. An important project has been implemented for southern Poland related to flood protection in the Odra river basin, primarily financed by the World Bank, the Council of Europe Development Bank, and the European Union. In June 2025 the last project from this programme will be finished, and there are steps to accept the next project related to a new retention reservoir in Kamieniec Zabkowicki.

Despite its ambition, a number of challenges have been observed that may prevent developing the full potential of the Directive at national level.

- Firstly, the **adaptation process is context specific** and it has been shown to be quite heterogeneous among different member states, depending on the local socio-economic and political conditions and on the compatibility of regulatory systems. Examples of challenges include:
 - **Insufficient public engagement:** the lack of public engagement and acknowledgement for the implementation of the measures is an important issue. In Slovakia, for example, the process of public consultation and informing the public about planned measures is reported to be not sufficiently effective, which can slow the implementation of flood and water management projects.
 - Also **legal obstacles** affect the adaptation process at national/regional level. Slovakia, for example, has faced delays in updating flood risk maps and FRMPs, which were due in 2021. Issues with public procurement and strategic environmental assessments slowed the process, weakening the effectiveness of preventive measures, especially in the context of climate change.
- Secondly, at times the **progress of the implementation** phases has been quite **limited**, reducing the beneficial effects on the water quality. This is related to a widespread and chronic lack of financial and human resources invested to implement the WFD's goals.

The inefficiency of the River Basin Authority can also lead to a delay in time and project delay. Main challenges involve the following:

- **Financial constraints:** full implementation of water management and flood protection measures is costly. A lack of adequate funding often hampers project execution, especially in flood-prone areas that require special protection for cultural heritage sites.
 - **Challenges in data collection:** According to interviews with experts from the organisation managing river basin planning in the Košice region, there have been difficulties in collecting data on ongoing floods. This issue is particularly significant in smaller municipalities, which often lack the institutional capacity and resources needed for effective data collection and response during flood events.
- In addition **structural and operational problems** act as a barrier to a successful implementation of the Directive. Challenges include:
- **Insufficient or inadequate protection system:** for example, in Germany the continuity of the watercourse is often interrupted by transverse structures. Following the severe flooding occurring in September 2024 in Poland, experts indicate that there is a need for an additional 2-3 retention reservoirs in Oder catchment area. Recently, there have been some protests against further expansion of the reservoir system, but every flood shifts public attitudes towards such investments. Unfortunately, simultaneously, the state budget is limited.
 - **Limited effectiveness of measures** due to human activity: the high input of nutrients into the lakes, transition waters and coastal waters, mostly discharged by the agricultural and wastewater treatment sectors ²⁸, undermine the effect of risk mitigation measures. Furthermore, the use of pesticides in agriculture must be significantly reduced. This also includes the use of nutrients which are sustainable resources, such as nitrogen ²⁹.
 - **Lack of available space** for implementing measures. Often, as in the case of Balaton in Hungary, there is not enough space, e.g. for the construction of a meandering track of a small watercourse, at least it should be intended to use natural solutions and materials (e.g. the use of engineering biological methods for bank stabilisation). The implementation of this measure could improve the connection between the settlement and water surfaces. Moreover, local recreational opportunities could also be increased besides the ecological aspects.
 - **Lack of inclusion of built environment:** the built environment can also contribute to pressures on water quality, e.g.: stormwater runoff from paved surfaces (diffuse pressures) or the discharge of treated wastewater from urban settlements into receiving waters (point source pressures), and inadequate wastewater treatment in urban areas, where there is not public utility service, can contribute to groundwater pressures (diffuse pressures).

²⁸ BMUV (2011): Die Europäische Wasserrahmenrichtlinie und ihre Umsetzung in Deutschland.

²⁹ BMUB/ UBA (2016): Die Wasserrahmenrichtlinie - Deutschlands Gewässer 2015.

Finally, the specified **time frame** for implementing the WFD, has also a role. Twenty years is not considered a long enough period for water bodies to recover from years of damage recovery from many years. It would be necessary to continue to monitor the achieved improvements up to this point even after the final year.

M. Existing gaps for the protection of CNH assets sensitive to climate change risk

The WFD, which aims to protect and improve the quality of water resources across Europe, does not explicitly include cultural and natural heritage as primary objectives. As seen in the previous sections, the directive focuses primarily on ecological and chemical water quality, aiming for a "good status" of all water bodies. While the protection of biodiversity and ecosystems is a key component of the WFD, cultural and natural heritage are not directly addressed. However, these aspects can be indirectly considered in the context of water management, as certain water bodies may have cultural or historical significance, and the WFD encourages integrated and sustainable management that could support the preservation of such heritage.

Indeed, the relationship between water and landscape is unquestionable: water bodies are part of the landscape, water balance is a landscape shaping factor; landscape uses depend on the quantity and quality of surface and groundwater; recreational activities are often linked to water bodies; water surface in the landscape is often a landscape character shaping factor; the visual appearance of water is usually a positive element in the landscape. Surface watercourses and standing waters do not only play an important and complex role in natural systems, but they also have a significant impact on landscape structure and landscape use potential, making them of outstanding importance from a landscape history and cultural history perspective. Most of the pilot cases investigated in INACO are a unique combination of natural features (surface water) and cultural traditions and built heritage from a tourism perspective, both nationally and globally.

Despite the adoption of the EU Water and Floods Directives, and its indirect inclusion of CNH protection, notable gaps emerge. Although flood management plans include risk reduction measures, there is not always enough integration of CNH protection into water management and flood prevention strategies. More specifically, the following gaps can be highlighted:

- **Lack of specific measures:** the protection of heritage sites and sensitive natural areas is not always prioritised in flood protection planning. In many cases, specific measures to safeguard historical buildings, parks, or natural reserves in flood-prone areas are missing. Current water management legislation is more focused on the management of water for food, agricultural, industrial, and natural purposes by regulating the flow rates of water covers and bringing their parameters within the chemical and biological limits imposed by current laws. Also, there are some issues due to the bureaucracy and different level management that often slow down the processes on water management.
- **Insufficient funding for CNH protection projects:** many projects aimed at protecting cultural and natural heritage from floods or droughts suffer from a lack of financial resources, slowing the implementation of necessary protective measures. There is no

regular monitoring for the CNHs to observe the sensitivity to climate change risks, due to insufficient financial resources and limited staff.

- **Low preparedness for climate change:** the existing FRMPs do not yet fully account for the long-term impacts of climate change, such as more frequent extreme weather events, on CNH protection. Improving monitoring and predictive systems could reduce the risk of damage to heritage assets from floods. In addition, the public is not yet sufficiently aware of this issue. In particular, the weak points of the administration are a lack of regional planning, cooperation between the municipalities and administrations and the lack of funds for the water management. Furthermore, there are conflicts between agriculture and the flood meadow project and conflicts between tourism and the flood meadow project in our local context.

To ensure better protection of cultural and natural heritage, it is crucial to improve the integration of CNH protection into flood management plans, enhance institutional capacities at the local level, especially in smaller municipalities, and secure sufficient funding for preventive measures.

N. Final remarks and conclusions

The investigation carried out during this activity of the INACO project provides valuable clues concerning the WFD adoption among project partners' countries and the challenges still faced.

The fitness check carried out in a recent study³⁰ concluded that the reason that the WFD objectives have not yet been fully reached is not due to a deficiency in the legislation, but "largely due to insufficient funding, insufficient implementation [...] and insufficient integration of environmental objectives in sectoral policies"³¹.

From a legal perspective, lack of money is in most cases not an accepted excuse not to comply with legal obligations. Although the WFD framework allows exemptions based on 'disproportionate cost', corresponding guidance from the Commission states that "[W]hen affordability arguments are used to extend the deadline, the possibility to use relevant alternative financing mechanisms should be fully considered."³² Yet, lack of finances was cited in the second RBMPs as one of the most common hurdles to the implementation of the PoMs.³³ At the same time, Member States have generally not fully used the economic instruments that the WFD offers, such as proper implementation of Art. 9 on cost recovery, although the adoption of

³⁰ Sara Johansson (2023). The Water Framework Directive, the forgotten tool to fix Europe's water crisis: State of play on implementation and enforcement of EU's main water law

³¹ European Commission (2019). Commission Staff Working Document: Executive summary of the Fitness Check of the Water Framework Directive, Groundwater Directive, Environmental Quality Standards Directive and Floods Directive. SWD(2019) 440 final.

³² European Commission and Directorate-General for the Environment (2009). Guidance document on exemptions to the environmental objectives. Guidance document No 20.

³³ European Commission, 2019, SWD(2019) 30 final, p. 182

the WFD entails obligations for Member States to make available the necessary means for its implementation.³⁴

Instead of action, there has been a continuous reliance on exemptions, such as time extensions, from achieving the objectives. Although the legal framework allows the use of exemptions under certain conditions, their extensive use beyond the legal prerequisites can result in a breach of law.³⁵ Yet, Member States have placed more than half of Europe's water bodies under different kinds of exemptions.³⁶ In its assessment of the 2nd RBMPs, the Commission recommended that Member States should reduce the reliance on exemptions and improve transparency in relation to the justifications used.³⁷

Concerning the non-inclusion of CHN protection in the WFD, it should be stressed that water bodies and ecosystems constitute an integral part of cultural sites. Therefore, although not explicitly included, the protection of cultural heritage, or at least some dimensions of it, is indirectly addressed in the WFD. This represents an important aspect which could be further developed in order to include CNH protection in risk management. Various stress factors, including mass tourism, urbanisation and pollution, combined with the increasing negative effects of climate change, are seen as the principal cause of accelerated degradation accelerating degradation and damage of cultural heritage. Although, adaptation is possible on a temporary basis (e.g. by building a mobile barrier system), it is essential to reduce greenhouse gas emissions, pollution and mass tourism in order to preserve cultural heritage for the future generation in the long term.

³⁴ Reese (2018). Die Wasserrahmenrichtlinie in der Umsetzungsphase - Fortbestehende Umsetzungsdefizite und rechtlicher Handlungsbedarf zur ökologischen Gewässerentwicklung, Neue Zeitschrift für Verwaltungsrecht, 1592, p. 1596.

³⁵ EEB/ClientEarth 2022

³⁶ European Commission (2019). Fitness Check of the Water Framework Directive, Groundwater Directive, Environmental Quality Standards Directive and Floods Directive, p. 50

³⁷ European Commission (2019). COM/2019/95 final