RETOUCH NEXUS

REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

Deliverable 1.2

Comparative analysis of national and transboundary water governance strategies focusing on priorities and mechanisms of sectoral alignment

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Executive summary

This deliverable assesses current governance strategies and institutional set-ups to deal with water-related risks in the EU through the lens of the OECD Principles on Water Governance while using a WEFE nexus perspective. The analysis first elaborates on institutional settings, followed by a concise overview of EU water-related directives and their implementation at national and transboundary levels. With this, the specific focus is on six EU member states: Belgium, Germany, Malta, Slovakia, Spain, and the Netherlands. In addition, the deliverable provides concise information on all 27 EU member states in the form of factsheets that are publicly available online (https://retouch-nexus.eu/library).

The analysis shows that across the six EU member states major challenges remain related to the implementation of EU water-related legislation, especially with a view to achieving a good ecological status of all waters by 2027 and safeguarding sufficient levels of available water resources throughout the year.

More specifically, the six RETOUCH NEXUS countries need to address the following challenges:

- Improve water management and infrastructure, inter alia by reducing leakage, taking measures to avoid water scarcity and improving wastewater treatment infrastructure;
- Revitalise water courses and address modifications of water regimes by bringing back natural dynamics to water systems;
- Reduce agricultural pressures and take action on the nitrates problem, cleaning up polluted groundwaters and eutrophied surface waters;
- Complete the designation of Natura 2000 protected areas and establish appropriate conservation objectives and measures for all sites, and
- Improve the absorption of EU funds for investments and reforms.

To address these challenges, several opportunities are identified that may facilitate a shift towards increased coordination in water-related governance by using a WEFE nexus perspective. These opportunities are organized into seven categories: new priorities, new policies, new concepts, new tools, new roles and tasks, new cooperations, and new sources of funding.

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Table of content

Contents

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Abbreviations

BE	Belgium
DE	Germany
EIR	Environmental Implementation Review
EEA	European Environment Agency
EC	European Commission
ES	Spain
EU	European Union
FRMP	Flood Risk Management Plan
IDRPC	International Danube River Protection Convention
MSFD	Marine Strategy Framework Directive
MT	Malta
NECP	National Energy and Climate Plan
NL	The Netherlands
OECD	Organisation for Economic Co-operation and Development
PoM	Programme of Measures (related to WFD)
pps	Public purchasing standard
RBD	River Basin District
RBMP	River Basin Management Plan
RRP	Recovery and Resilience Plan
SAC	Special Area of Conservation (under the Habitats Directive)
SCI	Sites of Community Importance (under the Habitats Directive)
SDG	Sustainable Development Goal
SK	Slovakia
UWWTD	Urban Waste Water Treatment Directive
WEFE	Water-Energy-Food-Ecosystems
WFD	Water Framework Directive
WGP	Water Governance Programme (of the OECD)

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Chapter 1: Introduction: main concepts, method and structure

1.1. Main aim of the deliverable

This deliverable assesses current governance strategies and institutional set-ups to deal with water-related risks in the EU through the lens of the OECD Principles on Water Governance while using a WEFE nexus perspective. Part of the analysis will be an overview of the EU water-related directives and their implementation at national and transboundary level. With this, the specific focus is on the six countries involved in the RETOUCH NEXUS project, including Belgium (BE), Germany (DE), Malta (MT), Slovakia (SK), Spain (ES), and the Netherlands (NL). In addition, this deliverable will provide basic information on all EU member states in the form of factsheets that will be publicly available online.

This chapter is structured as follows. Section 1.2 introduces the OECD Principles on Water Governance and associated indicators. Section 1.3 briefly explains the WEFE nexus perspective. Section 1.4 presents the method used. Section 1.5 outlines the structure of the deliverable.

1.2. The OECD Principles on Water Governance and associated indicators

The OECD has been developing its Water Governance Programme (WGP) since 2009, with the aim to help governments at all levels identify and fill critical gaps in the design and implementation of their water governance. To do so, the WGP relies on economic analysis, policy dialogues, commonly accepted standards, and international best practices. This programme stands on the premises that water management should not be confined to the limits of a sectoral or environmental issue, but it must be approached as a crucial economic issue for sustainable and inclusive growth, territorial development and well-being at large (Akhmouch et al., 2018).

Under the scope of this WGP, the OECD launched the Water Governance Initiative in 2013. This is a multi-stakeholder platform of more than 100 delegates from public, private and non-profit sectors, with the task of bringing the development of the so-called OECD Principles on Water Governance to a next level. During this process, the OECD defined the task in terms of EU water governance as follows (Akhmouch et al., 2018):

- Hydrological boundaries and administrative perimeters do often not coincide;
- Water management involves a plethora of public, private and no-profit stakeholders;
- Water is a highly capital-intensive and monopolistic sector, with important market imperfections;
- Water policy is inherently complex and strongly linked to other domains; and
- Allocation of increasingly complex and resource-intensive responsibilities to sub-national governments is leading to fragmentation.

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In order to cope with current and future water challenges, the OECD argues that policy responses will be viable only if they are coherent, if stakeholders are properly engaged, if well-designed regulatory frameworks are in place, if there is adequate and accessible information, and if there is sufficient capacity, integrity and transparency (Akhmouch et al., 2018). Furthermore, policy responses should be adapted to territorial contexts, recognizing that optimal governance solutions respond to context-specific circumstances.

Based on these considerations, OECD developed a set of twelve principles on water governance to support effective, efficient and inclusive water policies, and thus improve the 'water governance cycle' from policy design to implementation. They are articulated around three mutually reinforcing and complementary dimensions of water governance, namely effectiveness, efficiency, and trust and engagement. These dimensions apply across different water management functions, water uses, and set-ups of water management, resources and assets. The resulting OECD Principles on Water Governance were adopted in 2015 by the 35 OECD member countries (see Table 1.1).

Table 1.1 The OECD Principles on Water Governance

Enhancing the effectiveness of water governance	
Principle 1	Clearly allocate and distinguish roles and responsibilities for water policymaking, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities
Principle 2	Manage water at the appropriate scale(s) within integrated basin governance systems to reflect local conditions, and foster co-ordination between the different scales
Principle 3	Encourage policy coherence through effective cross-sectoral co-ordination, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use
Principle 4	Adapt the level of capacity of responsible authorities to the complexity of water challenges to be met, and to the set of competencies required to carry out their duties
Enhancing the efficiency of water governance	
Principle 5	Produce, update, and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy
Principle 6	Ensure that governance arrangements help mobilise water finance and allocate financial resources in an efficient, transparent and timely manner
Principle 7	Ensure that sound water management regulatory frameworks are effectively implemented and enforced in pursuit of the public interest
Principle 8	Promote the adoption and implementation of innovative water governance practices across responsible authorities, levels of government and relevant stakeholders
Enhancing trust and engagement in water governance	
Principle 9	Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making
Principle 10	Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation

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Principle 11	Encourage water governance frameworks that help manage trade-offs across water users, rural and urban areas, and generations
Principle 12	Promote regular monitoring and evaluation of water policy and governance where appropriate, share the results with the public and make adjustments when needed

Source: Akhmouch et al. (2018)

Principles 1 to 4 target water governance effectiveness, improving coordination by defining clear goals and targets, specifying roles and responsibilities, managing water at appropriate scales, and encouraging coherence and sufficient capacity. Principles 5-8 focus on the efficiency of implementation processes and stimulate continuous improvement in order to maximise the benefits at the least cost to society. Principles 9-12 emphasize the roles of different actors, as well as the importance of trust and engagement, through more transparency and better communication. These can indeed enhance democratic legitimacy and fairness for society.

As a next step, the OECD has been developing an implementation strategy for the OECD Principles of Water Governance based on an indicator framework and water governance stories (Akhmouch et al., 2018). The indicators are conceived as a self-assessment framework for governments and stakeholders, to carry out a dialogue on the strengths and weakness of water governance systems and the way forward. Simultaneously, 60-plus water governance stories illustrating the implementation of the OECD Principles have been collected at local, basin, at national and global levels, to showcase concrete experiences, lessons learned from successes, and pitfalls to avoid.

Since the adoption of the OECD Principles on Water Governance in 2015, the Water Governance Initiative has been reorganised into two working groups on i) indicators and ii) best practices (Akhmouch and Correia, 2016). See for a comprehensive explanation of the OECD water governance indicators the upcoming RETOUCH NEXUS Deliverable 1.3 - A list of water governance indicators (https://retouch-nexus.eu/library).

Formulating policies for water management and implementing them requires the engagement of several levels of society, including local, regional, state, and national authorities, as well as international organizations, and civil society. They are all requested to play a role and cooperate with each other in a more or less harmonious way (Moss and Newig, 2010; Akhmouch and Correia, 2016). However, some tensions or conflicting views among those actors are unavoidable, and the quality of water governance largely depends on the way those tensions and conflicting situations are settled (Akhmouch and Correia, 2016).

According to an assessment by Neto and Camkin (2022), the principles and guidelines of the EU Water Framework Directive (WFD) are, in general, well aligned with the OECD Principles. However, it should be noted that the EU includes a great diversity of specific national contexts and frameworks of implementation, and consequently diverse internal policy impacts (Neto et al., 2018). For example, there are different rhythms of progress in Northern and Southern European countries that also impact on some regional transboundary issues (Martínez-Fernández et al., 2021).

Overall, the WFD has had a strong impact in terms of imposing new regulatory and legislative frameworks within member states and brought success in terms of better water quality and

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monitoring of water resources in Europe (e.g. Neto and Camkin, 2022). At the same time, the potential impact of the WFD on other policy areas has not been fully achieved. More specifically, Carvalho et al. (2019) observe that the WFD has not yet been sufficiently mainstreamed into other policies. Neto and Camkin (2022) argue that the WFD might eventually benefit from synergies with other more transversal instruments, such as the European Green Deal, the Sustainable Development Goals (SDGs) and the international climate agreements.

Importantly, the analysis by Neto and Camkin (2022) has shown that trust is fundamental to the successful implementation of the OECD Principles of Water Governance. In order to enhance trust, they suggest that water governance should:

- Be seen as a process built on shared responsibility instead of an activity pursued by governments in the lead that engage stakeholders;
- Incorporate the principles of open science;
- Align the OECD Principles with higher level global and regional objectives such as Agenda 2030 and the SDGs;
- Pursue a collaborative planning process, facilitating community learning and capacity building; and
- Involve stakeholders in the co-design and co-implementation of an indicator framework in a meaningful way.

Overall, Neto and Camkin (2022) conclude that the OECD Principles have been an important step forward. However, the current reality imposes considerations on additional dimensions that should now be integrated with them. Some of these are the need for inclusive participation in the diagnostic stages of water-related problems, as well as in the process of identifying possible solutions, and also the realization of systems supporting the sharing of information (e.g. data, experiences, ideas), and co-creation of knowledge. Furthermore, they suggest that the emphasis on more meaningful stakeholder involvement to facilitate community learning and capacity-building should also involve a collaborative process of co-designing and co-implementing the OECD indicator framework.

1.3. The WEFE nexus perspective

Public policies for public health, environment, agriculture, industry, energy, and transportation cannot be formulated without considering water availability or scarcity (Akhmouch & Correia, 2016). As a consequence, water resources policy and management is tightly interwoven with all these sectors and should promote some guidance to settle potential or existing conflicts and manage trade-offs among various uses.

To tackle this challenge, Sušnik et al. (2023) argue that there is a need for systems thinking, positing that water is centrally important in the wider functioning of the water-energy-food nexus, and in the ability to provide other services to humanity. They emphasise that water is one of the critical resources, if not the most important one, enabling wider resources provision and human development. Due to the interconnected nature of systems, policies developed in one of the

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separate domains could potentially have unintended consequences in one of the others. To prevent such negative effects now and in the future, Sušnik et al. (2023) make a plea to explore developments in water demand and their consequences on water supply security, water availability for food production, and water availability for energy generation. Along similar lines, it is seen as important to recognize the central role of water for the attainment of several SDG goals (Carmona-Morena et al., 2021; Dawes, 2020). Moreover, Brengtsson and Shivakoti (2015) have not only highlighted the role of water in enabling the achievement of multiple SDGs, but have also shown how governance of other resources can influence the Water SDG. For example, efforts to meet food production or clean energy generation goals could lead to greater levels of water abstraction.

In terms of governance, dealing with these complexities requires dedicated coordination approaches, or mechanisms, based on so called principles of good governance (e.g. transparency, accountability, legitimacy). One of such approaches to deal with the sectoral dependency on water resources of sufficient quality and quantity is the WEFE nexus approach (e.g. Bidoglio et al., 2019; Pahl-Wostl, 2019, and Melloni et al., 2022).

For the purposes the RETOUCH NEXUS project, the WEFE nexus approach is defined as an approach that integrates management and governance across sectors and scales (…) aiming, among other things, at resource use efficiency and greater policy coherence. Given the increasing interconnectedness across sectors and in space and time, a reduction of negative economic, social and environmental externalities is assumed to increase overall resource use efficiency, provide additional benefits and secure the human rights to water and food. See for a further elaboration on the WEFE nexus approach and its interpretation in the RETOUCH NEXUS project, the concept note included in Deliverable 1.3 (https://retouch-nexus.eu/library).

1.4. Method

This deliverable is based on a review of existing EU legislation and policies related to water and their implementation in practice. Sources of information are implementation reports produced by EU DG Environment and the European Environment Agency (EEA), as well as academic literature. The main directives included in the analysis are the Water Framework Directive, the Floods Directive, the Drinking Water Directive, the Groundwater Directive, the Urban Waste Water Treatment Directive (UWWTD), the Industrial Emissions Directive (IED) and the Habitats Directive.

More specifically, the deliverable develops country profiles for the six RETOUCH NEXUS countries plus factsheets for all 27 EU member states. For each country profile, a tentative assessment is made focusing on the potential support for the WEFE nexus approach, based on hindering and stimulating factors for its application. The categories used in these assessments are largely based on a paper by van Kats et al. (2022), who identified governance related factors that hamper or stimulate the implementation of the Water Framework Directive. They clustered them into the following categories: legal aspects, knowledge and monitoring, political willingness, intersectoral collaboration and public participation, financial resources, relationship between pressures and measures, and coherence of EU legislation. For the purpose of the RETOUCH NEXUS project, we will tentatively

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assess each of the six countries focusing on factors primarily related to competencies, planning, and coordination.

Furthermore, this deliverable offers a first inventory of water governance related challenges that the six countries need to address according to the EU Environmental Implementation Review (EIR) process[1], several publications on the implementation of Water Framework Directive and other pieces of EU environmental legislation, as well as documents produced for the EU Recovery and Resilience Facility[2], especially the national Recovery and Resilience Plans (RRPs). Based on similar EU documents, it also identifies opportunities for improving water governance in the near future.

As mentioned earlier, basic information on all 27 EU member states is presented in the form of factsheets which are publicly available online (https://retouch-nexus.eu/library/). These provide an overview of each member state's main characteristics, their institutional settings in relation to the WEFE nexus pillars of water, energy, food and ecosystems, as well as the main challenges and opportunities from a WEFE nexus perspective.

1.5. Structure of the deliverable

This deliverable is structured as follows. Chapter 2 gives an outline of the main features of water governance in the EU. Chapter 3 presents the comparative analysis of the six RETOUCH NEXUS countries. Chapter 4 provides a conclusion.

The deliverable has eight Annexes. Annex 1 introduces the United Nations Sustainable Development Goal 6 and its targets, goals and indicators, or in short the Water SDG. The annexes 2 to 7 present the country profiles of the six RETOUCH NEXUS countries. Annex 8 lists selected good practices from all EU member states that may facilitate a WEFE nexus governance approach. Finally, the RETOUCH NEXUS website provides factsheets of the 27 EU member states online (https://retouch-nexus.eu/library).

[1] https://environment.ec.europa.eu/law-and-governance/environmental-implementation-review_en
[2] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en

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Chapter 2: Water governance in the EU

2.1. Introduction

Europe's water law and policy have developed gradually over the past decades (see e.g. Hering et al., 2010; Voulvoulis et al., 2017). The first EU policies aimed at improving water quality date back to 1991, with the adoption of the Urban Waste Water Treatment and Nitrates Directives, both targeting reduction of pollution pressures to water. In 2000, with the adoption of the Water Framework Directive (WFD), an integrated ecosystem based approach to managing water was introduced. This legislation requires that all European waters are in good ecological condition by 2027.

At the transboundary level, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, or in short the 1992 Water Convention, plays a major role.[3] It is meant as an international legal instrument and intergovernmental platform aiming to ensure the sustainable use of transboundary water resources by facilitating cooperation. It encourages countries to enter into specific agreements and establish joint bodies.

At the international level, the Sustainable Development Goals (SDGs), as formulated under auspices of the United Nations, provide a broader framework of goals, targets and indicators. With regard to RETOUCH NEXUS, SDG 6 is especially relevant as it addresses governments to ensure availability and sustainable management of water and sanitation for all by 2030 (see Annex 1).

This chapter is structured as follows. Section 2.2 gives an overview of the main pillars of EU water law and policy. Section 2.3 explains the transboundary context. Section 2.4 identifies the main trends and provides an outlook to the future EU water policy agenda.

2.2. The main pillars of EU water law and policy[4]

EU water policy is one of the priorities set out in the European Green Deal.[5] To this end, the Commission works closely with the member states to help achieve the objectives of preserving, protecting and improving the quality of water resources EU-wide. Its main instruments are the

[3] https://unece.org/environment-policy/water/about-the-convention/introduction

[4] The text in this section is copy pasted from: European Commission (2022). Environmental Implementation Review 2022. Turning the tide through compliance. COM (2022) 438 final, 8.9.2022.

[5] In September 2021, the Commission launched the EU mission on *restore our ocean and waters by 2030*, as a way to achieve the marine and freshwater targets of the European Green Deal, such as protecting 30% of the EU's sea area and restoring marine eco-systems and 25,000 km of free-flowing rivers.

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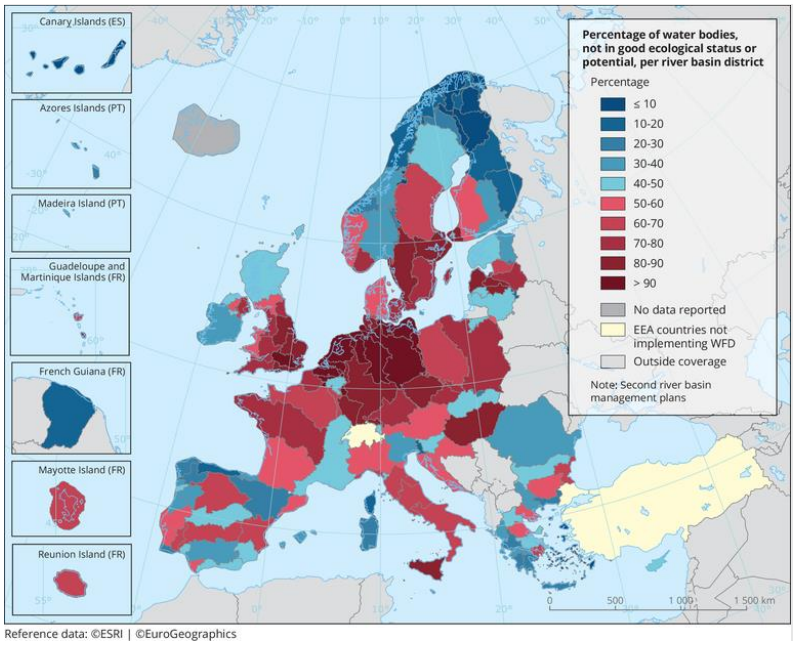
Water Framework Directive[6] and its associated directives, the Floods Directive[7], the Drinking Water Directive[8], the Bathing Water Directive[9], the Nitrates Directive[10], the Urban Waste Water Treatment Directive[11] and the Marine Strategy Framework Directive (MSFD)[12]. The different fitness checks carried out so far show that the Water Directives are broadly fit for purpose but require better overall implementation (see Figure 2.1).

Figure 2.1: Proportion of surface water bodies (rivers, lakes, transitional and coastal waters) with less than good ecological status per River Basin District (EEA, 2022)



The main findings from the 2022 Environmental Implementation Review covering all EU member states are as follows:

1. Implementation of the Water Framework Directive objectives continues but, although the assessment of the 3rd river basin management plans (RBMPs) is pending, it can be said that

[6] 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, OJ L 327, 22.12.2000, p. 1–73.
[7] Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, OJ L 288, 6.11.2007, p. 27–34.
[8] Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption, OJ L 435, 23.12.2020, p. 1–62.
[9] Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC, OJ L 64, 4.3.2006, p. 37–51.
[10] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources, OJ L 375, 31.12.1991, p. 1-8.
[11] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment OJ L 135, 30.5.1991, p. 40–52. The Commission presented a proposal to further modernise this 1991 directive to improve pollution prevention, resource efficiency and energy neutrality for the whole sector.
[12] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164, 25.6.2008, p. 19–40.

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progress towards achieving good status for water bodies is generally slow, despite the fact that the 2027 deadline is drawing near. This is due to a mix of factors, including failure to set reference conditions for the characterisation of water bodies and incomplete assessment of pressures, insufficiencies in the monitoring of water, meaning that the status of water bodies is unknown, assessments of the impact of activities on water bodies are incorrectly performed, and the exemptions invoked are not sufficiently justified.

2. The EIR country reports present the latest information on the percentage of water bodies not achieving good ecological and chemical status, the abstraction of water per sector as well as the water exploitation index. Increased investments are essential if objectives are to be met, and EU funding continues to support the implementation efforts by EU member states, mainly through the cohesion policy, the Recovery and Resilience Facility, and Horizon Europe.
3. The Commission has shared its findings on the 2nd RBMPs with the Member states in question, and expects to see the shortcomings addressed when the 3rd RBMPs are submitted. The Commission is also verifying how the national systems (e.g. permits and inspections) ensure that the Water Framework Directive is correctly applied on the ground by each member state as regards abstraction of water, point source and diffuse pollution. The member states were due to report to the Commission their 3rd RBMPs and 2nd flood risk management plans (FRMPs) by 22 March 2022.
4. The 1998 Drinking Water Directive is well implemented overall in the EU. However, it is a cause for concern in a few countries.[13] By 12 January 2023, all member states have to transpose the recast Directive in order to comply with the revised quality standards and the Commission is providing support in order to ensure the timely and correct transposition of the new rules.
5. Overall, the Bathing Water Directive shows high rates of excellent or good performance in the EU. However, there are some differences between member states.[14]
6. In many cases, despite sometimes well-defined and specific obligations such as those in the Nitrates Directive and the Urban Waste Water Treatment Directive, implementation on the ground has been very slow, due to planning and organisational flaws and a lack of funding and prioritisation.
7. Many member states have problems in relation to the implementation of the Nitrates Directive and should step up their efforts to further reduce nitrates pollution from agriculture in groundwater and eutrophication by designating all nitrates-vulnerable zones and by including appropriate measures in their action plans.[15]
8. Despite a degree of progress, urban wastewater is still not collected and treated as it should be in many member states, which is why several of them are facing infringement proceedings[16] and a few have been subjected to financial penalties.[17]

The EU's Habitats and Birds Directives are the key legislative tools to deliver on the targets of the EU biodiversity strategy for 2030, and are the cornerstone of EU legislation aimed at conserving the

[13] FR, HU, IR, and IT.

[14] An evaluation of this Directive is ongoing, and the Commission plans to present an overall assessment on its functioning in 2023.

[15] Infringements are pending against: BE, DE, ES, IT.

[16] Infringement procedures for bad application of the UWWTD are currently ongoing for 19 Member States: BG, BE, CY, FR, GR, HU, IR, IT, LV, LT, MT, PL, PT, RO, SK, CZ, SI, SE and ES.

[17] GR, IT and ES are currently paying fines regarding the UWWTD.

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EU's wildlife, natural habitats and ecosystems.[18] Key milestones towards meeting the objectives of the Birds and Habitats Directives are: (i) the setting up of a coherent Natura 2000 network; (ii) the designation of sites of community importance (SCIs) as special areas of conservation (SACs)[19], and (iii) the setting of site-specific conservation objectives and measures for all Natura 2000 sites. In the coming years, the biodiversity legislation will be further strengthened by the implementation of the Nature Restoration Law that was approved by the European Parliament in July 2023.

2.3. The transboundary context

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes was concluded in Helsinki on 17 March 1992.[20] This 1992 Water Convention entered into force in 1996. It is meant as an international legal instrument and intergovernmental platform aiming to ensure the sustainable use of transboundary water resources by facilitating cooperation. Initially negotiated as a regional instrument, it has been opened up for accession to all UN Member States in 2016.

Importantly, the 1992 Water Convention obliges riparian countries to conclude transboundary agreements and establish joint bodies to manage their joint waters. More specifically, the 1992 Water Convention requires Parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure their sustainable management. Parties bordering the same transboundary waters have to cooperate by entering into specific agreements and establishing joint bodies. As a framework agreement, the Convention does not replace bilateral and multilateral agreements for specific basins or aquifers; instead, it fosters their establishment and implementation, as well as further development.

As required by the 1992 Water Convention, several countries have concluded legal agreements concerning transboundary waters in the years after. Table 2.1 gives an overview of the agreements and conventions that are relevant in terms of the six RETOUCH NEXUS countries.

Table 2.1 International conventions on transboundary water governance relevant for the six RETOUCH NEXUS countries (marked in bold)

Name of Convention / Agreement	**Entry into force**	**Main decision making body**	**Contracting parties**

[18] The biodiversity legislation will be strengthened by the Nature Restoration Law.

[19] Sites of Community Importance (SCIs) are designated pursuant to the Habitats Directive whereas Special Protection Areas (SPAs) are designated pursuant to the Birds Directive; figures of coverage should not be added up because some SCIs and SPAs overlap. Special Areas of Conservation (SACs) are SCIs designated by the Member States.

[20] https://unece.org/environment-policy/water/about-the-convention/introduction

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Albufeira Convention[21]	2000	Commission for the Application and Development of the Convention on Cooperation for the Protection and Sustainable Use of Waters in Portuguese-Spanish River Basins (CADC)	Portugal and **Spain**
Convention on the Protection of the Rhine[22]	2003	International Commission for the Protection of the Rhine	France, **Germany**, Luxembourg, Switzerland, **the Netherlands**, and the European Community
International Meuse Agreement[23]	2006	International Meuse Commission	**Belgium**, France, **Germany**, Luxembourg, and **the Netherlands**
Agreement on the Protection of the Scheldt[24]	2005	International Scheldt Commission	France, **Belgium**, Wallonia, **Flanders**, Brussels capital region and **the Netherlands**
International Danube River Protection Convention (IDRPC)[25]	1998	International Commission for the Protection of the Danube River	Austria, Bulgaria, Croatia, the Czech Republic, **Germany**, Hungary, Moldova, Romania, **Slovakia**, Slovenia and Ukraine, and the European Community

The Albufeira Convention was signed in 1998, after a dispute over a proposed water transfer from the Douro River by Spain that would affect Portugal's interests. It is an agreement between Spain and Portugal on the cooperation for the protection and the sustainable use of the waters of the shared river basins of Miño, Limia, Duero, Tagus and Guadiana, aiming to balance environmental protection with economic development (Correia, 2019). The agreement establishes a Commission for the implementation and development of the Convention, composed of representatives from both countries (Chatterjee, 2013). The Albufeira Convention shows the importance of cross-sectoral

[21] https://poctepalbufeira.org/?lang=en
[22] https://www.iksr.org/fileadmin/user_upload/DKDM/Dokumente/Rechtliche_Basis/EN/legal_En_1999.pdf
[23] https://www.meuse-maas.be/CIM/media/ACCORDS/Accord-Meuse_anglais_Mdelch_05_19.pdf
[24] https://faolex.fao.org/docs/pdf/mul150201.pdf
[25] https://www.icpdr.org/about-icpdr/framework/convention

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coordination and cooperation, especially in the context of the water-energy-food nexus. The agreement addresses the interdependencies and trade-offs between different water uses, such as irrigation, navigation, tourism, hydropower, and ecosystem services.

The International Meuse Commission (IMC) was established in 2002 with the signing of the Meuse Treaty. The aim of the Convention is to achieve sustainable and integrated water management in the international river basin district of the Meuse. The treaty is signed by the Walloon Region, the Netherlands, France, Germany, the Flemish Region, the Brussels-Capital Region, Belgium and Luxembourg. The Meuse Treaty entered into force on 1 December 2006. The main tasks of the IMC are to align the obligations of the Water Framework Directive and the Floods Directive and to give advice and recommendations to the parties for the prevention and control of calamitous water pollution (warning and alarm system).

The International Scheldt Commission was also set up in 2002. It is an intergovernmental body with six Contracting Parties, including France, Belgium, Wallonia, Flanders, Brussels capital region and the Netherlands. It strives for sustainable and integrated water management in the international Scheldt river basin district. Important topics for collaboration are the harmonized implementation of the Water Framework Directive and Floods Directive, covering issues such as chemical and ecological water quality, fish migration, sediment management, groundwater, flood risk management, adaptation to climate change (in particular prevention of the consequences of drought) and the cross-border control of calamitous pollution in the waters. Furthermore, Flanders and the Netherlands are working together on a sustainable and vital Scheldt estuary in the Flemish-Dutch Scheldt Commission.[26]

The International Danube River Protection Convention (IDRPC) forms the overall legal instrument for co-operation on transboundary water management in the Danube River Basin. The Convention was signed in 1994 in Sofia (Bulgaria) and came into force in 1998. It aims to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably. This involves:

- the conservation, improvement and rational use of surface waters and groundwater;
- preventive measures to control hazards originating from accidents involving floods, ice or hazardous substances, and
- measures to reduce the pollution loads entering the Black Sea from sources in the Danube River Basin.

The signatories to the IDRPC have agreed to co-operate on fundamental water management issues by taking all appropriate legal, administrative and technical measures to at least maintain, and where possible, improve the current water quality and environmental conditions of the Danube river and of the waters in its catchment area, and to prevent and reduce as far as possible adverse impacts and changes occurring or likely to be caused.

[26] https://vnsc.eu/

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Over time, the reporting under the 1992 Water Convention and more recently on SDG indicator 6.5.2, which measures the existence of operational arrangements in shared basins, showed that the development of agreements on transboundary waters remained a challenge. To support countries and other stakeholders to arrange for their transboundary waters, UNECE decided to develop a Practical Guide for the Development of Agreements or Other Arrangements for Transboundary Water Cooperation.[27] It is intended for State representatives, legal and technical experts, decision-makers involved in negotiation of agreements or other arrangements for transboundary waters, the staff of river basin organizations, regional organizations, and other stakeholders working on transboundary cooperation and water diplomacy.

2.4. Current trends and the future agenda of EU water policy

EU water governance has evolved over the years, mainly based on lessons learned with the implementation of the water-related legislation in the EU member states (see e.g. Hering et al., 2010; Voulvoulis et al., 2017; Carvalho et al., 2019). Overall, the following trends in EU water governance can be identified:

- Rise of multi-level and multi-sector governance;
- Increased attention for policy integration and coherence;
- Emergence of innovative governance approaches where public actors share responsibilities with private actors (e.g. multi-stakeholder partnerships);
- Emergence of new concepts and arrangements (e.g. water footprint, water justice, river contracts, rivers as legal persons);
- Citizen engagement and participation have become more and more important; and
- Increased attention for co-creation processes of policy makers together with stakeholders.

Based on a recent analysis of water governance diversity across Europe, Rowbottom et al. (2022) conclude that there is a need to implement a hybrid approach to water governance and WFD implementation. Such an approach should combine elements of centralised and decentralised governance. Decentralisation (discretionary) is needed to ensure collaboration and engagement of stakeholders at the local level, whereas a centralised (mandatory) governance and regulatory system should enable national environmental standards to be set and enforced. They conclude that such a hybrid approach may provide the best of both worlds (bottom-up involvement of stakeholders meeting top-down goal achievements) and is worthy of further research.

EU water policy is still in flux. In recent years, new initiatives have been introduced and existing ones integrated for example under the umbrella of the European Green Deal and the Farm to Fork and Biodiversity Strategies, zero pollution ambitions and European Climate Law. In the years to come,

[27] https://unece.org/environment-policy/publications/agreements-transboundary-water-cooperation-practical-guide

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the EU has planned to adopt additional legislation and introduce further targets and initiatives. Important policy objectives that will support the improved status of water will inter alia include:[28]

- Restore 25 000 km of rivers into free-flowing rivers by 2030, through the removal of primarily obsolete barriers and the restoration of floodplains and wetlands;
- Reduce fertiliser use by at least 2% and nutrient losses by 50% while ensuring that there is no deterioration in soil fertility, among others building on an integrated nutrient management action plan;
- Reduce the overall use of and risk from chemical pesticides and the use of the more hazardous pesticides by 50%, by 2030;
- Reduce the sales of antimicrobials used in farmed animals and aquaculture by 50%;
- Have 25% of agricultural land organically farmed by 2030, and
- Achieve EU commitments on land degradation neutrality.

[28] https://water.europa.eu/freshwater/policy-and-reporting

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Chapter 3: Comparative analysis

This chapter provides a comparative analysis focused on the six RETOUCH NEXUS countries, mainly based on the individual country profiles as presented in the Annexes 2 to 7. The chapter is structured as follows. Section 4.1 focuses on the institutional settings in the six countries. Section 3.2 discusses the state of implementation of EU legislation and associated strategies. Section 3.3 gives an indication of the support for a WEFE nexus approach in the six countries concerned based on their institutional settings. Section 3.4 summarises the main challenges that need to addressed by implementing such an approach. Section 3.5 provides an overview of opportunities that could potentially facilitate its implementation, distinguishing between new priorities, new policies, new concepts, new tools, new roles and tasks, new cooperations, and new sources of funding.

3.1. Institutional settings

When comparing the six RETOUCH NEXUS countries, it is evident that they have organized their institutional settings in very different ways. At the most fundamental level, this is being reflected by the different names the six countries have given to their polities, the various layers of government that are distinguished and the choices they have made in terms of decentralization of legislative powers (see Table 3.1.). Importantly, 3 out of the 6 countries involved in the analysis (Belgium, Germany and Spain) have opted for the model of a federal state, having an extra layer of government and delegated legislative powers to subnational levels. As a consequence, their levels of decentralization are relatively high. Concerning the latter, the Netherlands is positioned more or less in the middle, whereas Malta and Slovakia have relatively more centralized powers. It is important to note that EU-wide only 7 out of 27 members states have made a similar choice of delegating legislative powers to subnational levels, comparable to Belgium, Germany and Spain. This means that the selection of RETOUCH NEXUS countries deviates is not representative in this respect for the overall situation EU-wide.

Table 3.1. Division of administrative powers between national and subnational levels

	Belgium (BE)	Germany (DE)	Malta (MT)	Slovakia (SK)	Spain (ES)	The Netherlands (NL)
Polity	complex federal state	federal state	decentra-lised unitary state and parliamen-tary republic	unitary state composed of regions and municipal	federal or quasi-federal state	decentralized unitary state
Layers of government	central, regional,	central, regional,	central, regional, municipal	central, regional, municipal	central, regional,	central, provincial, municipal

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	provincial, municipal	counties, municipal			provincial, municipal	
Subnational legislative powers	Yes	Yes	No	No	Yes	No
Level of decentrali-sation	High	High	Low	Low	High	Middle

Focusing on the four WEFE nexus pillars (water-energy-food-ecosystems), the ministerial distribution of tasks and responsibilities is mostly conventional in the six countries, with water and ecosystems commonly falling under the scope of a ministry for environmental affairs and food brought under a ministry specifically dedicated to agriculture. Energy issues are in some countries being dealt with by the ministry responsible for economic affairs and in others by the ministry that focuses on environmental issues. Ambition wise, Spain forms an exception in the sense that the name of the ministry responsible for water policy, namely Ministry for Ecological Transition, reflects a certain level of aspiration as it explicitly refers to a transition process that is being envisaged. The latter is a trend that it is also visible in other Southern EU member states (e.g. France, Italy). Overall, the analysis of the 27 member states shows that in recent years the configurations of ministries and the resulting institutional settings are increasingly subject to change and experiment.

3.2. Implementation strategies

WFD - Water quantity

With respect to water abstraction, the total amounts and relative uses are very different between the six RETOUCH NEXUS countries (see Table 3.2.). Spain and Germany have by far the highest extraction levels in absolute terms but when taking surface area and population size into account the Netherlands and to a lesser extent Belgium have also relatively high extraction levels. Compared to these four countries, Malta and Slovakia have much lower extraction levels.

Table 3.2. Water abstraction in the six RETOUCH NEXUS countries

	Belgium	**Germany**	**Malta**	**Slovakia**	**Spain**	**The Netherlands**
Total water abstraction in 2018/2019 (in $hm^{3)}$	5,846.07	27,075.75	49.95	267.44	30,504.20	11,600.55
Surface area (in km^2)	30 452	353 296	316	49 702	502 654	34 188
Population size (in millions)	11,6	83,2	0,5	5,4	47,4	17,6

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Water Exploitation Index plus (WEI+)	7.31% (2017)	5.46% (2017)	29.6% (2019)	0.39% (2017)	23.71% (2019	4.15% (2017)

Source: European Commission (2023) and EEA (2022)

The Water Exploitation Index plus (WEI+) is a measure of total fresh water use as a percentage of the renewable freshwater resources (groundwater and surface water) at a given time and place (EEA, 2022). It quantifies how much water is abstracted and how much water is returned after use to the environment. A value above 20% is considered an indication of water scarcity and a value above 40% of severe water scarcity. Spain and Malta are both experiencing problems of water scarcity. The other four countries have less structural problems in this respect, although several longer periods of droughts have occurred in recent years that urged them taking measures to reduce water use.

Overall, water scarcity affected 29% of the EU territory during at least one season in 2019 (EEA, 2022). Despite water abstraction declining by 15% in the EU between 2000 and 2019, there has been no overall reduction in the area affected by water scarcity conditions. In fact, since 2010 there has been a worsening of the situation. This, compounded with the fact that climate change is expected to further increase the frequency, intensity and impacts of drought events, makes it unlikely that water scarcity will reduce by 2030. According to EEA (2022), additional effort is needed to ensure sustainable water use.

Notably, the six RETOUCH NEXUS countries each have one specific sector that uses a relatively high volume of water (more than 45%) (see Table 3.3.). Electricity cooling is the main using sector in Belgium (48,53%), Germany (49,92%) and the Netherlands (45,81%), whereas in both Malta (50,81%) and Spain (68.09%) agriculture is the main user. In Slovakia, this role is for public water supply (51.58%).

Table 3.3. Water use per sector in the six RETOUCH NEXUS countries (in %)

	Belgium	Germany	Malta	Slovakia	Spain	The Netherlands
Agriculture	--	0,96	50.81	5.06	68.09	2.29
Electricity cooling	48,53	49,92	17.16	9.62	14.90	45.81
Manufacturing	15.60	11,93	2.01	27.93	0.88	20.97
Manufacturing cooling	12,43	12,42	--	5.71	0.48	19.95
Mining and quarrying	0.68	5,35	--	0.10	--	0.01
Public water supply	12,81	19,42	30.01	51.58	15.65	10.97

Source: European Commission (2022)

Registers for water abstractions

Each of the six RETOUCH NEXUS countries uses a register to monitor water abstractions and also has a permitting system in place. However, the requirements are different between countries and in some of them not all smaller abstractions are registered. Belgium uses registers to monitor water abstractions. Each region makes use of its own system. Smaller abstractions do not require permits, but most of them are nevertheless registered, at least in recent years. Germany uses water registers to control water abstractions, as well as a permitting system, with permits regularly reviewed. Smaller abstractions are exempted according to German law, but not all are registered. Only a few Länder require notification of the uses that are exempt from the obligation to have a permit. Malta

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uses a register to monitor water abstractions from groundwater. The register of groundwater sources is not publicly available. Where a source has been marked for exemption from checks on its groundwater-abstraction meter, no record is kept of this by the competent authority. No competent authorities are responsible for updating and managing water-abstraction registers, unlike the situation which exists for abstraction from fresh surface-water sources, which is being monitored. Slovakia also uses a register to control water abstractions. However, smaller abstractions do not require permits and are not all registered. Spain requires authorizations for all abstractions from both surface and groundwater sources. The country is developing an electronic water register to control all water permits. The Netherlands uses a register to record water abstractions that are more than 150.000 m^3 per year. For groundwater abstractions of up to 10 m^3 per hour, an exemption from the permit obligation may be allowed. For surface waters, small abstractions are permitted without notification, as long as sufficient surface water is available. Mid-sized abstractions have to be notified and may require a permit to protect nature or buildings. Abstractions over 50 m^3 per hour require a permit.

Water leakage from the water distribution network is a problem in several member states (WaterNews Europe, 2022).[29] One of those is Spain with a leakage rate of around 22%. The Netherlands has the lowest rate with around 5% of lost non-revenue water. Under the revised European Drinking Water Directive, which came into force in January 2021, water leakage levels should be assessed by all Member States and reduced if they are above a certain threshold. The EU is currently developing a policy to deal with this issue that is aimed to become effective in 2028.

Water use per household and associated trends considerably differ between the six RETOUCH NEXUS countries (see Table 3.4). Malta has experienced an significant increase in water use in the past 25 years, whereas Belgium has seen a considerable downward trend. The same goes for Spain but to a lesser extent. In the Netherlands and Germany, household water use remained more or less stable since 1995. For Slovakia, there are no figures available. From the six RETOUCH NEXUS countries, Belgium has currently the lowest household water use in absolute terms, amounting to 31.2 m^3 per inhabitant in 2020.

Table 3.4. Household water use from public supply, 1995-2020 (in m^3 per year per inhabitant)

	1995	2000	2005	2010	2015	2020
Belgium	42.7	32.2	35.0	34.7	32.2	31.2
Germany	n.a.	46.0	45.5	43.7	44.4	n.a.
Malta	31.8	37.5	40.1	41.3	42.2	43.3
Slovakia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	n.a.	61.2	61.2	58.8	52.8	51.9
The Netherlands	46.9	50.6	48.4	47.3	46.9	46.9

Source: Eurostat Water Statistics 2023

[29] https://www.waternewseurope.com/reduce-water-leakages/#:~:text=Member%20States%20are%20now%20required,European%20Commission%20by%20early%202026.&text=By%20early%202028%2C%20the%20Commission,a%20threshold%20on%20leakage%20rates.

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WFD - Water quality

Water quality is a major issue in all six RETOUCH NEXUS countries. This is especially the case for Belgium and the Netherlands that are located in the delta's of the major rivers Rhine and Meuse. Both countries score relatively low on ecological water quality. Water quality problems may be related to emissions from industrial activities, but also to agricultural production. Intensive livestock farming is the main cause of current high levels of nitrates in surface and groundwater in several member states. In four out of the six RETOUCH NEXUS countries (BE, DE, ES, NL), the sector of intensive rearing of poultry and pigs is the first largest industrial activity. However, this activity is less relevant in Malta and Slovakia. The nitrates problem is further exacerbated by high amounts of agricultural fertiliser use in arable farming. Pesticide use is an additional pressure related to intensive agriculture, resulting in emissions of toxic substances to soil and water. Contamination with per- and polyfluoroalkyl substances (PFAS) is currently a fast emerging issue in Belgium, the Netherlands and Germany, receiving major attention.[30]

Habitats Directive

Concerning habitats protected under the Natura 2000 legislation, there has been an increase of those having a unfavourable conservation status in all RETOUCH NEXUS countries in the past reporting period, except Germany and the Netherlands (see Table 3.5.). The latter country even experienced a slight improvement. Malta had the highest relative increase of habitats in an unfavourable condition. With respect to species, there was a major upward trend in Malta and downward trends in Slovakia and Spain. Importantly, some countries report relatively high figures for lack of data, especially with respect to species.

Table 3.5. Habitats and species in unfavourable conservation status, 2007-2012 and 2013-2018

	Habitats		Species	
	2007-2012	2013-2018	2007-2012	2013-2018
Belgium	90,32%	94,62%	68,65%	66,67%
Germany	69,79%	69,23%	60,38%	63,34%
Malta	56,67%	72,41%	54,24%	24,45%
Slovakia	55,44%	60,50%	60,81%	75,31%
Spain	62,29%	73,28%	53,45%	65,87%
The Netherlands	96,15%	88,47%	73,41%	68,75

[30] https://www.lemonde.fr/en/les-decodeurs/article/2023/02/23/forever-pollution-explore-the-map-of-europe-s-pfas-contamination_6016905_8.html

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Infringement proceedings

Several EU member states are experiencing problems with implementing the EU water-related legislation correctly and on time.[31] Tabel 3.6. gives an overview of the active cases of infringement proceedings that the European Commission started against the six RETOUCH NEXUS countries. In total, they are currently involved in 39 active cases of infringement proceedings. Half of these cases are relating to the incomplete and/or incorrect implementation of the Habitats and Birds Directives. Furthermore, there are currently seven active cases about inadequate implementation of the Urban Waste Water Treatment Directive, and three relating to poor implementation of the Nitrates Directive. With regard to this latter directive, the EU infringement proceedings against Germany were discontinued on June 1, 2023, as the additional measures recently implemented were considered sufficient to reduce nitrates pollution of groundwater in the coming years.

Other infringement cases are focusing on delays with implementation of the EU legislation such as late submission of 3rd RBMPs and/or2nd FRMPs and implementing the most recent changes in the Drinking Water Directive. Overall, Germany and the Netherlands are pursuing an active policy to avoid getting involved in infringement proceedings. For example, the Netherlands is currently using its RRP funds to buy out intensive pig farmers in order to prevent an infringement case based on the Nitrates Directive.

Table 3.6. Active cases of Infringement proceedings started by the European Commission (status: 28 September 2023)[32]

	Belgium (year/case)	**Germany** (year/case)	**Malta** (year/case)	**Slovakia** (year/case)	**Spain** (year/case)	**The Netherlands** (year/case)
WFD – incomplete or incorrect implemen-tation	None	None	None	2014/4190	2014/4004 2014/2090*	None
WFD- late submission 3rd RBMPs and/or2nd FRMPs	2022/2188	None	2022/2195	2022/2187	2022/2192	None
Nitrates Directive	2022/2051 2013/4118	None	None	None	2018/2250	None
UWWTD	None	None	2016/2142	2021/2147 2016/2191	2017/2100 2016/2134 2012/2100	None

[31] https://ec.europa.eu/commission/presscorner/detail/en/inf_23_1768

[32] https://ec.europa.eu/atwork/applying-eu-law/infringements-proceedings/infringement_decisions/

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					2004/2031	
Drinking Water Directive	2023/0045	2023/0057	2023/0083	2023/0103	None	None
Habitats and Birds Directives	2015/2007	2019/2145 2014/4159 2014/2262	2020/2346 2020/2345 2020/2280	2019/2141 2018/4076 2016/2091 2014/4190	2023/2037 2020/4133 2019/2143 2017/2113 2015/2003 2014/2090* 2010/4235 2006/4340	2021/4061

*One case is mentioned under both WFD and Habitats Directive

3.3. Potential support for a WEFE nexus approach

Tentative assessments have been made by the national RETOUCH NEXUS project teams about the potential support for a WEFE nexus approach in their own countries (see the Annexes 2-7 presenting the six country profiles). To this end, the researchers scored to what extent specific elements are present in the current national situations on a scale of high, medium and low, and added an explanation in a few sentences. Table 3.7. summarises these tentative assessments, giving a first indication to what extent a WEFE nexus approach may indeed be supported by existing institutional settings and what the teams consider potentially stronger and weaker elements.

Table 3.7. Potential support for a WEFE nexus approach based on current institutional settings in Belgium, Germany, Malta, Slovakia, Spain, and the Netherlands

Elements of institutional settings	**High**	**Medium**	**Low**
Political will and decisiveness	DE	BE, ES, MT, SK	NL
Division of responsibilities / competencies	DE, ES, MT	BE, NL, SK	--
Planning mechanisms	ES	BE, DE, MT, NL, SK	--
Coordination mechanisms	BE, MT	ES, NL, SK	DE
Stakeholder representation and engagement	DE, MT	ES, NL, SK	BE
Knowledge infrastructure	ES, NL	BE, DE, MT, SK	--
Financial resources	NL	BE, DE, ES, MT	SK

Based on these assessments by the country teams, it is evident that most elements of the current national institutional settings are seen as medium supportive to a WEFE nexus approach. At the same time, this implies a recognition of certain potential for improvement. Furthermore, the outcomes vary between the countries with respect to the different criteria. To start with, political will is considered relatively supportive in Germany and Slovakia but less so in the Netherlands where

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a culture of consensus seeking often leads to postponing difficult decisions. The division of responsibilities and competencies is thought to be relatively supportive in Germany and Spain which could be related to their federal structure, with legal powers delegated to regional levels. In the case of Malta, the smaller size of the country may have a comparable positive influence on a clear division of responsibilities.

Planning mechanisms are found relatively supportive in Spain, with its National Plan for Wastewater Treatment, Sanitation, Efficiency, Savings and Reuse (DSEAR Plan) as a recent example in the water domain. The same goes for intersectoral coordination mechanisms in Belgium and Malta. In the latter an Inter-Ministerial Committee on Water and a National Water Table are facilitating exchange about water issues. However, intersectoral mechanisms are seen as less supportive in Germany as they are largely non-existent. Stakeholder representation and engagement seem to be well developed in Germany and Malta, but less so in Belgium.

Knowledge infrastructure is seen as especially well developed in Spain and the Netherlands, with both countries having multiple institutions for fundamental and applied research that are especially dedicated to water-related issues. In terms of availability of online information on water policy related issues, Belgium, Slovakia and the Netherlands stand out as offering information from a wide variety of sources, covering various topics and addressing different target groups. In Germany and Spain, most information is provided by governmental authorities at central or regional level and has a mostly technical character. Malta is currently preparing to make water-related information available online.

Financial resources are considered supportive in the Netherlands where water policy is having a high profile historically. In Germany, water policy has had a less high profile in policy making thus far, whereas in Slovakia there is less budget available for water management due to other urgent priorities.

3.4. Challenges

For each of the country profiles, challenges have been identified that are relevant with respect to the implementation of EU policies related to the four pillars of the WEFE nexus. These were based on documents produced in the EU context, including the national Environmental Implementation Reviews by the European Commission, associated reports on the implementation of EU environmental policy by the European Environment Agency, and the national Recovery and Resilience Plans (RRPs) concluded between the European Commission and individual member states.

In general terms, the analysis shows that each of the six RETOUCH NEXUS countries has scope for improving coordination between policies focusing on the four WEFE nexus pillars. More specifically, the following main challenges for the six countries were identified:

- Revitalise water courses, act against degradation of available water resources and address modifications of water regimes (BE, DE, NL, SK);

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- Improve water management and infrastructure, inter alia by reducing leakage, taking measures to avoid water scarcity and completing urban wastewater treatment facilities (BE, ES, MT);
- Take action on the nitrates problem caused by agriculture and clean up polluted groundwaters and eutrophied surface waters (BE, DE, ES, MT, NL, SK);
- Complete the designation of Natura 2000 protected areas and establish appropriate conservation objectives and measures for all sites (BE, DE, ES, MT, NL, SK), and
- Improve the absorption of EU funds for investments and reforms (SK).

Zooming in on the Natura 2000 issue, all six countries are encouraged by the European Commission to complete their networks of protected sites and address issues concerning deterioration of habitats and species. More specifically, the following challenges have been identified:

- Ensure the completion of the Natura 2000 network by designating sites and formulate appropriate conservation objectives and measures (BE, DE, ES, MT, NL);
- Safeguard landscape structures and ecological stability in protected areas when considering the authorization of buildings and activities (SK);
- Implement natural capital accounting and inform policy makers, the public, business and the finance sector of its advantages of natural capital accounting and ensure sufficient funding and co-operation, both nationally and internationally (DE);
- Integrate Natura 2000 conservation objectives into other policies, such as River Basin Management Plans (ES);
- Implement an ecosystem accounting framework focused on biodiversity conservation targets in urban and rural areas, and develop a reporting system to inform policy makers on the ecological and economic effects of policy decisions (DE);
- Put in place clearly defined conservation objectives and measures for nature protection sites, and provide adequate resources for their implementation in order to maintain/restore species and habitats of Community interest to a favourable conservation status (DE), and
- Safeguard landscape structures and ecological stability in protected areas when considering the authorization of buildings and activities. (SK)

In terms of the problem of nitrates, the specific challenges for the six countries have been formulated as follows:

- Reduce nitrates pollution from agriculture in groundwater and continue efforts on monitoring inland and transitional waters for nitrates pollution (MT);
- Reinforce the Nitrates Action Programme with measures that match the severity and the urgency of the situation to: (i) reduce nitrates, (ii) tackle eutrophication, and (iii) help farmers switch to more sustainable and less intensive production (NL);
- Ensure compliance with the Nitrates Directive by revising the rules on the identification of polluted areas and by taking appropriate measures to address serious groundwater pollution, especially in intensive farming areas (DE), and
- Address the problem of groundwater pollution in hot spots of nitrates and address eutrophication of surface waters where agriculture pressure is significant (ES).

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3.5. Opportunities

Besides challenges, several opportunities have been identified in the six RETOUCH NEXUS countries that could be helpful to address the major challenges identified and be supportive to developing and implementing a WEFE nexus approach (see Table 3.8.). These opportunities are organized in the seven categories of new priorities, new policies, new concepts, new tools, new roles and tasks, new cooperations, and new sources of funding. Further examples of such opportunities can be found in Annex 8 - Selected good practices in EU member states facilitating a WEFE nexus approach, as well as in the factsheets made for all 27 EU member states (https://retouch-nexus.eu/library).

Table 3.8. Opportunities facilitating a WEFE nexus approach in the six RETOUCH NEXUS countries

Categories	Opportunities
New priorities	Germany has shifted investment priorities towards greater support to policies aimed at stimulating sustainability transitions in a wide set of economic sectors.
New policies	Under the umbrella of Blue Deal Belgium[33], Flanders aims to accelerate its water-retention actions through: (i) the restoration and creation of wetlands; (ii) integrating waterbodies and other natural environments together into a broader network that spans both cities and rural areas; (iii) the installation of water buffers at large scale; (iv) the use of innovative water-saving technologies; and (v) investing in research on water conservation.
	In 2023, a National Water Strategy[34] was launched by Germany's Federal Ministry of Environment aiming to take systematic action to ensure a sound management of water resources by modernizing water infrastructure with a view to future challenges.
	The Spanish government approved the National Plan for Wastewater Treatment, Sanitation, Efficiency, Savings and Reuse (DSEAR Plan) in July 2021.[35]
	In 2022, Germany presented a federal Action Plan on Nature Based Solutions for Climate and Biodiversity[36] aiming to create synergies between nature and climate protection by restoring ecosystems.
	The Netherlands launched a Program of Strengthening Biodiversity in 2020 and strives to achieve 100% of the objectives of the Birds and Habitats Directives by 2050.
	Spain adopted a National Strategy for the Conservation of Pollinators in September 2020[37], as well as a National Strategy for Green Infrastructure,

[33] https://bluedeal.integraalwaterbeleid.be/about-blue-deal

[34] https://www.bmuv.de/en/download/national-water-strategy-2023

[35] https://www.miteco.gob.es/content/dam/miteco/es/agua/temas/planificacion-hidrologica/dsear_plan_book_english_tcm30-538717.pdf

[36] https://www.bmuv.de/en/download/federal-action-plan-on-nature-based-solutions-for-climate-and-biodiversit

[37] https://www.miteco.gob.es/en/biodiversidad/publicaciones/fauna_flora_estrategias_polinizadores.html

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	Connectivity and Ecological Restoration in July 2021.[38]
New concepts	The Slovakian Ministry of Agriculture and Rural Development is developing a new agenda called Soil – the Carbon and Water Bank of the Landscape, aiming to protect and restore soils and their water retention capacity at the level of municipalities, regions, basins and the country.
	CSR Netherlands has implemented a government funded Societal Natural Capital Programme to inspire, stimulate and facilitate businesses in different economic sectors to account for natural capital impacts, dependencies and risks in their operations.
	Germany has strengthened the precautionary aspect in national soil protection in order to make policy measures more effective in terms of climate change adaption and climate protection as well as preservation of soil biodiversity.
New tools	Belgium has developed online tools for farmers and peer-to-peer learning activities.
New roles and tasks	The Government of Malta established a new role for Ambjent Malta related to habitat restoration projects and dissemination of information on protected areas.
New cooperations	Malta has several platforms, networks and communities of practice involving businesses in protecting biodiversity and promoting natural capital assessments, such as the Natural Capital Coalition.
New knowledge	A major LIFE project on water management is being executed developing baseline assessments on water demand and supply, explores water efficient technologies, and elaborates master plans for sixteen valley catchments in the Maltese Islands using participatory processes.
	Spain is executing the LIFE ALNUS TAEJO project[39], together with Portugal, that focuses on the protection and restoration of rivers and riverbanks dominated by residual alluvial forests.
	Spain is involved in the LIFE REMAR project[40], that aims to demonstrate the viability of using managed aquifer recharge (MAR) technology at WWTP's.)
	Slovakia gained experience gained with ecosystem services assessments through various projects under the EU LIFE programme.
	Spain is involved in the Ecosystem Service Partnership (ESP)[41], connecting over 3000 ecosystem services scientists, policy makers and practitioners worldwide.
	The Netherlands has acquired a high level of expertise in ecosystem accounting and associated trend analysis.
New sources of funding	Malta's Recovery and Resilience Plan (RRP) allocates spending to climate objectives and environmental objectives.
	The Slovakian RRP focuses on priorities relating to a reform of landscape planning, nature protection, and water management.

[38] https://www.miteco.gob.es/en/biodiversidad/temas/ecosistemas-y-conectividad/infraestructura-verde/infr_verde.html
[39] LIFE20 NAT/ES/000021
[40] LIFE20 ENV/ES/000284
[41] https://www.es-partnership.org/

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	The Spanish RRP earmarks budget to climate change objectives, improvement of knowledge about he country's natural heritage, ensuring ecological connectivity based on nature-based solutions, and the promotion of green infrastructure.
	The Netherlands' RRP allocates nearly 1 billion euro to reduce nitrogen emissions and address their negative effects on nature through a subsidy scheme for the cessation of intensive pig farming and investment in a Nature Restoration scheme.

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Chapter 5: Conclusion

This deliverable aimed to assess current governance strategies and institutional set-ups dealing with water-related risks in the EU through the lens of the OECD Principles on Water Governance while using a WEFE nexus perspective. With this, the specific focus has been on Belgium, Germany, Malta, Slovakia, Spain, and the Netherlands. For each of these countries, a profile has been developed focusing on national institutional settings and implementation strategies of EU water-related legislation.

Concerning the national institutional settings, it can be concluded that there are some commonalities between the six EU countries, but also major differences in terms of division of responsibilities, planning and coordination mechanisms, stakeholder engagement, knowledge infrastructure and financial resources. The analysis also revealed that each of the six RETOUCH NEXUS countries has scope for improving coordination between policies related to the pillars of the WEFE nexus.

Furthermore, it became evident that across the six EU member states major challenges remain related to the implementation of EU water-related legislation, especially with a view to achieving a good ecological status of all waters by 2027 and safeguarding sufficient levels of available water resources throughout the year.

With regard to the implementation of EU water-related legislation, the analysis identified the following major challenges in the RETOUCH NEXUS countries, including the need to:

- Revitalise water courses and address modifications of water regimes by bringing back natural dynamics to water systems (BE, DE, NL, SK);
- Improve water management and infrastructure, inter alia by reducing leakage, taking measures to avoid water scarcity and completing urban wastewater treatment facilities (BE, ES, MT);
- Take action on the nitrates problem caused by agriculture and clean up polluted groundwaters and eutrophied surface waters (BE, DE, ES, MT, NL, SK);
- Complete the designation of Natura 2000 protected areas and establish appropriate conservation objectives and measures for all sites (BE, DE, ES, MT, NL, SK), and
- Improve the absorption of EU funds for investments and reforms (SK).

To address these challenges, several opportunities have been identified that may facilitate a shift towards better coordination in water governance. These opportunities have been organised into the seven categories of new priorities, new policies, new concepts, new tools, new roles and tasks, new cooperations, and new sources of funding. They will be further explored within the next steps in the RETOUCH NEXUS project.

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ANNEX 1: United Nations Sustainable Development Goal 6 (Water SDG)

UN SDG6 - Ensure availability and sustainable management of water and sanitation for all

Targets	Goals	Indicators
Target 6.1 – Access to drinking water	By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services
Target 6.2 – Access to sanitation	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using (a) safety managed sanitation services and (b) a hand-washing facility with soap and water
Target 6.3 – Water quality and water reuse	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.1 Proportion of domestic and industrial wastewater flows safety treated 6.3.2 Proportion of bodies of water with good ambient water quality
Target 6.4 Water-use efficiency	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
Target 6.5 Integrated Water Resources Management	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management 6.5.2 Proportion of transboundary basin area with

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		an operational arrangement for water cooperation
Target 6.6 Water-related ecosystems	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lake	6.6.1 Change in the extent of water-related ecosystems over time
Target 6.A International cooperation and capacity-building	By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.A.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan
Target 6.B. Participation of local communities	Support and strengthen the participation of local communities in improving water and sanitation management	6.B.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

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ANNEX 2: Country profile of Belgium

Belgium in a few facts

# of inhabitants	11,6 million
Surface area	30 452 km2
GDP per capita	121 pps[42]
Significant bodies of water (RBDs)	Meuse; Scheldt
Polity	complex federal state
Layers of government	central government; 3 regions; 3 communities; 10 provinces; 581 municipalities
Legislative powers at the sub-national level	yes
Decentralisation index	2.1 (7th out of 27)[43]
Water Exploitation Index plus (WEI+)	7.31% (2017)[44]

1. Institutional settings

Distribution of tasks and responsibilities

Belgium is a country with complex institutional arrangements. Since 1993, Belgium has constitutionally been a Federal State composed of three Regions and three Communities. This federal mechanism has repercussions on environmental competences, as these are shared between the federal authority and the three regions. The three regions are federated, separate entities that are not subordinated to the federal authority or the other Regions.

Flanders, Wallonia and the Brussels Capital Region are mainly responsible in each of their territories for: (i) land-use planning; (ii) the protection and conservation of nature; (iii) the protection of soil, water and air; (iv) noise control; (v) waste policy; (vi) the production and supply of water; and (vii) the monitoring of industrial activities.

To ensure that Belgium speaks with one voice in a European and international context, the federal and regional authorities consult each other in a **permanent coordination committee for international environmental policy (CCIM/CCPIE)**. This network is managed by the federal service. Environmental issues that require cooperation between the regions and the federal government are dealt with by the **Interministerial Conference for the Environment (ICE**), formed of representatives of ministers for environment in the regions and at the federal level.

The federal and regional inspection services control the implementation of environmental policy in Belgium. When implementing environmental policy, Belgian public authorities consult with business federations, unions and specialised non-governmental organisations. These consultations are organised by topic or by file. The CCIM/CCPIE also organises a stakeholder's dialogue that occurs every six months.

[42] EU purchasing power standard
[43] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[44] The threshold for water scarcity is set at > 20%

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Table 1. presents the distribution of tasks and responsibilities in relation to the four WEFE nexus pillars. It is important to note that policy making mainly takes place at the federal level, but execution is primarily a responsibility of the three regions.

Table 1. Main governmental actors responsible for WEFE nexus relevant governance in Belgium

WEFE nexus pillars	**Policy making**	**Policy execution**
Water	Ministry of Climate, Environment, Sustainable Development and Green Deal	Federal Public Service for Public Health, Food Chain Safety and Environment; -Brussels Environment;-Environnement Wallonie; Flanders Environment Agency;-local authorities **E**nergy: Department for Energy Wallonie; Flemish Energy and Climate Agency; Brussels Environment
Energy	Ministry of Energy	Department for Energy Wallonie; Flemish Energy and Climate Agency; Brussels Environment
Food	Ministry of Self-Employed, SMEs and Agriculture, Institutional Reforms and Democratic Renewal; Ministry of Social Affairs and Public Health	Federal Public Service for Public Health, Food Chain Safety and Environment; Flemish Department for Agriculture and Fishery; Portail de l'Agriculture Wallonne
Ecosystems	Ministry of Climate, Environment, Sustainable Development and Green Deal	Federal Public Service for Public Health, Food Chain Safety and Environment; Brussels Environment; Environnement Wallonie; Flanders Environment Agency; Flanders Nature and forest Agency; local authorities

Coordination mechanisms[45]

Multi-level coordination

To make sure that there is coordination between the Walloon region, the Brussels region and the Federal Government, there is a coordination committee for international environmental policy (CCIM). Expert groups have been set up within the CCIM for consultation on various environmental topics, bringing together all the officials involved with relevant expertise, including the CCIM Water Steering Group. This CCIM SG Water ensures intra-Belgian coordination for all water-related European and multilateral topics. Mutual coordination regarding the implementation and reporting

[45] For this topic, the focus will be primarily on Flanders since water management is accredited to the Flemish government and the three RETOUCH sub-cases are located in Flanders.

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on the Water Framework Directive and the Floods Directive are an important part of the CCIM SG Water's remit.

Flanders has multiple coordination mechanisms for water in place. The main one is the **CIW, the integrated water management coordination committee**. The Integrated Water Policy Decree describes the mission of the CIW as follows: "The CIW is responsible at the level of the Flemish Region for the preparation, planning, control and follow-up of integrated water policy, monitors the uniform approach to river basin operation and is charged with the implementation of the decisions of the Flemish Government on integrated water policy." The CIW prepares the drafts of the RBMPs, conducts the public inquiry about them and, based on the comments and opinions received, prepares the final drafts and submits them to the Flemish Government, which adopts the RBMPs.

The CIW is also responsible for organizing the **Drought Commission** and coordinating circular water policy. The Flemish Drought Commission is embedded in the CIW operation. The Drought Commission is an executive body that meets during a prolonged dry period with general water shortages to ensure aligned drought management in Flanders. The members decide together what additional measures are needed to conserve water and make optimal use of the remaining water resources. They also make agreements on communication in the event of drought and water shortages. The CIW has a multidisciplinary and cross-policy composition. The CIW includes: administrations and entities of the Flemish Region from the policy domains; local water managers through their umbrella organizations (Association of the Flemish Provinces (VVP); Association of the Flemish Cities and Municipalities (VVSG); Association of the Flemish Polders and Waters (VVPW); VLINTER; wastewater and drinking water companies; the river basin authorities.

The river basin authorities are responsible for the basin-specific and area-specific aspects of the integrated water policy. Another coordination mechanism is **Aquaflanders**, which is the federation of drinking water companies and sewerage managers. Drinking water companies also have to report on their activities to the **Water Regulator**, which is a sub-entity of the Flemish Environment Agency (VMM). They carry out the tasks assigned in the Water Code. The focus is on tariff regulation of the drinking water component, performance and efficiency comparison of the water companies and studies to provide substantiated advice on economic aspects of drinking water supply in Flanders. There is also VLARIO which is the knowledge center and consultation platform for stormwater and wastewater management in Flanders.

At the transboundary level, Belgium is a party to the Agreement concerning the Protection of the Meuse and the Agreement on the Protection of the Scheldt. Furthermore, it cooperates with the parties involved in the Convention for the Protection of the Rhine.

Multi-sector coordination

This review could not identify cross-sectoral coordination mechanisms that are relevant from the WEFE nexus perspective. Sectors (sector federations, advisory boards) are for instance involved in the Flemish coordination commission integrated water management (CIW). Water platforms are specifically installed to inform the sectors and for knowledge exchange.[46]

[46] https://www.integraalwaterbeleid.be/nl/over-ciw/organisatievorm/organisatievorm/platformwerking-voor-water

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SDG coordination

It is up to the federal state and regions to achieve and follow up the SDG targets.[47] Joint coordinaton and cooperation between different entities is organized within the **Interministerial Conference for Sustainable Development (IMCDO)**. Every individual entity has developed their own long term strategy (e.g. Flanders visie 2050).[48]

Stakeholder involvement and participation

A public participation process for river basin management plans is performed for every individual RBMP, as prescribed by the WFD. All groups of interest (e.g., industry, agriculture, local authorities) are allowed to give their opinion on water resource management planning measures and waterbody development projects.

Access to information and transparency

Table 2 includes the most relevant sources on water-related topics from the different Flemish authorities.

Table 2. Sources of water policy related online information in Flanders (Belgium)

Organisation	Website	Type of data
CIW	nl (integraalwaterbeleid.be)	Information on water policy in Flanders and the management of water issues and access to the RBMP
CIW	GEEF MEE VORM AAN DE UITVOERING VAN HET WATERBELEID — Vol van water	Website for public surveys on water management planning in Flanders
VMM (Flemish Environmental Agency)	Water — Vlaamse Milieumaatschappij (vmm.be)	Overview of research on water conducted by the VMM
Aquaflanders	Publicaties categorie overzicht - AquaFlanders	Positions and publications of Aquaflanders on the drinking water sector and the sewerage management/
Aquafin	Particulieren | Aquafin	Info on supra-municipal wastewater infrastructure, collectors, pumping stations, and wastewater treatment plants
VMM	Geoloket VMM Kwaliteit waterlopen — Vlaamse Milieumaatschappij (vmm.be)	Water quality data

[47] https://sdgs.be/nl/beleid/nationaal-beleid

[48] https://www.vlaanderen.be/publicaties/visie-2050-een-langetermijnstrategie-voor-vlaanderen

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VMM	Riolering en waterzuivering — Vlaamse Milieumaatschappij (vmm.be)	Data on sewerage and water sanitation in Flanders
Flemish government	Grondwater | DOV (vlaanderen.be)	Data on water quantity of groundwater
Flemish government	Update datasets Kaderrichtlijn water (toestand 22/03/2022) | Vlaanderen.be	Overview of datasets related to the Water Framework Directive.

2. State of implementation of EU legislation

Flanders distinguishes four river basins: the Yser, the Brugse Polders, the Scheldt and the Meuse, which are assigned to two international river basin districts, including the Scheldt and the Meuse.

The **international Scheldt River Basin District** has an area of 36,500 km², of which about one-third is located in Flanders. The Flemish part of the international Scheldt river basin district is formed by the catchment basin of the rivers Scheldt and IJzer and their tributaries and the Brugse Polders, together with the associated groundwater and coastal waters. The Flemish part of the river basin district includes the provinces of West Flanders, East Flanders and Flemish Brabant and part of the provinces of Antwerp and Limburg. Of the 300 Flemish municipalities, 263 lie entirely and 23 partially within the Scheldt river basin district. Due to the predominantly flat relief, the rivers are lowland waterways with wide valleys and low flow velocities and discharge. The area is densely populated and highly urbanized and is further characterized by a very dense network of transportation roads. This, on top of the urbanization, creates strong fragmentation. The district is home to a number of large industrial areas, including the port of Antwerp as one of the most important in the world. Predominantly intensive agriculture is also prominent, accounting for just under half of the land use. Large, contiguous natural areas are rare.

The **International Meuse River Basin District** has an area of about 34,500 km², of which barely 1 600 km² is in Flanders. The river basin district is formed in Flanders by the Meuse and its tributaries, together with the associated groundwater. The district does not form a contiguous whole in Flanders: one part lies in the north of the province of Antwerp, a second part in the east of the province of Limburg and a third part in Voeren. Of the 300 Flemish municipalities, 14 lie entirely and 23 partially within the Meuse river basin district. Of the 11 basins, only the Meuse basin belongs to the Meuse river basin district. Of the six groundwater systems, the entire Meuse system, a small eastern part of the Bruland Creek system and the northern part of the Central Campine system belong to the Meuse river basin district. The relief in the Meuse River Basin District is predominantly flat. The district has a lower population density than the rest of Flanders. The network of transportation roads is also less dense. The main industrial areas are located along the canals. A little less than half of the territory is used for mostly intensive agriculture. There are slightly more natural areas in the Meuse river basin district than in the Scheldt river basin district.

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Water Framework Directive – water quality

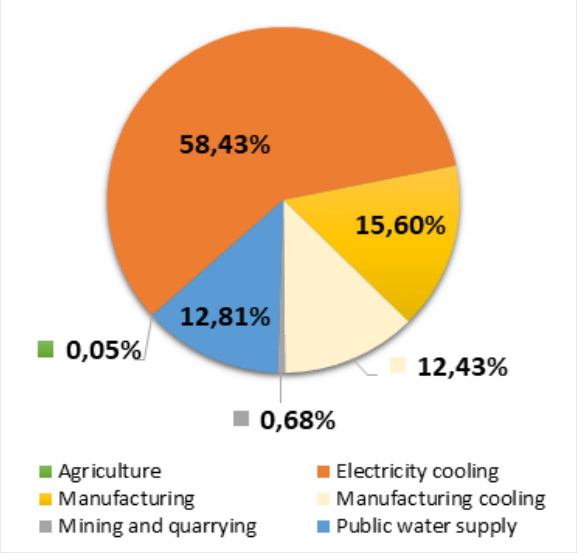
According to Belgium's 2nd RBMPs, 26.2% of all surface water bodies have achieved good ecological status (with only 2.7% of surface water bodies having unknown status) and only 2.2% having good chemical status (with 0.2% having unknown status). For groundwaters, 58.8% of groundwater bodies failed to achieve good chemical status and 10.0% are in poor quantitative status.

The quality of drinking water in Belgium has not been indicated as an area of concern. Out of the 118 Belgian bathing waters, 81.4% are of excellent quality.

Water Framework Directive – water quantity

The total of water abstracted from Belgian surface and groundwater sources amounted to 5,846.07 hm^3 in 2018 (EEA, 2022). As shown in Figure 1., the largest share is taken by electricity cooling (58.43%), followed by manufacturing (15.60%) and public water supply (12.81%).

Figure 1. Water abstraction per sector in Belgium



Source: EEA (2022)

In Belgium, the water exploitation index plus (WEI+)[1] was 7.31% (in 2017), which is less than the 20% that is generally considered to indicate water scarcity. However, the country ranks above the EU average, occupying the 8th place.

Belgium uses a register to monitor water abstractions. Each region makes use of its own system. Small abstractions do not require permits in Belgium, but most small abstractions are nevertheless registered (at least in recent years).

Floods Directive

To comply with the Floods Directive, flood management plans have been set up and made part of the RBMPs. The assessment of flood risks is done by using multiple indicators focusing on: water management and safety, shipping, ecology and water supply. For the water management and safety aspect, the indicators 'economic damage' and 'number of potentially affected people' are considered. The flood risk assessment of all basins shows that the economic consequential damages

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and the number of people potentially affected by floods of high, medium and low probability in most basins is severe to critical. Therefore, the state has to be improved by taking cost-effective actions.

For shipping, the number of days with shipping delays/navigation blockage due to high discharges is measured. The waterways in the Brugse Polders, Upper Scheldt, Dender and Leie basins are the most sensitive to blockages due to increased discharges. Over the years, the number of days with navigation blockages remains more or less stable. For the ecological aspect, the number of hectares of natural area with certain ecological impact that is located within the fluvial flood contours with high probability is measured. More than 99% of the area is flood-tolerant in terms of fluvial flooding. For water supply, the number of days with a shortage of surface water for production of drinking water linked to flooding problems is included as an indicator. There have been no drinking water supply problems due to flooding in recent years.[49]

Urban Waste Water Treatment Directive

In April 2022, the treatment rate of wastewater in the Flemish Region was 86%.[50] This is the share of residents whose wastewater is treated in a public sewage treatment plant. This share has increased significantly in recent decades: in 1992 the treatment degree was 26%, in 2000 45% and in 2010 74%. However, the increase has been less steep in recent years.

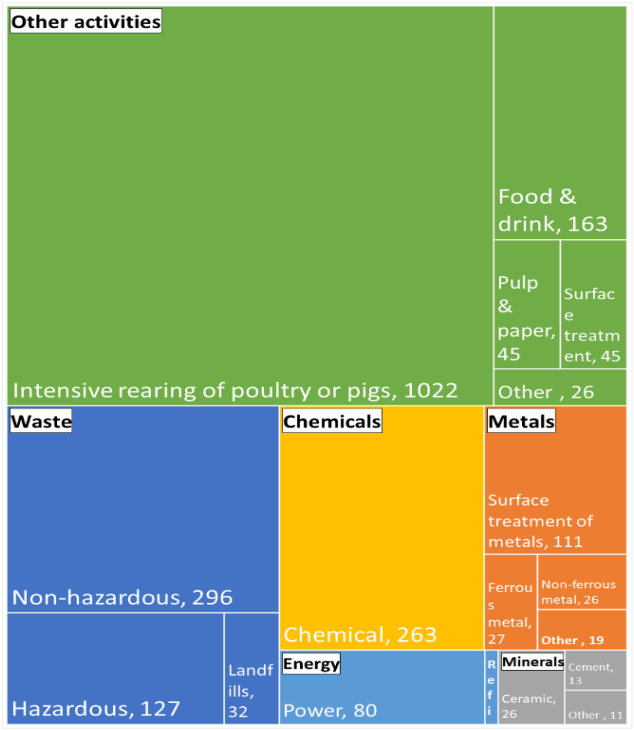
Industrial Emissions Directive

In Belgium, around 2 340 industrial installations were required to have a permit based on the Industrial Emissions Directive (IED) in 2018. As Figure 2. shows the sectors with most IED installations were: (I) intensive rearing of poultry or pigs (44%); (ii) the waste-management sector (19%); (iii) the production of chemicals (11%); (iv) food and drink production (7%); (v) surface treatment of metals (5%); and (vi) the power production sector (3%).

Figure 2. IED industrial installations per sector in Belgium, 2018

[49] *3-doelstellingen-en-beoordelingen.pdf (integraalwaterbeleid.be)
[50] Zuiverings- en rioleringsgraad — Vlaamse Milieumaatschappij (vmm.be)

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.



Source: EEA (2021)

Industrial emissions to water mainly result from: (I) landfills for municipal waste; (ii) the production of pulp and paper and chemicals (nitrogen, phosphorous and total organic carbon); (iii) the metals industry; and (iv) chemicals production and (v) landfills for heavy metals.

Under the Industrial Emissions Directive (IED), Belgium realized a significant decrease (40.3%) in industrial releases of heavy metals like Cd, Hg, Ni, Pb and (4.4%) and Total Organic Carbon (TOC) to water in the last decade (EEA, 2021).

Habitats Directive

As shown in Figures 3. and 4., the share of habitats in good conservation status amounted to 4.3% for the reporting period 2013-2018, compared to 8.6% in the previous one (2007-2012). Concerning protected species, 25.4% were assessed as having a good conservation status in the period 2013-2018, compared to 19,4% in the previous period (2007-2012).

At the same time, the share of habitats in bad conservation status increased from 73.12% to 79.57%, and the share of species in bad conservation status decreased from 43.48% to 35.51%.

Figure 3. Conservation status of habitats in Belgium, 2007-2012 and 2013-2018

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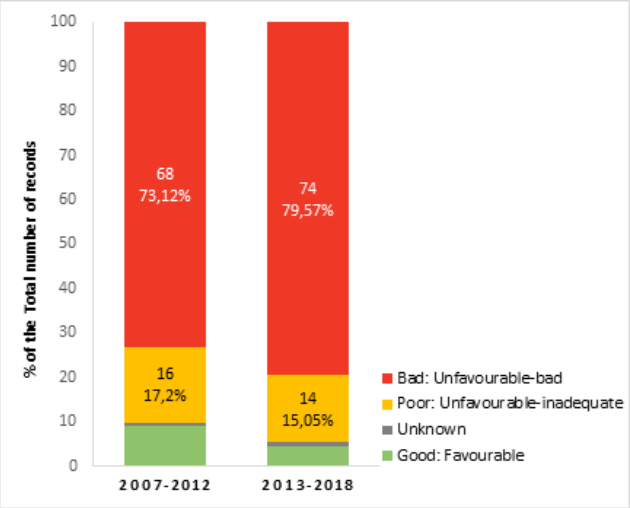

Source: EEA (2021)

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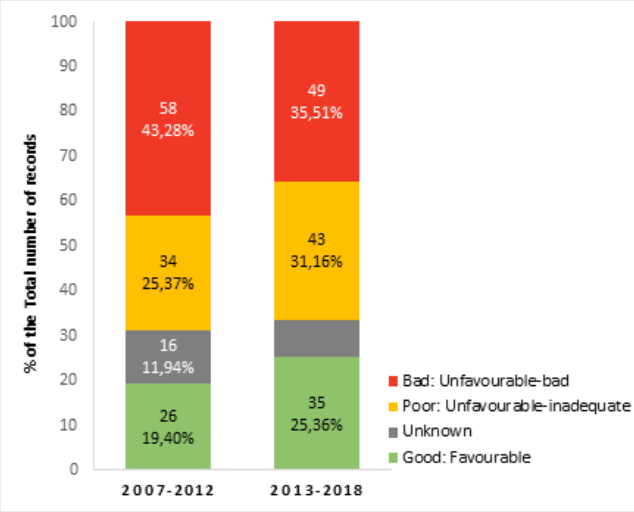
Figure 4. Conservation status of species in Belgium, 2007-2012 and 2013-2018



Source: EEA (2021)

The setting of conservation measures for the Natura 2000 sites in Flanders and Wallonia is a work in progress. Although **Flanders** has general management plans at site level that identify the priority measures necessary for the improvement of the conservation status, more specific management actions have only been drawn up so far for those parts of the network under public or NGO ownership. Although several projects are running or being set up in order to implement the identified priority measures in the field, the remaining work is mostly related to the setting of conservation measures for private lands in Natura 2000.

The problem of nitrogen deposition which affects natural areas and ecosystems is tackled by a tightened permit policy and the enhancement of nature restoration projects within a broad programmatic approach that will be formally adopted in the near future.

Wallonia has a highly effective scheme to prevent site-level deterioration that applies to all individual land sections within the Nature 2000 network, irrespective of their ownership status. This scheme is based on a combination of: (I) a legal regime of general restrictions; and (ii) land-parcel-specific restrictions based on the current land-use and restoration potential of individual land parcels (the so-called "management units"). In addition, site-specific management plans are currently being drawn up as part of the ongoing LIFE BNIP programme.[3]

The **Brussels Capital Region** has set site specific conservation objectives for all Special Areas of Conservation, including the description of general conservation measures for the target habitats and ecological demands for the target species.

Energy and climate related legislation

In 2019, the Belgian government presented its national energy- and climate plan for the period 2021-2030. This plan explains how Belgium will contribute to the long-term greenhouse gas emission reduction targets under the Paris Agreement. It sets the outlines for the transition to a sustainable,

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reliable and affordable energy system, according to the five dimensions of the European Energy Union and in line with the objectives set for 2030: a low-carbon EU (reduction of greenhouse gas emissions and development of renewable energy), energy efficiency, security of supply, the internal energy market research, innovation and competitiveness. The plan must also be consistent with a long-term strategy for reducing greenhouse gas emissions, in line with the Paris Agreement.[51]

3. *Potential support for a WEFE nexus approach*

Based on the previous sections of this country profile of Belgium, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 3).

Table 3. Potential support for WEFE nexus approach based on current institutional settings in Belgium

	High	Medium	Low
Political will and decisiveness		X	
Division of responsibilities / competencies		X	
Planning mechanisms		X	
Coordination mechanisms	X		
Stakeholder representation and engagement			X
Knowledge infrastructure		X	
Financial resources		X	

The main arguments for this tentative assessment are that Flanders has multiple coordination mechanisms for water in place. Important ones are the CIW, the integrated water management coordination committee, the Drought Commission, Aquaflanders and the Water Regulator. However, stakeholder representation and engagement seem to be less well organized.

4. *Challenges and opportunities*

Several challenges and opportunities can be identified that are relevant with respect to implementing a WEFE nexus approach. They are based on documents produced in the EU context, including the 2022 EIR report for Belgium, associated publications on the implementation of EU environmental policy, and the Belgian Recovery and Resilience Plan (RRP).

Challenges:

- Assess new physical modifications of water bodies, taking alternative options and appropriate mitigation measures into consideration.
- Improve water quality - both in surface water and ground water bodies, tackling pollution by nitrates in particular.

[51] NEKP | Vlot en veilig mobiliteitssysteem (nationaalenergieklimaatplan.be)

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- Increase the share of protected areas and establish site-specific conservation objectives for all Natura 2000 sites.
- Invest in water infrastructure and complete the implementation of the Urban Waste Water Treatment Directive for all remaining non-compliant agglomerations.

Opportunities:

- As part of the Belgian RRP and under the umbrella of Blue Deal Belgium[52], Flanders aims to accelerate its water-retention actions through: (i) the restoration and creation of wetlands; (ii) integrating waterbodies and other natural environments together into a broader network that spans both cities and rural areas; (iii) the installation of water buffers at large scale; (iv) the use of innovative water-saving technologies; and (v) investing in research on water conservation.
- Flanders facilitates compliance with the Nitrates Directive by a wealth of online tools made available to farmers and also promotes peer-to-peer learning between farmers for a better soil and water quality.

[52] https://bluedeal.integraalwaterbeleid.be/about-blue-deal

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ANNEX 3: Country profile of Germany

Germany in a few facts

# of inhabitants	83,2 million
Surface area	353 296 km2
GDP per capita	117 pps[53]
Significant bodies of water (RBDs)	Elbe; Rhine; Weser; et al
Polity	federal state
Layers of government	central government; 16 federal states (Länder); 401 counties (294 Landkreise, 107 kreisfreie Städte); 11,054 municipalities
Legislative powers at the sub-national level	yes
Decentralisation index	2.5 (1st out of 27)[54]
WEI+	5.46% (2017)[55]

1. Institutional settings

Distribution of tasks and responsibilities

In Germany, tasks and responsibilities for water governance are generally distributed between three institutional levels: the Federal Government, the federal states (Länder), and municipalities. The Federal Government has the right to issue framework regulations, whereas the states must implement this framework within their own state law and can issue supplementary regulations. The administrative enforcement of all water legislation, including federal laws, and thus in particular the issuing of official permits, is the responsibility of the federal states. Importantly, a distinction has to be made between the water authorities that make water law decisions and the technical offices (state offices, state institutes, environmental offices, water management offices) that primarily perform advisory and expert functions.

Table 1. provides an overview of the specific responsibilities that Federal Ministries have in the field of water governance.

[53] pps = purchasing power standard
[54] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[55] The threshold for water scarcity is set at > 20%

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Table 1. Water governance responsibilities by Ministry[56]

Ministry	Responsibility/Area of Influence
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (**BMUB**)	Regulation in accordance with the Federal legislation. Represents Germany in international settings related to transboundary cooperation and EU Regulation.
Federal Ministry for Food and Agriculture (**BMEL**)	Flow regulation, flood protection and coastal protection in the rural sector.
Federal Ministry of Health (**BMG**)	Drinking water supply and bathing water quality.
Federal Ministry for Transport and Digital Infrastructure (**BMVI**)	Waterways, navigation, and quality of coastal waters.
Federal Ministry of Education and Research (**BMBF**)	Research, innovation, and technological development in the water sector.
Federal Ministry for Economic Affairs and Energy (**BMWi**)	Regulation of Germany's energy supply (including hydropower).
Federal Ministry for Economic Cooperation and Development (**BMZ**)	Water resource management-related issues.

At the next levels, the federal states and the municipalities are responsible for enforcing water management regulation and the implementation of administrative procedures, following the three-level structure of the general administration, distinguishing between supreme, intermediate and lower authority.[57] The local authorities are responsible for the supervision of day-to-day water management matters and technical functions, including: supply of drinking water and collecting of water charges; monitoring of the status of waterbodies; preparation of technical guidelines and offering of technical advice; planning of the use of water resources; processing of licenses and approval of water use; monitoring of wastewater discharges, management of fines and compensations, and management of rainwater.

Table 2. presents the distribution of tasks and responsibilities in relation to the four WEFE nexus pillars. It is important to note that policy making mainly takes place at the federal level, but execution is primarily a responsibility of the federal states.

[56] https://www.uba.de/water-resource-management

[57] https://www.bmuv.de/themen/wasser-ressourcen-abfall/binnengewaesser/gewaesserschutzpolitik/deutschland/wasserwirtschaftsverwaltung-in-den-laendern-und-kommunen

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Table 2. Main governmental actors responsible for WEFE nexus relevant governance in Germany

WEFE nexus pillars	Policy making	Policy execution
Water	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)	federal states; municipalities
Energy	Federal Ministry for Economic Affairs and Energy (BMWi)	federal states; municipalities
Food	Federal Ministry for Food and Agriculture (BMEL)	federal states; municipalities
Ecosystems	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)	federal states; municipalities

Coordination mechanisms

Multi-level coordination

The main agents responsible for water governance in Germany are the Federal States (Länder). They are responsible for coordination across sectors and for the implementation of the Programmes of Measures (PoMs) to achieve the provisions of the EU WFD. The Federal States must coordinate between sectors and municipalities and are responsible for the management of inland, ground and marine waters as well as flood risk management. At the national level, the Working Group of the Federal States on Water Issues (LAWA) is a discussion space that brings together the Federal States. LAWA acts as an umbrella to discuss legislation and share ideas and experiences to draw solutions for better water management.

For the aim of transboundary coordination and management of water bodies, Germany takes part in numerous international commissions. The most important are: International Commission for the Protection of the Rhine against Pollution (ICPR); International Commissions for the Protection of the Moselle and the Saar against Pollution (ICPMS); International Commission for the Protection of the Elbe (ICPER); International Commission for the Protection of the Danube River (ICPDR); International Commission for the Protection of the Oder against Pollution (ICPO); International Commission for the Protection of the Meuse (IMC); International Commission for the Protection of Lake Constance. Besides, these commissions, Germany cooperates closely with the Netherlands through ministerial discussions about the management of the Ems river basin.

Multi-sector coordination

This review could not identify cross-sectoral coordination mechanisms that are relevant from the WEFE nexus perspective other than the responsibilities of the Federal States.

SDG coordination

The Federal Government oversees the implementation of the SDGs as described in the National Sustainability Strategy (Bundesregierung, 2021). The federal ministries, who are responsible for the

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implementation, advise the federal government and appoint SDG coordinators. With the implementation of the EU WFD, SDG targets 6.1 (access to drinking water), 6.2 (access to sanitation services) and 6.5 (integrated water resource management) have been met in Germany. The remaining targets related with water quality, and ecosystem health still require further actions.

Stakeholder involvement and participation

Germany has specific mechanisms in place for the involvement of the general public in decision-making related to the use of water resources, these are also relevant with respect to the implementation of the main EU directives, including the Water Framework Directive and the Floods Directive. At the national level, the Federal Water Act regulates stakeholder involvement and participation. Following the above regulations, all groups of interest (e.g., industry, agriculture and tourism sectors and environment protection organizations) should be allowed to give their opinion on water resource management planning measures and waterbody development projects. The responsibility of developing such consultations relies on the local competent authorities.

Access to information and transparency

There are several databases and information sources related to water management available to the German administration as well as the public. The Federal Environment Agency (UBA) hosts most of this information. Table 3. gives an overview of online sources presenting relevant water management and water policy information.

Table 3. Sources of water policy related information online

Title of website	Websites address	Type of data
Umweltbundesambt (UBA)		
Water Resource Management in Germany	https://www.umweltbundesamt.de/en/topics/water (EN)	Info for general public
Waters in Germany. Status and assessment:	https://www.umweltbundesamt.de/en/publikationen/waters-in-germany (EN)	Info for general public
Water-related environmental indicators	https://www.umweltbundesamt.de/en/data (EN)	Water Quality Indicators
The Water Framework Directive – The status of German waters 2015	https://www.umweltbundesamt.de/publikationen/water-framework-directive (EN)	State of implementation of the EU WFD in Germany
Environmental Protection in Agriculture	https://www.umweltbundesamt.de/publikationen/umweltschutz-in-der-landwirtschaft (DE)	Information on how to avoid/minimize environmental damage from agricultural production
Drinking water	https://www.umweltbundesamt.de/publikationen/rund-um-trinkwasser (DE)	Info for general public: quality of drinking water

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Quality of bathing waters	https://www.umweltbundesamt.de/themen/wasser/schwimmen-baden/badegewaesser (DE)	Info for general public: quality of bathing water
Water Protection tips for individuals	https://www.umweltbundesamt.de/publikationen/wasser-wertvolles-nass-ueberfluss (DE)	Info for general public: Day-to-day action for water conservation
Other organisations		
Instructional and educational materials	http://www.h2o-wissen.de/ (DE)	Info for general public
Germany's Pollutant Release and Transfer Register	https://thru.de/thrude/ (EN) (DE)	Info for general public

2. State of implementation of EU legislation

As shown in Figure 1., Germany has fully transposed the water-related EU directives into the Federal Government legislation. This section explains this process and describes Germany's progress in implementing the EU legislation and the remaining challenges.

Figure 1. Principal legal provisions of water resource management

Principal legal provisions of water resource management

Level	Regulations					
EU	Water Framework Directive (WFD) Groundwater Directive (GWD) Environmental Quality Standards Directive (EQSD)	Urban Wastewater Treatment Directive Industrial Emissions Directive (IED)	Drinking Water Directive	Nitrates Directive	Flood Risk Management Directive	Marine Strategy Framework Directive (MSFD)
National	Federal Water Act (WHG) Groundwater Ordinance (GrwV) Surface Waters Ordinance (OGewV) Ordinance on Installations for Handling Substances Hazardous to Water	Federal Water Act Waste Water Charges Act (AbwAG) Waste Water Ordinance (AbwV)	Drinking Water Ordinance (TrinkwV)	Fertilizer Act (DüngG) Fertilizer Ordinance (DüV)	Federal Water Act	Federal Water Act
Länder	Federal states' legislation (laws/ordinances, licences, notices, monitoring)					

Source: BMU & UBA (2018)

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Water Framework Directive – water quality

In Germany, the Federal Water Act (FWA) is the national law concerning water resource management. This law dictates the main regulations for the management of surface and groundwater and controls human interventions of waterbodies. The FWA considers waterbodies an integral component of the ecosystems that provide habitats for fauna and flora. Furthermore, the FWA dictates that water resources must be protected and managed to serve the general public.

At the national level, the FWA contains the provisions of the EU WFD. In addition, the Environmental Quality Standards Directive and the Groundwater Directive have been included under the Surface Waters Ordinance and the Groundwater Ordinance. Under the German legislation, the federal states are responsible for preparing the PoMs and management plans, and for enforcing regulations. However, the Federal Government has the ultimate reporting responsibility to the EU.

According to the assessment of the implementation of the PoMs for the 2nd RBMPs (European Commission, 2022), there was satisfactory progress for the following measures:

- Construction or upgrades of wastewater treatment plants;
- Reduction of nutrient pollution from agriculture;
- Phasing-out emissions, discharges and losses of Priority Hazardous Substances;
- Prevent or control the adverse impacts of invasive alien species and introduced diseases, and
- Prevent or control the adverse impacts of fishing and other exploitation/removal of animals and plants.

However, the execution of the following measures is facing significant challenges and delays:

- Improving longitudinal continuity (e.g., establishing fish passes, demolishing old dams);
- Improving hydromorphological conditions of water bodies other than longitudinal continuity, and
- Improvements in flow regime and establishment of ecological flows.

The main challenges for the implementation of the PoMs for the respective German waters are: lack of mechanisms and staff resources for planning processes, acceptance of the plans and their actions by the general public, and land availability (European Commission, 2022).

Water Framework Directive – water quantity

The total of water abstracted from German surface and groundwater sources amounted to 27,075.75 hm^3 in 2019 (EEA, 2022). As Figure 2. shows, the largest share is taken by electricity cooling (49.92%), followed by public water supply (19.42%) and manufacturing cooling (12.42%).

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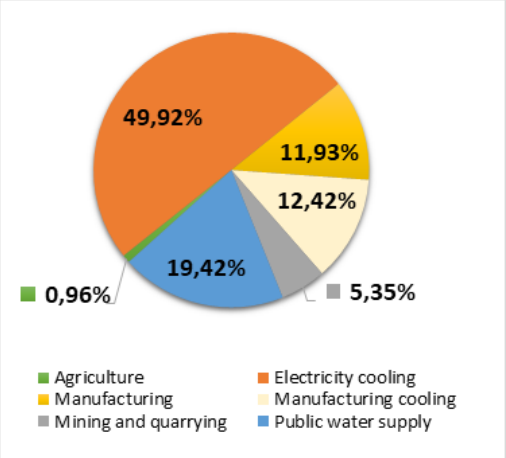
Figure 2. Water abstraction per sector in Germany, 2019



Source: EEA (2022)

In Germany, the water exploitation index plus (WEI+)[58] was 5.46% in 2017, which is below the 20% generally considered to be an indication of water scarcity. The country is ranked 11th (from high to low score) in the EU.

Germany uses water registers to control water abstractions, as well as a permitting system, with permits regularly reviewed. Small abstractions are exempted according to German law, but not all are registered. Only a few Länder require notification of the uses that are exempt from the obligation to have a permit.

Floods Directive

Germany has made significant progress by adopting the National Flood Protection Programme and numerous measures for flood risk management at the river basin level. However, progress is still needed on the implementation of these measures with special emphasis on assessing the impact of climate change, as determined by the Flood Risk Management Directive. In general, there is a need for a better understanding of the tolerated flow risk level, as well as of the cost-benefit considerations for better flood risk management policy.

Drinking Water Directive

Progress towards the provisions of the Drinking Water Directive is considerable. Most of the river basins in the country have been mapped for pressures (European Commission, 2022). Furthermore, access to drinking water and sanitations services in Germany is considered universal (Bundesregierung, 2021). To date, most indicators regarding quality of drinking water exhibit a positive trend.

[58] This index is a measure of total fresh water use as a percentage of the renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned after use to the environment.

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Bathing Water Directive

Bathing water quality is closely monitored by the Federal States in accordance with the European Directive. Out of the 2,304 reported bathing waters, 89.9% were of excellent quality and 4.9% of good quality.

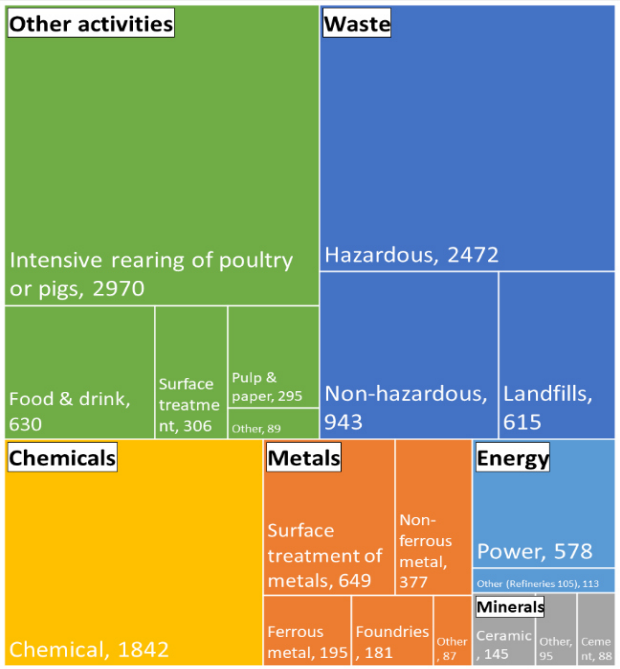
Urban Waste Water Treatment Directive

At the national level, the Wastewater Ordinance, the Wastewater Charges Act, and the Federal Water Act incorporate the provisions of the UWWTD. These instruments regulate the direct discharge of wastewater into a waterbody by implementing the polluter-pays principle into practice. This means that a fee is charged based on the content of toxic substance in discharged water. According to the Freshwater Information System for Europe[59], 100% of sewage in Germany is treated in accordance with the EU legislation.

Industrial Emissions Directive

In Germany, around 12 670 industrial installations are required to have a permit based on the Industrial Emissions Directive (IED). As shown in Figure 3., the industrial sectors with most IED installations are: the waste management sector (32%), intensive rearing of poultry and pigs (23%), the production of chemicals (15%), followed by power production (5%), surface treatment of metals (5%) and food and drink production (5%).

Figure 3. IED industrial installations per sector in Germany, 2018



Source: EEA (2021)

Industrial emissions to water mainly result from the production of chemicals, production of pulp and paper and the waste management sector for nitrogen, phosphorous, and total organic carbon, as

[59] https://water.europa.eu/freshwater/countries/uwwt

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well as from the production of ferrous metals and waste incineration for polycyclic aromatic hydrocarbons, and from production of chemicals, waste management sector and extractive industry in case of heavy metals.

Under the IED framework, Germany showed a significant decrease in industrial releases of heavy metals like Cd, Hg, Ni, Pb (-26.6 %) and in total organic carbon (-19.1 %) to water in the last decade (EEA, 2021).

Habitats Directive

Germany hosts 93 habitat types and 195 species covered by the Habitats Directive. The country also hosts populations of nearly 120 bird taxa listed in Annex I to the Birds Directive.

By 2021, 15.5% of the national land territory of Germany was covered by Natura 2000 (EU coverage 18.5 %), with special protection areas (SPAs) classified under the Birds Directive covering 11.3% (EU coverage 12.8%) and sites of community importance (SCIs) under the Habitats Directive covering 9.4% (EU coverage 14.2%) of Germany's territory.

According to the European Commission, the quality of the set objectives and measures is insufficient for all 4 544 SACs in Germany and has started a legal procedure in February 2022. The main legal dispute is about how specific and detailed conservation objectives have to be set for each site designated under the Habitats Directive.

The share of habitats in good conservation status amounted to 29.7% for the reporting period 2013-2018, compared to 28.1% in the previous one (2007-2012) (see Figure 4.). However, German protected grassland habitat types show a favourable conservation status of less than 10%. Concerning protected species, 25.6% were assessed as having a good conservation status in the period 2013-2018, compared to 24.6% in the period 2007-2012 (see Figure 5.).

At the same time, the share of habitats in unfavourable conservation status decreased from 69.8% to 69.2%, while the share of assessments for species in unfavourable conservation status increased from 60.4% to 63.3%. The main pressures are agriculture and changes in land use (both, intensification and abandonment), together with nitrogen deposition from agriculture and traffic sources. Importantly, Germany has failed to reverse or halt the decline in protected habitats and species associated with agricultural land. In 2020, 14% of agricultural land in Germany was under contract to contribute to biodiversity and landscapes.

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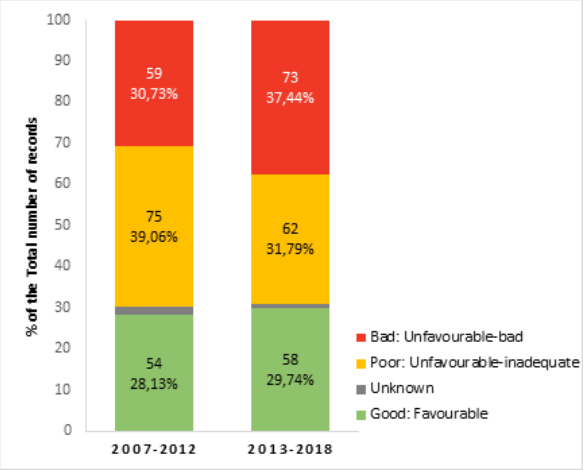
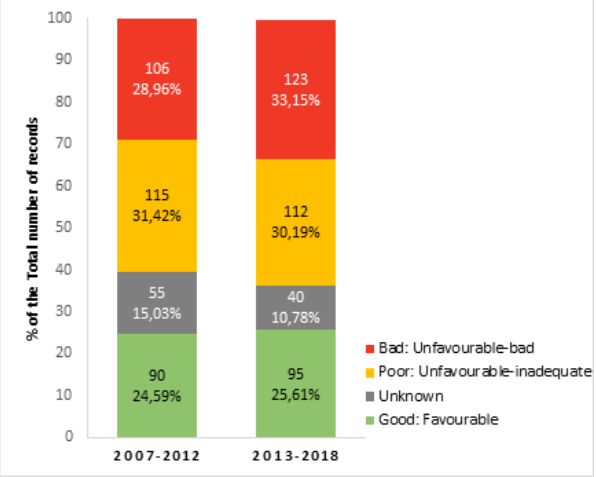
Figure 4. Conservation status of habitats in Germany, 2007-2012 and 2013-2018



Source: EEA (2021)

Figure 5. Conservation status of species in Germany, 2007-2012 and 2013-2018



Source: EEA (2021)

The **2022 EIR for Germany**[60] recognizes the overall efforts of the country in terms of the implementation of EU environmental EU law. At the same time, the level of implementation varies among each federal state. Intensive production practices (e.g., industry and agriculture) still impose threats to the national ecosystems and natural resources. The following are the main environmental challenges faced by Germany:

- Pollution by nitrates is significantly affecting groundwater quality;
- Progress towards the objectives for special areas of conservation are not sufficient;
- Ecological status of the majority of surface water bodies reach is not desirable, and

[60] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=comnat%3ASWD_2022_0265_FIN

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- Environmentally harmful subsidies persist at the national level.

Energy and climate related legislation

According to its **Climate Action Plan 2050**, Germany has the objective of achieving greenhouse gas neutrality by 2050.[61] This target is exhibiting positive trends, but may fall short by more than 20% (Bundesregierung, 2021). In addition, the German Strategy for Adaptation to Climate Change (DAS) considers 15 lines of action covering the energy and industry sectors as well as water resource management, and coastal and flood protection. The **Working Group of the Federal States on Water Issues (LAWA)** is in charge of analysing adaptation measures to address the potential impacts of climate change. These adaptation measures should take into account uncertainty and a variety of climate change scenarios. At the national level, the Federal Environment Agency has a climate check tool to assess key criteria of adaptation measures. The main points under evaluation are (BMU & UBA, 2018):

- **Flexibility**: measures should be easy to adjust.
- **Robustness**: measures should meet the desired impacts regardless of the intensity of climate change.
- **Effectiveness**: measures should target climate change adaptation as directly as possible.
- **Capacity** to address a diversity of objectives, including *inter alia* water management and nature conservation.

3. Potential support for a WEFE nexus approach

Based on the previous sections, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 4).

Table 4. Potential support for a WEFE nexus approach based on current institutional settings in Germany

	High	Medium	Low
Political will and decisiveness	X		
Division of responsibilities	X		
Planning mechanisms		X	
Coordination mechanisms			X
Stakeholder representation and engagement	X		
Knowledge infrastructure		X	
Financial resources		X	

The main arguments for this tentative assessment are that Germany is strong in terms of division of responsibilities, political will, and stakeholder engagement requirements. In particular, the administrative division of the country into Federal States, and the division of responsibilities within them is a strong point that favors multi-level approaches. From a planning, knowledge and funding perspective, the country has made substantial progress on the implementation of the WFD. On the

[61] https://ec.europa.eu/clima/sites/lts/lts_de_en.pdf

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other hand, this review could not identify any (WEF) cross-sectoral coordination mechanisms other than the responsibilities of the Federal States. Finally, economic instruments for water governance are still limited to drinking and wastewater charges so that there is room for the adoption of other innovative instruments.

4. Challenges and opportunities

Several challenges and opportunities can be identified that are relevant with respect to implementing a WEFE nexus approach. They are based on documents produced in the EU context, including the national EIR report for Germany from 2022, associated publications on the implementation of EU environmental policy, and the German Recovery and Resilience Plan (RRP).

Challenges:

- Put in place clearly defined conservation objectives and measures for nature protection sites, and provide adequate resources for their implementation in order to maintain/restore species and habitats of Community interest to a favourable conservation status.
- Implement an ecosystem accounting framework focused on biodiversity conservation targets in urban and rural areas, and develop a reporting system to inform policy makers on the ecological and economic effects of policy decisions.
- Ensure compliance with the Nitrates Directive by revising the rules on the identification of polluted areas and by taking appropriate measures to address serious groundwater pollution, especially in intensive farming areas.
- Inform policy makers, the public, business and the finance sector of the advantages of natural capital accounting and ensure sufficient funding and co-operation, both nationally and internationally.
- Promote cross-sectoral coordination through dedicated mechanisms and instruments.

Opportunities:

- In 2023, a National Water Strategy[62] was launched by the Federal Ministry of Environment aiming to take systematic action to ensure a sound management of water resources by modernizing water infrastructure with a view to future challenges.
- In 2022, a Federal Action Plan on Nature Based Solutions for Climate and Biodiversity[63] was published aiming to create synergies between nature and climate protection by restoring ecosystems.
- The precautionary aspect in national soil protection law has been strengthened in order to make policy measures more effective in terms of climate change adaption and climate protection as well as preservation of soil biodiversity.
- Investment priorities in Germany have shifted towards greater support to policies aimed at stimulating sustainability transitions in a wide set of economic sectors.

[62] https://www.bmuv.de/en/download/national-water-strategy-2023
[63] https://www.bmuv.de/en/download/federal-action-plan-on-nature-based-solutions-for-climate-and-biodiversit

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- In the 2014-2020 period, Germany received EU support for 37 LIFE projects (for nature and environment) with EUR 124.3 million from the LIFE programme.

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ANNEX 4: Country profile of Malta

Box Malta in a few facts

# of inhabitants	0,5 million
Surface area	316 km2
GDP per capita	313 pps[64]
Significant bodies of water (RBDs)	Malta
Polity	decentralised unitary state and parliamentary republic
Layers of government	central government; 6 regional committees; 68 municipalities
Legislative powers at the sub-national level	no
Decentralisation index	0,8 (26th out of 27)[65]
Water Exploitation Index plus (WEI+)	29.6% (2019)[66]

1. Institutional settings

Distribution of tasks and responsibilities

At the national level, the coordination of the development of water management policy falls within the remit of the **Ministry for the Environment, Energy and Enterprise (MEEE)** that is being supported on a technical level by the **Energy and Water Agency (EWA)**. In relation to the management of stormwater in the urban environment, the policy function falls mainly to the Ministry for Public Works and Planning (MPWP), with regulatory authorities such as the Planning Authority and the Building and Construction Authority falling within its purview. Other relevant ministries include the Ministry for Transport, Infrastructure and Capital Projects (MTIP), which plays an implementation role through the Infrastructure Malta Agency.

The Ministry for Agriculture, Fisheries and Animal Rights (MAFA) is relevant in relation to water use in agriculture. It is also the supervisory ministry for the Food Agency. Furthermore, the Superintendent of Public Health within the Ministry for Health holds the primary responsibility related to water intended for human consumption and is the competent authority in respect of the relative EU directive.[67]

[64] EU purchasing power standard
[65] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[66] EU Commission Country Report for Malta 2023 - https://economy-finance.ec.europa.eu/system/files/2023-05/MT_SWD_2023_618_en.pdf. The threshold for water scarcity is set at > 20%.
[67] Directive EU 2020/2184 – recast Drinking Water Directive

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Whilst Regional Committees and municipalities may be consulted in relation to water-related issues, given the small expanse of the territory of the Maltese islands, water policy is mainly managed at the centralized government level.

From a WEFE nexus perspective, the policy functions in relation to energy and ecosystems aspects fall to the MEEE, which is responsible for the design of energy-related policy through the efforts of the Energy and Water Agency (EWA) as well as environmental policy, and which supervises the implementing entity Ambjent Malta, an entity tasked with responsibility for the preservation and enhancement of Malta's natural capital and biodiversity in rural, urban, coastal and marine landscapes.

Regulatory functions fall to the Regulator for Energy and Water Services for water and energy services, and to the Environment and Resources Authority for broader environmental matters, including ecosystems, the responsible minister for both being the Minister for the Environment, Energy and Enterprise.

For the island of Gozo, the Gozo Regional Development Authority is tasked with reviewing any policy or plan related to water management in order to assess how it specifically impacts the Gozitan region. Furthermore, the Ministry for Gozo is tasked with a number of responsibilities related to water management such as storm water/valley management. Otherwise all implementation of water-related policies is centrally managed through the various entities falling within the purview of the above-mentioned ministries.

Table 1. summarises the distribution of tasks and responsibilities from the perspective of the four WEFE nexus pillars.

Table 1. Main public actors responsible for WEFE nexus relevant governance in Malta

WEFE nexus pillars	Policy making	Policy execution
Water	Ministry for the Environment, Energy and Enterprise (MEEE)	Energy and Water Agency (EWA); Environmental and Resources Authority (ERA); Regulator for Water and Energy Services; Water Services Corporation
Energy	Ministry for the Environment, Energy and Enterprise (MEEE)	Energy and Water Agency (EWA); Regulator for Water and Energy Services
Food	Ministry for Agriculture, Fisheries & Animal Rights (MAFA)	Malta Food Agency
Ecosystems	Ministry for the Environment, Energy and Enterprise (MEEE)	Environment and Resources Authority (ERA)

Coordination mechanisms

Existing coordination mechanisms are primarily focused on the implementation of the Water Framework Directive. In order to coordinate the implementation of the Programme of Measures laid

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down in Malta's RBMP a supporting inter-ministerial committee was established. This committee is supported by a **National Water Table** which brings together stakeholders from the public and private sector to discuss development and implementation of Malta's River Basin Management Plan.

Inter-ministerial Committee on Water

The **Inter-ministerial Committee on Wat**er was established in order to ensure the effective and timely implementation of the 1st RBMP. Its main responsibilities are to:

- Oversee the implementation of the water-related directives and ensure the integration of the measures into each entity's business plan (including time frames for implementation);
- Advise on the integration of WFD principles and objectives in sectoral policies, plans and programs and to recommend mechanisms that enable implementation of measures for adoption;
- Monitor the progress of implementation and report to the competent authorities and ministries;
- With the help of assisting sub-committees, identify constraints that hinder implementation and recommend alternative measures by reviewing subcommittees reporting and recommendations on implementation of respective measures; and
- Inform the RBMP implementation process of other issues that are likely to affect implementation.

The majority of the measures set out in the 2nd RBMP involved a wider spectrum of players, necessitating the involvement of a larger number of public bodies, including entities tasked with implementation tasks. This continues to be increasingly the case moving forward. Accordingly, the Inter-ministerial Committee on Water is set up in a manner that allows it to evolve to encompass the participation of other entities, and in this respect includes a representation from, *inter alia*, the Water Services Corporation and Transport Malta.

The Committee also seeks to support the implementation of other national plans and programmes, in order to contribute to the development of an active **Integrated Water Resources Management platform.** These include the National Tourism Policy, the National Environment Policy, the National Biodiversity Strategy and Action Plan, the Rural Development Programme and the National Aquaculture Strategy.

Stakeholder involvement and participation

In conjunction with the publishing of its 2nd RBMP, Malta undertook a LIFE project, aimed at optimising its implementation and, as part thereof established a Stakeholder Water Table where the active input of interested stakeholders in support of the implementation of the WCMP is sought. This **Stakeholder Water Table** is composed of numerous entities which include the project partners, government and public funded entities, NGOs and voluntary organisations together with private sector entities and associations. It is intended to ensure a continuous consultation process through which stakeholders are involved in the development of the approaches and measures required for the achievement of the environmental objectives as they arise out of the WFD, thus facilitating the acceptability and uptake of the Programmes of Measures. This forum allows for

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stakeholders to regularly discuss issues and challenges arising during the implementation of measures identified and ensures that the different stakeholders agree on common methods and approaches to support the implementation process, thus facilitating their uptake and optimizing their eventual impact.

Whilst the Stakeholder Water Table was set up as part of the 2nd cycle of RBMPs, it is envisaged that it shall continue to serve as a national sounding board on matters related to water policy, and to its implementation, including discussions which may inform the formulation of measures for Malta's future RBMPs and beyond. In its work, it is supported by a committee which tackles the technical and scientific aspects of the LIFE project implementation. It is composed of representatives of the project partners and chaired by a representative of the Energy and Water Agency.

Furthermore, the process leading to the publication of laws and policies may include a public consultation phase[68], through a dedicated public consultation platform.[69] Environmental laws and policies are amongst those which require public consultation. This includes any implementing legislation related to the implementation of the WFD.

Access to information and transparency

Whilst environment-related information is publicly available or can be requested from ERA (with some exceptions applicable in relation to commercially sensitive information), the availability of information related to water and water policy in general is more fragmented. The RBMP, which is publicly available, is the main source of water-related data applicable to the territory.

Plans however are at hand to improve the availability of data and information on the water sector through the establishment of a National Water Information System as data is currently to be found fragmented across multiple sources.

2. State of implementation of EU legislation

Water Framework Directive – water quality

The territory of the Maltese islands comprises of one river basin district. To this end, the entirety of the river basin district is handled through one RBMP, including a review of the status, setting of objectives and establishment of a Programme of Measures to achieve objectives. The issues highlighted by the Commission in its review of the outcome of the 2nd RMBP include the management of nutrient contamination, upgrading of monitoring frameworks, characterization of water bodies and improved regulatory framework for water uses.

According to Malta's 2nd RBMP reporting, 36.8% of its surface water bodies have reached good ecological status (with unknown ecological status for 52.6% of all surface water bodies), while only 52.6% have good chemical status (European Commission, 2019). For groundwater bodies, 80.0%

[68] https://www.gov.mt/en/publicconsultation/Pages/Policy-Making-Process.aspx

[69] https://www.gov.mt/mt/publicconsultation/Pages/default.aspx

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failed to achieve good chemical status and 13.3% are in poor quantitative status. The 3rd RBMP has been reported.

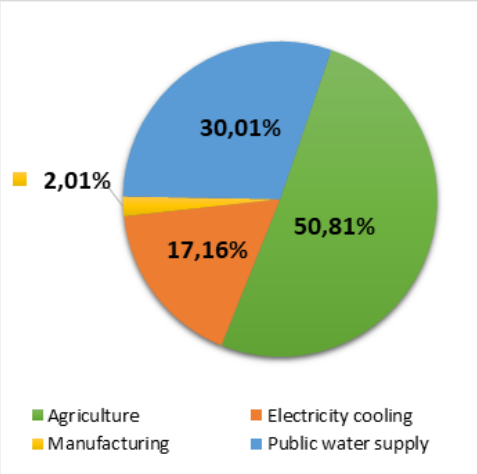
In February 2022, the Commission decided to refer Malta to the European Court of Justice for its failure to ensure compliance with the UWWTD in the Malta North and Malta South agglomerations.

Importantly, Malta showed the last decade a significant decrease (94.7%) in industrial releases of heavy metals like Cd, Hg, Ni, Pb, but a slight increase (0.7%) in TOC to water (EEA, 2022).

Water Framework Directive – water quantity

The total of water abstracted from Maltese surface and groundwater sources amounted to 49.95 hm^3 in 2019 (EEA, 2022). As Figure 1. shows, the largest share is taken by agriculture (50.81%), followed by public water supply (30.01%), electricity cooling (17.16%), and 2.01% for manufacturing. Malta has identified over-abstraction issues at groundwater-body level.

Figure 1. Water abstraction per sector in Malta



Source: EEA (2022)

In Malta, the water-exploitation index plus (WEI+)[70] amounted to 29.6% in 2019[71], a figure which taken at face value is indicative of water scarcity. It is furthermore very pertinent to highlight that this figure greatly underestimates the reality of water scarcity which effectively prevails in the territory, this being a benchmark which entirely fails to take into consideration non-conventional water resources, which constitute a substantial portion of Malta's water supply base. It is estimated that a long term adjusted average figure for the Maltese Islands would be of the order of 70-80%. There remains scope to use more efficient farming techniques, promote water reuse and spread good practices in water-scarce areas.

[70] The water-exploitation index plus (WEI+) is a measure of total fresh water use as a percentage of renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned after use to the environment.

[71] EU Commission Country Report for Malta 2023 - https://economy-finance.ec.europa.eu/system/files/2023-05/MT_SWD_2023_618_en.pdf

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The country uses a register to monitor water abstractions from groundwater. The register of groundwater sources is not publicly available. Where a source has been marked for exemption from checks on its groundwater-abstraction meter, no record is kept of this by the competent authority. No competent authorities are responsible for updating and managing water-abstraction registers, unlike the situation which exists for abstraction from fresh surface-water sources, which is being monitored. The groundwater abstraction is monitored by the EEA.[72]

According to an **OECD study on financing water-supply sanitation and flood protection**, Malta relies on a mix of conventional (e.g. groundwater) and non-conventional (e.g. desalination) resources for its water supply. The quality of groundwater in Malta is degrading (due to saline intrusion, and pollution by nitrates), and this may increase costs of supply in the future. Current investments in water reuse aim to reduce pressures on groundwater in the country.

Main water abstraction sectors in Malta are abstraction for municipal water production (by the Water Services Corporation) and for agricultural purposes (see Figure 2.). There are no surface water bodies from which freshwater can be abstracted.

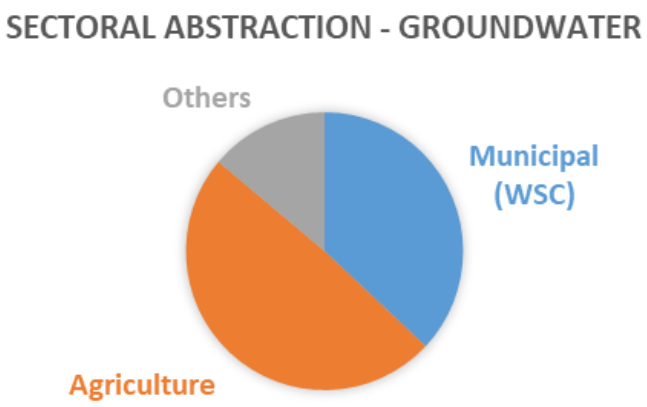

Figure 2. Groundwater abstraction by sector in the Maltese Islands

Groundwater abstractions are regulated by the **Malta Resources Authority** which maintains a register of groundwater abstraction sources.[73] Registered groundwater sources are also legally required to be metered, although some exemptions exist within the applicable law.[74] Groundwater abstracted by the private sector in the Maltese Islands is largely used for agricultural purposes, as shown in Figure 3.

[72] https://www.eea.europa.eu/data-and-maps/daviz/water-abstraction-by-source-2000#tab-chart_3_filters=%7B%22rowFilters%22%3A%7B%7D%3B%22columnFilters%22%3A%7B%22pre_config_country%22%3A%5B%22Malta%22%5D%7D%7D.
[73] Notification of Groundwater Sources Regulations (Subsidiary Legislation 423.12 of the Laws of Malta) - https://legislation.mt/eli/sl/423.12/eng
[74] Groundwater Abstraction (Metering) Regulations (Subsidiary Legislation 423.40 of the Laws of Malta) - https://legislation.mt/eli/sl/423.40/eng

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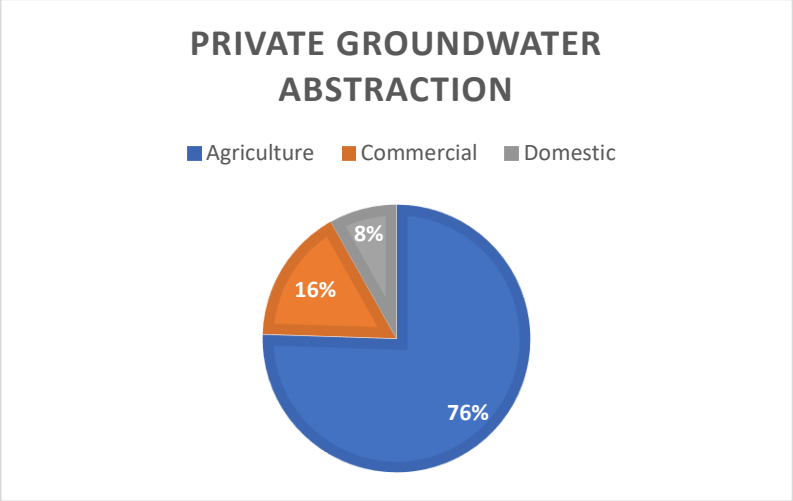

Figure 3. Relative importance of private sector groundwater abstractions in the Maltese Islands

Floods Directive

The 6th Implementation Report published by the Commission in 2021 includes a review and update of the preliminary flood-risk assessments drawn up by Malta. However, the review indicated that the methodology in this report contains no definition of 'significant impacts', resulting in challenges to identify previous floods in Malta that had significant adverse impacts. The conclusion was that the impacts of climate change and of increasing urbanisation need to be more appropriately considered.

Urban Waste Water Treatment Directive

While Malta has met the targets for the collection of urban waste water, further efforts are needed to provide biological treatment to an additional 0.91 million p.e of urban waste water (98.9%) and biological treatment with nitrogen removal to an additional 0.13 million p.e. of urban waste water (100.0%).[75] Nevertheless, wastewater constitutes an increasingly important resource, with highly polished reclaimed water, referred to as "new water" which can be utilised for agriculture, industry and landscaping and is becoming increasingly relevant in reducing stresses on groundwater resulting from abstraction for agricultural purposes.

In February 2022, the Commission decided to refer Malta to the European Court of Justice for its failure to ensure compliance with the UWWTD in the Malta North and Malta South agglomerations.

Industrial Emissions Directive

In Malta, 19 industrial installations are required to have a permit based on the Industrial Emissions Directive (IED). As Figure 4. shows, the industrial sectors with most installations are the waste management sector, including landfills (53%), followed by the chemicals sector (26%) and the energy sector (21%).

[75] https://water.europa.eu/countries/uwwt/malta

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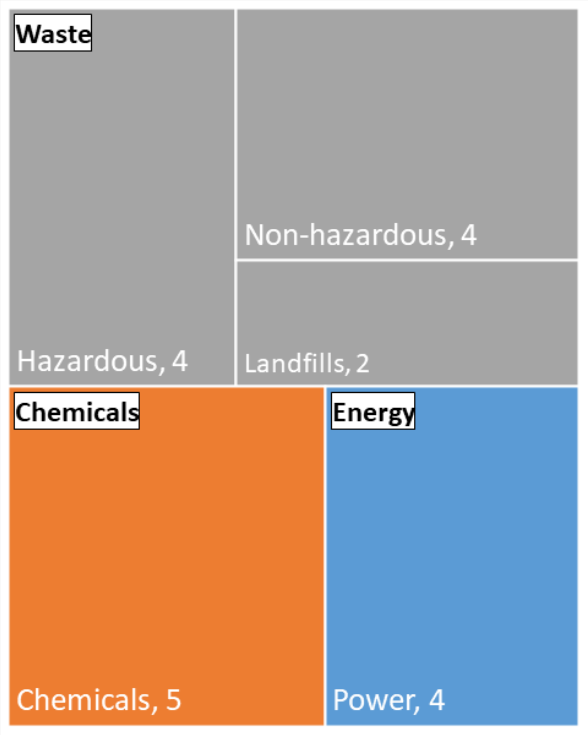
Figure 4. IED industrial installations per sector in Malta, 2018



Source: EEA (2021)

The industrial emissions to water mainly result from: (i) the energy sector (heavy metals); and (ii) from aquaculture (nitrogen, total organic carbon and phosphorous).

Habitats Directive

Malta hosts 29 habitat types and 66 species covered by the Habitats Directive (European Commission, 2022). The country also hosts populations of 31 bird taxa listed in the Birds Directive Annex I.

The share of habitats in good conservation status was 27.59% for the reporting period 2013-2018 (see Figure 5.). This is significantly less than the 43.33% reported in the previous period (2007-2012). Concerning protected species, the share of assessments in good conservation status was 53.33% (2013-2018), which is more than the 40.38% reported in the previous period (2007-2012) (see Figure 6.).

At the same time, the share of habitats in bad conservation status has dramatically increased from 6.67% to 58.62% in 2013-2018. The share of assessments for species in bad conservation status has slightly increased from 7.69% to 8.89%.

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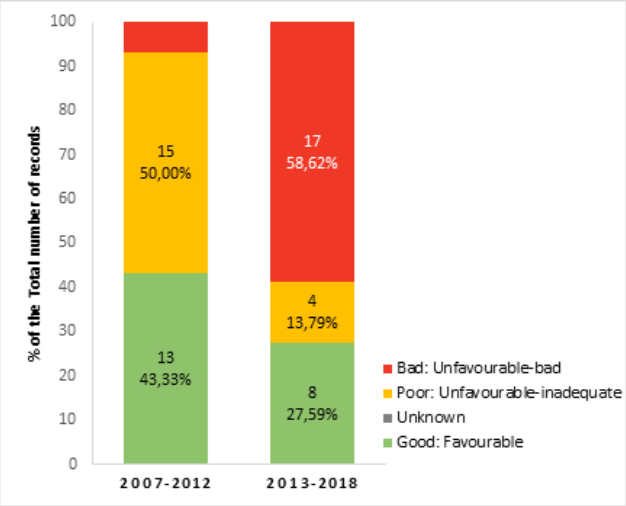
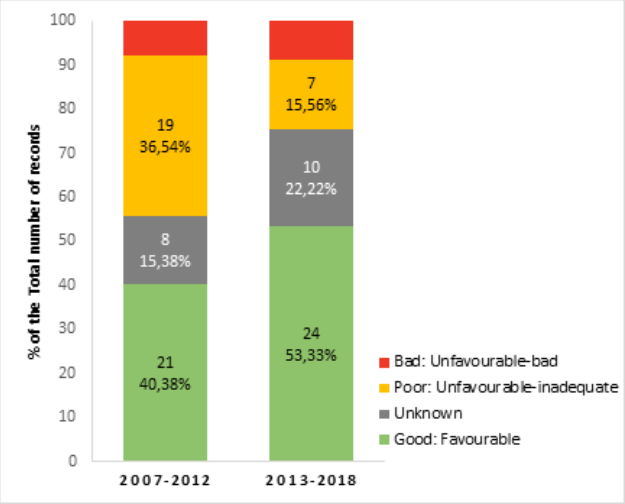
Figure 5. Conservation status of habitats in Malta, 2007-2012 and 2013-2018



Source: EEA (2021)

Figure 6. Conservation status of species in Malta, 2007-2012 and 2013-2018



Source: EEA (2021)

The main pressures causing the increase in the bad status of habitats are: (i) development, construction, and infrastructure; and (ii) alien and problematic species.

In 2020, the Commission initiated infringement proceedings against Malta for failure to complete the designation of Natura 2000 sites.

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Energy and climate related legislation

Malta's climatic conditions and lack of energy-intensive industries result in Malta having the lowest final energy consumption per capita across all EU member states. The country has published an integrated **National Energy and Climate Plan (NECP)** as required by Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action. Malta's commitments in terms of decarbonisation and energy efficiency are shown in Figure 3.7.

Figure 7. Malta's commitments in terms of decarbonisation and energy efficiency in its NECP

Dimension		Key objectives	Key policies and measures
Decarbonisation	GHG emissions and removals	-19% GHG emissions reduction target under the Effort Sharing Regulation (ESR); Contributing to the EU -40% GHG emission reduction target; Fulfilling obligations of the Paris Agreement;	Management of Farm Slurries in the Maltese Islands; Waste Management Plan 2020-2030; Development of Waste-to-Energy Facility; Sustainable mobility measures;
	Renewable Energy	11.5% share of Renewable energy in gross final energy consumption in 2030; 14% RES share in the transport sector in line with Renewable Energy Directive;	Measures exploiting all technically and economically viable indigenous RES sources; Extension of current policy framework in the area of RES for the period until 2030 whilst providing new initiatives tailored to local specificities. - Financial support schemes for Solar PV; - Schemes to support solar water heaters and heat pump water heaters; - Biofuels substitution obligation;
Energy Efficiency		Energy intensity of 0.07 toe/thousand €$_{2005}$ in 2030. Reaching energy savings obligations under Article 7 of the Energy Efficiency Directive.	Energy savings obligations and incentives for all energy end-use sectors, through measures such as: - Electricity tariffs supporting energy efficiency; - Support schemes for services and industry; - Government leading by example; - Projects in primary water network and wastewater treatment plants

3. Potential support for a WEFE nexus approach

Based on the previous sections of this country profile of Malta, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 2.).

Table 2. Potential support for WEFE nexus approach based on current institutional settings in Malta

	High	Medium	Low
Political will and decisiveness		X	
Division of responsibilities	X		
Planning mechanisms		X	
Coordination mechanisms	X		
Stakeholder representation and engagement	X		
Knowledge infrastructure		X	
Financial resources		X	

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The main arguments for this tentative assessment are the clearcut division of responsibilities between public actors involved in water-related tasks. Furthermore, coordination mechanisms exist at multi-sector level in the form of the Inter-ministerial Committee on Water as well as related to the SDGs. Concerning stakeholder engagement, public and private actors are well represented in the Stakeholder Water Table.

4. Challenges and opportunities

Several challenges and opportunities can be identified that are relevant with respect to implementing a WEFE nexus perspective. They are based on documents produced in the EU context, including the national EIR report for Malta from 2022, associated publications on the implementation of EU environmental policy, and Malta's Recovery and Resilience Plan (RRP).

Challenges:

- Develop effective approaches to tackle water scarcity issues and degrading quality of groundwater.
- Reduce nitrates pollution from agriculture in groundwater and continue efforts on monitoring inland and transitional waters for nitrates pollution.
- Address the trend of a fast deteriorating status of habitats by accelerating the process of designating Natura 2000 sites and implementing the necessary conservation measures for all sites.
- Diminish the environmental stress caused by development, construction, and the use of residential, commercial, industrial and recreational infrastructure.
- Help the country's agricultural sector to improve biodiversity by maintaining landscape features through voluntary schemes.

Opportunities:

- Malta is involved in a LIFE project[76] on water management that develops baseline assessments on water demand and supply, explores water efficient technologies, and elaborates master plans for sixteen valley catchments in the Maltese Islands using participatory processes.
- Investments are currently done to stimulate water reuse aiming to reduce pressures on groundwater.
- In 2020, the Government established a new role for Ambjent Malta related to habitat restoration projects and dissemination of information on protected areas.
- Malta has several platforms, networks and communities of practice involving businesses in protecting biodiversity and promoting natural capital assessments (NCAs).
- The country allocates nearly 54% of its RRP's spending to climate objectives and environmental objectives.

[76] https://webgate.ec.europa.eu/life/publicWebsite/project/details/4816

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ANNEX 5: Country profile of Slovakia

Slovakia in a few facts

# of inhabitants	5,4 million
Surface area	49 702 km2
GDP per capita	67 pps[77]
Significant bodies of water (RBDs)	Danube; Vistula[78]
Polity	unitary state composed of regions and municipalities
Layers of government	central government; 8 self-governing regions; 2 926 municipalities
Legislative powers at the sub-national level	no
Decentralisation index	1.2 (24 out of 27)[79]
Water Exploitation Index plus (WEI+)	0.39 (2017)[80]

1. Institutional settings

Distribution of tasks and responsibilities

As shown in Table 1., the Ministry of Environment of SR is the central authority responsible for water policy. It manages water at the national level, creates water policies and frameworks for water governance, ensures and supervises a comprehensive care, preservation and use of domestic water resources, their quantity and quality.[81] There are several state enterprises subordinate to the Ministry of Environment of SR with specific competences and responsibilities (e.g. responsible for maintenance of watercourses and of material investment property, operation of hydroelectric power plants, research in water management and ecological problems, hydrological and meteorological services, nature protection. Examples include: The Slovak Hydrometeorological Institute[82] is a state organization providing hydrological and meteorological services at the national level. It is also responsible for issuing warnings for weather-related risks and providing information on water resources and their availability. The Slovak Environment Inspectorate[83] monitors compliance with environmental regulations, the status of surface waters and groundwater and wastewater discharges and their impacts on the recipient bodies.

[77] EU purchasing power standard

[78] Although a small part of Slovakia belongs to the Vistula river basin, the river Vistula itself does not flow through Slovakia

[79] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx

[80] EU Commission Country Report for Malta 2023 - https://economy-finance.ec.europa.eu/system/files/2023-05/MT_SWD_2023_618_en.pdf. The threshold for water scarcity is set at > 20%.

[81] https://www.minzp.sk/voda/ (SK)

[82] https://www.shmu.sk/sk/?page=1094 (SK)

[83] https://www.sizp.sk/voda/kontrolna-cinnost-v-oblasti-ochrany-vod (SK)

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Table 1. Main actors responsible for WEFE nexus relevant governance in Slovakia

WEFE nexus pillars	Policy making	Executive level
Water	Ministry of Environment	state (co-)owned enterprises; municipalities; private sector
Energy	Ministry of Economy	state (co-)owned enterprises; private sector
Food	Ministry of Agriculture and Rural Development	private sector; state owned enterprises (responsible for hydromeliorations in agriculture)
Ecosystems	Ministry of Environment	State Nature Conservancy; state (co-)owned enterprises; state institutions; municipalities

With respect to water governance, other relevant ministries include the Ministry of Agriculture and Rural Development (oversees irrigation issues), Ministry of Economy (responsible for hydropower facilities), Ministry of Health (monitors drinking water and bathing water quality). District offices of the state administration are responsible for matters concerning transboundary waters, and supervising water protection within the scope of their competence.

At the local level, municipalities play a role in water governance, particularly in providing water supply and sanitation services. They are responsible for managing water infrastructure, distribution networks, and sewage systems within their jurisdictions. Municipalities grant permits for the abstraction of surface water and groundwater and their use to households and construction projects and regulate the use of small watercourses and other water bodies.

Coordination mechanisms

Multi-level coordination

Coordination between the central government and lower levels (municipalities) is ensured thanks to ministerial working groups established under each Ministry. The **Association of Towns and Communities** in Slovakia is invited to participate in the ministerial working groups and it promotes the interest of the territorial self-government in legislative regulations. Within any legislative process the Association or individual municipalities have the right to comment on the draft proposals.[84]

Multi-sector coordination

The national government dominates the legislative initiative, most of the bills are drafted and prepared by ministries. However, prepared proposals (bills proposed by government or Ministries; government regulations; decrees; edicts and measures - implementing rules; statements of government on proposed bills, which are in the legislative process in the Parliament; amendment of governmental bills, which did not pass the Parliament; international treaties or incorporations of EU

[84] https://portal.cor.europa.eu/divisionpowers/Pages/Slovakia-MLG.aspx (EN)

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directives) are subject to an interdepartmental comments procedure meaning that different sectors can comment on the proposals and raise their objections. There is an online portal for the Slovak Interdepartmental Comments Procedure, so except for compulsory commentators to the bills any interested party is allowed to comment including nongovernmental institutions, civic organizations or public at large.[85]

During the legislative process, an intersectional working group of representatives from various ministries, other public institutions, trade unions, professional chambers or representatives of NGOs might be established. The entity that drafts a new regulation decides who is going to participate in penning down the bill. This would require more transparent principles on which actors should take part in the working groups because for some bills are drafted (by ministries) without any prior consultations with actors or sectors that would be primarily influenced by the bill.[85]

SDG implementation

The main coordinating body for the implementation of the 2030 Agenda and its SDGs in Slovakia is the **Government Council of the Slovak Republic for the 2030 Agenda for Sustainable Development**, founded in 2017. Members of the Government Council include key line ministers, representatives of other relevant state institutions, regional administration, cities and municipalities, employers, trade unions, academia, non-governmental organizations and relevant government advisory bodies. The Government Council is chaired by the Minister of Investments, Regional Development and Informatization, who is in charge of the internal dimension of 2030 Agenda implementation. The Minister of Foreign and European Affairs of the Slovak Republic is the Deputy Chairman and is responsible for the external dimension of the 2030 Agenda. The "Vision and Development Strategy of the Slovak Republic until 2030" (adopted in January 2021) is the executive document of SDGs in Slovakia.[86]

Stakeholder involvement and participation

The **Water Act** emphasizes public participation in water management decision-making processes. Stakeholders, including NGOs and the public, have the opportunity to participate in discussions related to water policies, projects, and management plans[87].

There are several types of stakeholder engagement in water governance. These include mandatory engagement events organized by state institutions (usually ministries) within their legal obligations. Voluntary engagement events are organized mainly by organizations representing the civil society or research institutions. Land consolidation and events related to blue and green infrastructure are initialized by local governance units (municipalities) in cooperation with other parties (designers of land consolidation), events related to irrigation infrastructure are initialized by farmers. Mandatory

85 https://www.minv.sk/swift_data/source/rozvoj_obcianskej_spolocnosti/otvorene_vladnutie/opengovweek2017/Legislativny-chodnik_prezentacia_final.pdf (SK) https://www.gamcon.org/wp-content/uploads/2017/03/legislative-process-in-slovakia-1.pdf (EN)

86 https://sustainabledevelopment.un.org/memberstates/slovakia (EN) and https://mirri.gov.sk/sekcie/udrzatelny-rozvoj/agenda-2030/ (SK, EN)

87 https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2004/364/ (SK)

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and voluntary events take the form of consultations, negotiations, workshops, meetings, conferences, projects, feedback treatment.

Examples:

The procedure of preparing the **Water Policy Concept for 2021-2030** (with prospects till 2050) was coordinated by a steering committee with water experts from the Ministry of Environment of SR. There was also a working group consisting of stakeholders from the sector serving as an advisory body. There were representatives of various ministries, research institutes, academia, water-related state enterprises and organizations, representatives of municipalities and non-governmental organizations in the working group.[88]

The procedure of preparing the Water Plan of Slovakia (and its two parts for the Danube and Vistula river basin) was led by the Ministry of Environment of SR and the Water Management Enterprise in cooperation with state administration bodies, self-governing regions, municipalities, the industrial sphere, the agricultural sphere, water companies, fisheries and organizations protecting aquatic ecosystems. Then it was made public for active participation and comments from stakeholders.[88]

Access to information and transparency

The **Slovak Water Act** divides the evidence on water into four parts: records about water bodies of surface and underground water, quantities and quality of water in water bodies, rights and obligations resulting from the decisions of the state water administration bodies, protected areas.[87]

As Table 2. shows, several institutions collect, process and publish information on water policies and water-related data. The Water Policy Concept for 2021-2030 calls for a consolidation of data and information on water collected by different professional organizations and entities, for support of compatibility of source data, for creating a water information system (**IS Water**) integrating existing information systems and linking data from other sectors and departments to ensure an accessible comprehensive database of relevant data and information about water.

Table 2. Sources of water policy related information online

Name of website	Website	Type of data
The Ministry of Environment of the Slovak Republic	https://www.minzp.sk/voda/ (SK)	information on the current water regulations, implementation of the EU Directives, water management plans, other conceptual documents and official information on water management in Slovakia
Statistical Office of the Slovak Republic	https://slovak.statistics.sk and its databases (SK)	basic statistics on the state of waters and climate data
Slovak Water Management Enterprise	https://www.svp.sk/sk/uvodna-stranka/ (SK)	information about management of water course, a map portal with floods risks

[88] https://www.minzp.sk/voda/koncepcne-dokumenty/koncepcia-vodnej-politiky-roky-2021-2030-vyhladom-do-roku-2050.html (SK)

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Water Research Institute	https://www.vuvh.sk/ (SK)	scientific information relevant for the Water Plan of Slovakia and evidence on waters
Slovak Hydrometeorological Institute	https://www.shmu.sk/en/?page=946 (EN)	meteorological and hydrological data, including information related to water resources, river flows, and flood forecasts
Environmental Inspectorate	https://www.sizp.sk/voda/kontrolna-cinnost-v-oblasti-ochrany-vod (SK)	information on environmental inspections and enforcement actions taken to ensure water quality and environmental protection
The Office of Public Health of the Slovak Republic	https://www.uvzsr.sk/web/uvz/narodna-sprava-o-kvalite-pitnej-vody (SK)	information about the quality of drinking water and water for bathing in Slovakia
Enviroportal	https://www.enviroportal.sk/clanky/Voda (SK)	a web portal of the Ministry of Environment publishing information on different environmental topics including water
Water Portal	https://www.voda-portal.sk/ (SK)	a central platform for providing water-related information to the public. The portal offers data and information on water quality, water quantity, water management plans, permits, fees, and other relevant topics related to water resources

2. *State of implementation of EU legislation*

Water Framework Directive – water quality

The responsibility for implementing the EU Water Framework Directive (WFD) into the Slovak legislation lies with the national government of Slovakia. The **Ministry of Environment** is the key government entity responsible for overseeing the transposition process.

There are two RBDs in Slovakia – **Vistula river basin and Danube river basin**, with the latter one representing 96% of the country's territory. Slovakia has reported its 3rd RBMPs on both river basin districts, Vistula and Danube, on time. The positive fact is that Slovakia launched public consultations on these plans a year before the adoption date and conducted public consultations, including online workshops on various river basin management topics. Stakeholders could provide feedback online or in writing.[89]

[89] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=comnat%3ASWD_2022_0252_FIN#footnote128 (EN)

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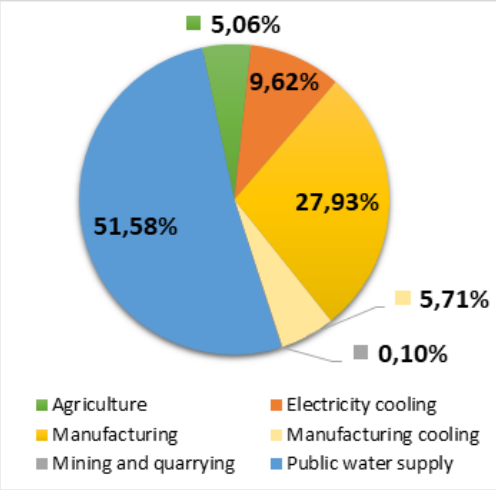
However, there are still some gaps and issues that need to be solved in the implementation of WFD by Slovakia. The EC assessment of the 2nd RBMPs concluded that despite some progress achieved in reaching WFD objectives, "it was not clear from the provided information, whether this progress is sufficient enough to fulfil the WFD obligations for the year 2021 (or alternatively for year 2027)."[90] The main challenges identified in the assessment are: old environmental burdens have negative impacts on drinking water sources in the south-western part of Slovakia, complaints related to small water hydro-plants are unsolved, and the completion of urban waste water treatment infrastructure is pending.

Water Framework Directive – water quantity

The total of water abstracted from Slovakian surface and groundwater sources amounted to 267.44 hm3 in 2019 (EEA, 2022). As shown in Figure 1., the largest share is taken by public water supply (51.58%), followed by manufacturing (27.93%) and electricity cooling (9.62%). The demand from agriculture is relatively small (5.06%).

Figure 1. Water abstraction per sector in Slovakia



Source: European Commission (2022)

In Slovakia, the water exploitation index plus (WEI+)[91] is 0.39% (corresponding to year 2017), which is far below the 20% that is generally considered as an indication of water scarcity. Slovakia is ranked 23rd (from high to low score) in terms of WEI+ within the EU.

Slovakia uses a register to control water abstractions. However, small abstractions do not require permits and are not all registered.

Floods Directive

As yet, Slovakia has not adopted and reported the 2nd FRMPs as stipulated in the Floods Directive. This is planned for June 2024.

[90] https://op.europa.eu/en/publication-detail/-/publication/644783e4-6d12-11ec-9136-01aa75ed71a1/language-en/format-PDF/source-250304332 (EN)

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

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Drinking Water Directive

The last report on the quality of drinking water in Slovakia was sent in March 2021 for the years 2017-2019. The report was prepared by the Office of Public Health of the Slovak Republic in cooperation with the **Research Institute of Water Management**, based on data provided by regional public health offices and data from public water supply operators. The report points to the negative impact of old environmental burdens on drinking water sources, even if there are no reported concerns about the deterioration of water quality.[92]

Bathing Water Directive

Detailed information about Slovak waters intended for bathing is available in the national portal of the **Office of Public Health**[93]. The state of bathing waters is also reported by the European Environmental Agency. According to the last report for Slovakia, from June 2022[94], 87.5% of all reported bathing waters are classified as "sufficient" or better according to the minimum quality standards of the Directive.

Urban Waste Water Treatment Directive

Slovakia has still many problems in fulfilling the obligations arising from the UWWTD. The country has 356 registered agglomerations with a population equivalent of 2,000 or more. For all these agglomerations it is necessary to ensure compliance with the requirements of the directive. After several difficulties over the years, 93% of wastewater is now treated in accordance with EU legislation.[95] However, despite the improvements made possible mainly thanks to the EU funds, the incomplete implementation of the UWWTD has led to a new infringement procedure against Slovakia in 2021, in addition to the one launched in 2016.[96]

Industrial Emissions Directive

In Slovakia, around 600 industrial installations are required to have a permit based on the Industrial Emissions Directive (IED). As shown in Figure 2., the industrial sectors with most installations are intensive rearing of poultry or pigs (35%), followed by non-hazardous waste management (25%) and chemicals (14%).

92 https://cdr.eionet.europa.eu/sk/eu/dwd/envydixpw/SprAva_Slovenskej_republiky_o_kvalite_vody_urAenej_na_AudskA_spotrebu_v_rokoch_2017_-_2019.pdf/manage_document (SK)

93 https://www.uvzsr.sk/sk/web/uvz/voda-na-kupanie (SK)

94 https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/assessments/state-of-bathing-water/country-reports-2020-bathing-season/country-reports-2020-bathing-season (EN)

95 https://water.europa.eu/countries/uwwt/slovakia (EN)

96 https://ec.europa.eu/commission/presscorner/detail/EN/INF_21_6201 (EN)

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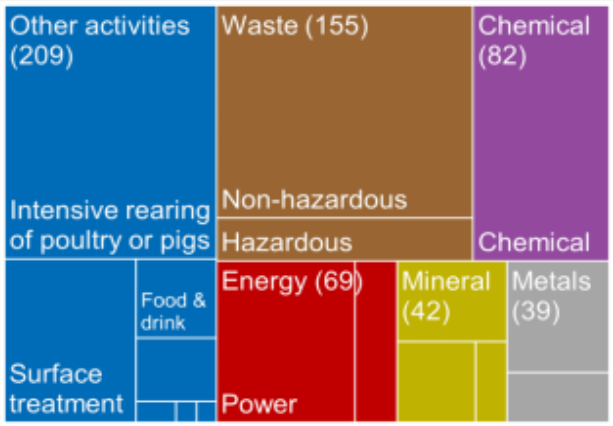
Figure 2. IED industrial installations by sector in Slovakia, 2015



Source: European Commission (2022)

Industrial emissions to water mainly result from: i) ferrous metal production (e.g. nitrogen), ii) pulp, paper and wood production (e.g. organic carbon and phosphorous), and iii) energy generation (e.g. heavy metals).

Habitats Directive

Slovakia hosts 66 habitat types and 195 species covered by the Habitats Directive (European Commission, 2022). It also hosts populations of 83 bird taxa listed in the Birds Directive Annex I. Considering both Natura 2000 and other nationally designated protected areas, Slovakia legally protects 37,40% of its terrestrial areas (EU-27 average 26,4%) (EEA, 2022).

As yet, 446 out of 473 protected sites have not been designated as Special Area of Conservation (SAC) (European Commission, 2022). In addition, Slovakia has failed to set site-specific conservation objectives and the necessary conservation measures for all 473 sites. For this reason, the Commission started an infringement procedure against Slovakia in July 2019 and issued a reasoned opinion in February 2022.

As illustrated by Figure 3., the share of habitats in good conservation status was nearly the same in the reporting period 2013-2018 as in the previous one between 2007-2012 (European Commission, 2022). The share of species in good conservation status increased from 20 to 23% between the two reporting periods (see Figure 4.). The share of habitats in bad conservation status decreased to 10%, while the share for species increased to 22%. For most habitats and species, Slovakia resolved the unknown classifications between the two reporting periods.

The reporting about the Habitats Directive was prepared by the **State Nature Conservancy** of the Slovak Republic, an expert body of the Ministry of Environment. The monitoring results are publicly available.[97] According to the report the changes in status occurred mainly as a result of improved knowledge based on the established monitoring system and a decrease in habitats and species with an unknown status, with the amount of habitats and species having decreased to almost zero.

[97] www.biomonitoring.sk

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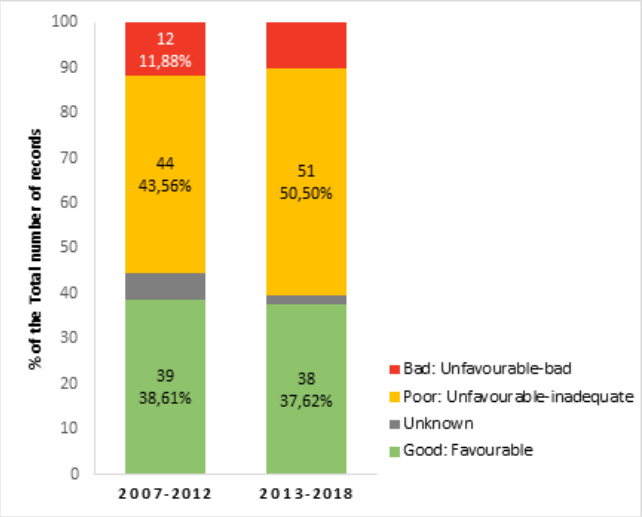
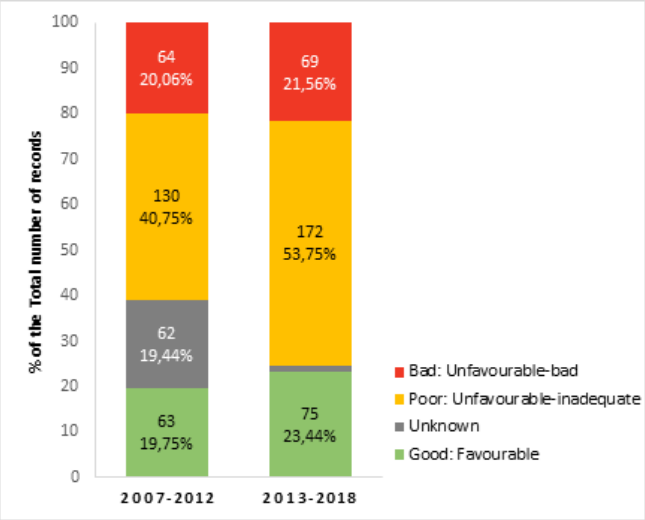
Figure 3. Conservation status of habitats in Slovakia, 2007-2012 and 2013-2018



Source: EEA (2021)

Figure 4. Conservation status of species in Slovakia, 2007-2012 and 2013-2018



Source: EEA (2021)

Energy and climate related legislation

The main policies related to energy and climate change issues in Slovakia include:

- **Integrated National Energy and Climate Plan** (2021-2030), setting quantified goals until 2030, such as reduction of greenhouse gas emissions for non-ETS sectors by 20%, a share of renewable energy sources of 19.2% in total and 14% in transport, achieving energy efficiency

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of 30.3% and interconnection of electrical systems by 52%.[98] Due to the EU's increased climate ambitions until 2030 and developments related to the invasion of Ukraine, the National Energy and Climate Plan needs to be updated.[99]

- **Low-carbon development strategy** of the Slovak Republic until 2030 with a view to 2050 aims to identify measures to achieve climate neutrality in the Slovak Republic in 2050.[100]
- **Updated Strategy for the Adaptation of the Slovak Republic to Climate Change**[101] and an associated Action Plan[102], both aiming to improve Slovakia's readiness to face the adverse consequences of climate change, to bring the widest possible information about the current adaptation processes in Slovakia, and to establish an institutional framework and coordination mechanism to ensure effective implementation of adaptation measures at all levels and in all areas, as well as to increase overall awareness of this issue.
- **Climate Law** - In January 2023, the Slovak Ministry of the Environment submitted the first Slovak national climate law to the interdepartmental comment procedure[103]. The law enshrines the long-term climate goal of carbon neutrality until 2050 and goals until 2030, including specific areas such as road transport, buildings or agriculture. However, non-governmental organizations criticize the proposal for not controlling emissions in energy and heavy industry, which pollute the most.[104]

3. *Potential support for a WEFE nexus approach*

Based on the previous sections of this country profile of Slovakia, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 3.).

Table 3. Potential support for WEFE nexus approach based on current institutional settings in Slovakia

	High	Medium	Low
Political will and decisiveness		X	
Division of responsibilities / competencies		X	
Planning mechanisms		X	
Coordination mechanisms		X	
Stakeholder representation and engagement		X	
Knowledge infrastructure		X	
Financial resources			X

[98] https://www.economy.gov.sk/uploads/files/IjkPMQAc.pdf?csrt=15998827014150865184 (SK)
[99] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022SC0252#footnoteref79 (EN)
[100] https://ec.europa.eu/clima/sites/lts/lts_sk_sk.pdf (SK)
[101] https://www.minzp.sk/files/odbor-politiky-zmeny-klimy/strategia-adaptacie-sr-zmenu-klimy-aktualizacia.pdf (SK)
[102] https://www.minzp.sk/files/odbor-politiky-zmeny-klimy/akcny-plan-implementaciu-nas.pdf (SK)
[103] https://www.minzp.sk/spravy/historicky-prvy-klimaticky-zakon-je-medzirezortnom-pripomienkovom-konani.html (SK)
[104] https://euractiv.sk/section/klima/news/novy-klimaticky-zakon-nema-plan-pre-najviac-znecistujuce-sektory/ (SK)

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In Slovakia, cooperation between ministries and institutions is not optimal in general. The division of responsibilities and competencies and inadequate cooperation slows down the implementation of policies. Recently, however, the cooperation between the Ministry of Agriculture and Rural Development and the Ministry of the Environment has been improving.

The Ministry of Agriculture and Rural Development of SR is developing a new nexus-based concept called Soil – the Carbon and Water Bank of the Landscape. Its aim is to protect and restore soils and their water retention capacity. The new concept promotes an integrated nexus approach to the management of water resources and soil at the level of municipalities, regions, basins and the country. This concept is currently under development, its implementation in practice is hindered by administrative and financial issues, different interests by relevant parties and bureaucratic procedures.

Water policy in Slovakia is based on the EU's Water Framework Directive which was transposed into Slovak legislation. The regulation of reducing negative effects of floods on human health, environment, cultural heritage, and the economy has been achieved by transposing EU directive 2007/60/ES on the assessment and management of flood risks. Legislative acts 442/2002 Coll. and 276/2001 Coll. provide the framework for public water supply and sewerage and for regulation of network systems.

The implementation of the WFD in Slovakia is achieved by executing measures that are included in the RBMPs for the Danube and Vistula. Integral parts of these plans are flood risk management measures. Water planning includes also plans for development of public water supply and sewerage systems. Slovak obligations with respect to relevant EU directives is regularly checked by reports for the European Commission that are also accessible for the public.

Water planning and implementation is conducted in cooperation with the public. The Ministry of the Environment of the Slovak Republic oversees inviting all relevant stakeholders including public representatives to participate in each stage of the planning cycle. Financial planning is an integral part of the planning cycle.

Actors involved in water governance represent institutions responsible for government management, state water management, management of fishing, prevention of floods, public water supply and sewerage systems, integrated prevention and control of environmental pollution. Other institutions of water governance include specialized institutions of Ministry of the Environment, Ministry of Agriculture and Rural Development (use of agricultural and forest lands, irrigation, protection of soils), Ministry of Health, Ministry of Transportation and Construction, Ministry of the Interior, Ministry of Economy, and Ministry of Foreign Affairs. There is an authority (URSO) to regulate water prices and management of public providers of water supply services and sewerage systems.

Slovakia borders five countries with which it has agreements and where the cooperation takes place through functioning of international commissions for border waters. Slovakia is a signatory to multinational agreements. Slovakia participates in ICPDR (International Commission for the Protection of the Danube River).

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4. Challenges and opportunities

Several challenges and opportunities can be identified that are relevant from a WEFE nexus perspective based on documents produced in the EU context, including the 2022 EIR report for Slovakia, associated publications on the implementation of EU environmental policy, and the Slovak Recovery and Resilience Plan (RRP).

Challenges:

- Strengthen the environmental governance framework and improve the coordinated implementation of water and nature policies.
- Safeguard landscape structures and ecological stability in protected areas when considering the authorisation of buildings and activities.
- Revitalise watercourses that would contribute to flood protection, drought minimisation, and act against a qualitative degradation of the available water resources.
- Reduce pressure from the agricultural sector on natural resources and in particular via land management practices improving water retention in soils.
- Improve the absorption of EU funds for investments and reforms.

Opportunities:

- The Ministry of Agriculture and Rural Development of SR is currently developing a new nexus-based concept, called Soil – the Carbon and Water Bank of the Landscape, that aims to protect and restore soils and their water retention capacity.
- The Slovakian RRP focuses on priorities relating to a reform of landscape planning and of nature protection and water management.
- There is considerable potential provided by rich biodiversity resources and a relatively high legal protection rate of terrestrial areas (37,40% against an EU-27 average of 26,4%).
- Experience gained with ecosystem services assessments through various projects under the EU LIFE programme.

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ANNEX 6. Country profile of Spain

Spain in a few facts

# of inhabitants	47,4 million
Surface area	502 654 km2
GDP per capita	85 pps[105]
Significant bodies of water (RBDs)	Cantábrico; Duero; Ebro; Guadalquivir; Guadiana; Júcar; Miño-Sil; Seguía; Tajo; et al
Polity	decentralised unitary state with a parliamentary monarchy under the 1978 Constitution; federal or quasi-federal state
Layers of government	central government; 17 self-governing regions; 50 provinces, 2 autonomous cities (Ceuta and Melilla); 8 131 municipalities
Legislative powers at the sub-national level	yes
Decentralisation index	2.2 (6th out of 27)[106]
Water Exploitation Index plus (WEI+)	23.71% (2019)[107]

1. Institutional settings

Distribution of tasks and responsibilities

As shown in Table 1., the governance framework for environmental, water, energy, and food-related matters in Spain is organized across multiple tiers: central, regional, and local. Each level of government possesses distinct competencies and responsibilities within these domains.

Table 1. Main governmental actors responsible for WEFE nexus relevant governance

WEFE nexus pillars	Policy making	Executive level
Water	Ministry for the Ecological Transition and the Demographic Challenge (MITECO); National Council on Water (Consejo Nacional del Agua); autonomous communities (regional government)	River Basin Authorities (*Confederaciones Hidrográficas*); irrigation communities; municipalities

[105] EU purchasing power standard.
[106] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[107] The water exploitation index plus (WEI+) is a measure of total fresh water use as a percentage of the renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned to the environment after use.

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Energy	MITECO; State Secretariat for Energy; Directorate General for Energy Policy and Mines	--
Food	Ministry of Agriculture, Fishery and Food; autonomous communities (regional government)	autonomous communities; municipalities
Ecosystems	MITECO; autonomous communities (regional government)	Spanish Environmental Agency (EPA); National Parks Agency (OAPN); municipalities

At the central level, the **Ministry for the Ecological Transition and the Demographic Challenge (MITECO)** is pivotal in devising and implementing government policies about energy and the environment. This ministry grants permits for facilities with a capacity exceeding 50MW, particularly those spanning multiple autonomous communities or located in offshore territorial waters. Additionally, the central government takes charge of legislative and regulatory aspects related to hydraulic resources, encompassing the management and concession of water resources and facilities.

Furthermore, it assumes responsibility for waste management, encompassing the approval of the National Plan on Waste Management, setting minimum waste management targets, and supervising the Carbon Fund (FES-CO2) to curb carbon emissions. The central government also oversees the National Plan for Air Quality, incorporating measures for nationwide air quality enhancement, and manages cross-regional waters, including regulating and administrating water bodies that traverse multiple regions.

At the regional level, authorities are entrusted with developing fundamental state-level legislation concerning various environmental and resource management facets. They also have the prerogative to establish and manage natural parks within their regions, primarily for conservation and recreation. Additionally, regional authorities oversee territorial organization, urban planning, housing, mountain management, forest exploitation, and environmental protection management. At the local level, which encompasses provincial and municipal tiers, regional authorities are responsible for coordinating and delivering municipal services efficiently, thereby ensuring essential services to local communities.

Municipal authorities, on the other hand, possess a broad spectrum of competencies and responsibilities. These include waste recovery and treatment, monitoring and inspecting environmental activities, enforcing sanctions within their jurisdiction, sewage water treatment, and formulating strategic environmental action plans tailored to their specific local contexts. These responsibilities directly influence the quality of life within individual municipalities. This allocation of tasks and responsibilities across central, regional, and local tiers of government mirrors a common approach adopted by many countries. It is designed to address environmental and resource management comprehensively, considering national imperatives and localized needs and priorities.

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Coordination mechanisms

Multi-level coordination

At the central level, the Ministry for the Ecologic Transition plays a key role in freshwater management. At the same time, the **National Council on Water** provides a platform for consultation and decision-making on water-related issues.

River Basin Authorities are responsible for inter-regional river basins and work at the regional level. They manage river basins, develop and implement River Basin Management Plans (RBMPs) and Flood Risk Management Plans (FRMPs), and oversee large-scale water users and infrastructure development. The governing boards of these authorities include representatives from the central government and the regions within their territories.

Regional authorities are responsible for intra-regional river basins and managing river basins, preparing and implementing RBMPs and FRMPs, and managing land and freshwater resources.

Municipalities are responsible for managing urban water supply and wastewater treatment at the local level. They also define regulations and pricing for water users, manage water infrastructure, and undertake urban planning and civil protection plans related to flood risk.

In addition to the government bodies, communities of users, such as agriculture stakeholders, play a role in resolving conflicts related to water use. These communities bring together local stakeholders and have historical roots in some regions, such as the Court of Water of the plains of Valencia and the Council of Wise Men of the plain of Murcia.

These coordination mechanisms aim to ensure that water resources are managed effectively and sustainably across different levels of government. They involve collaboration, consultation, and decision-making processes to address water-related challenges and promote the efficient use of water resources in Spain.

Multi-sector coordination

The main coordination mechanisms for multi-sector water governance are the following:

1. **River Basin Management Plans (RBMPs):** Spain has adopted a river basin management approach following the European Union Water Framework Directive (WFD). The country is divided into river basin districts, and RBMPs are developed for each district. These plans involve coordinating various stakeholders, including regional and local authorities, water agencies, and civil society organizations, to set objectives and measures for water quality and quantity management.
2. **Inter-administrative cooperation:** Spain's water governance involves coordination among different levels of government, including national, regional (autonomous communities), and local authorities. Transferring water management competencies to regional governments has led to a decentralized approach to water governance.
3. **Water authorities:** Spain has established various water authorities, such as the Confederaciones Hidrográficas (Hydrographic Confederations), responsible for managing water resources within specific river basins. These authorities play a crucial role in coordinating water management activities.

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4. **Participation and stakeholder involvement:** Public participation and stakeholder involvement are integral to water governance in Spain. Various stakeholders, including water users, environmental organizations, and local communities, are often consulted during the development RBMPs and other water management plans.
5. **Research and scientific collaboration:** Spain promotes research and collaboration among scientific institutions, universities, and government agencies to support evidence-based decision-making in water management.
6. **Drought Management Plans:** Spain faces periodic droughts, and the government has implemented drought management plans to address water scarcity issues. These plans involve coordination among different sectors, including agriculture, industry, and municipal water supply.
7. **Desalination and water reuse:** Spain has invested in desalination plants and water reuse initiatives to alleviate water scarcity. These projects often require coordination between the public and private sectors.
8. **International agreements:** Spain collaborates with neighboring countries on transboundary water issues, such as sharing river basins with Portugal and managing water resources in the context of the European Union's policies and agreements.

SDG coordination

The Spanish government coordinates SDG implementation efforts at the national level. The Ministry of Foreign Affairs, European Union, and Cooperation is crucial in overseeing the overall implementation process. They collaborate with other ministries, such as the Ministry for the Ecological Transition and the Demographic Challenge, which is particularly relevant to SDG6 as it addresses environmental and water-related issues.

Spain has established inter-ministerial committees and working groups to ensure that SDGs, including SDG 6, are mainstreamed into the policies and programs of different government departments. This helps coordinate efforts and ensure that all relevant ministries work towards the same goals. Additionally, regional and local governments have a significant role in implementing and monitoring SDGs within their jurisdictions. They adapt the national SDG framework to local contexts and priorities. Non-governmental organizations and civil society groups actively participate in the SDG implementation process in Spain. They often work to raise awareness, advocate for policy changes, and engage in projects related to clean water and sanitation.

Spain periodically reports its progress on SDG implementation to international bodies, including the United Nations.

Stakeholder involvement and participation

Public consultations and hearings: Often used by government authorities at the national, regional, and local levels to gather input from stakeholders on proposed policies, laws, and projects. These consultations may be open to individuals, organizations, and the general public. For example, the River Basin Organisations carry out different participatory events to bring the content of the new Hydrological Plans of each River Basin District closer to the citizens and to know their opinions and contributions firsthand. Anyone interested in participating in any of these events can find information on the websites of the River Basin Confederations. The Water Act provides that the

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basin organization shall establish a procedure to make public participation in the hydrological planning process effective. To this end, a specific web page has been created that compiles both the technical information and the public participation process.

Advisory councils and committees: Many government bodies in Spain establish advisory councils and committees composed of experts and representatives from various stakeholder groups. These bodies provide recommendations and advice to policymakers on various issues.

Environmental Impact Assessment (EIA): This process involves consultations with various stakeholders to assess the project's potential environmental and social impacts.

Local participation: At the local level, citizens can participate in neighborhood and municipal assemblies, where they can discuss and influence local policies, urban planning, and community development.

NGOs and Civil Society: They often engage in public campaigns, research, and lobbying to influence government decisions.

Access to information and transparency

Table 2. gives an overview of online sources presenting relevant water management and water policy information

Table 2. Sources of water policy related information online

Title of website	Websites address	Type of data
MITECO	https://www.miteco.gob.es/es/agua/temas/sistema-espaniol-gestion-agua.html (ES)	Reports, news, statistics
Fundación nueva cultura del agua	https://www.fnca.eu/guia-nueva-cultura-del-agua/ (ES)	Reports
Confederación hidrográfica del Júcar (each river basin authority has its own website)	https://www.chj.es/es-es/Paginas/Home.aspx (ES)	Maps, Excel, reports, news, hydrological plans

2. State of implementation of EU legislation

According to Spain's 2nd RBMPs reporting, 55.6% of all surface water bodies have reached good ecological status (with unknown status 2.1%) and 87.5% have good chemical status (with unknown status 6.1%). For groundwaters, 35.0% failed to achieve good chemical status and 24.3% are in poor quantitative status. Spain has exceeded the deadline for reporting the 3rd RBMPs: the public consultation has been concluded but the RBMPs concerned have not been reported as yet.

Spain showed an increase of 2.6% over the last decade in releases of heavy metals like Cd, Hg, Ni, Pb and a significant increase of 169.2% in Total Organic Carbon –TOC to water (EEA, 2021). Several groundwater monitoring stations show nitrates concentrations above 50 mg/l. In December 2021,

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the European Commission decided to refer Spain to the Court of Justice of the EU for failing to take sufficient action on nitrates pollution.[2]

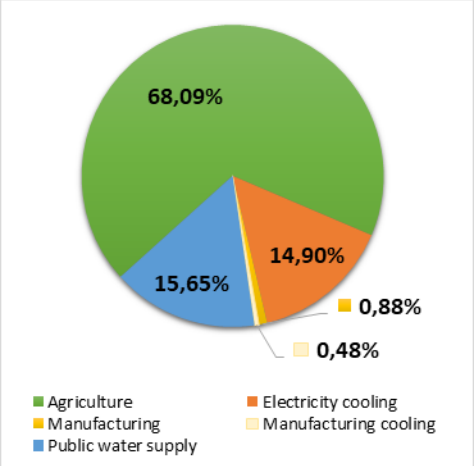
Progress is made on wastewater management, although many agglomerations do not yet comply with the Urban Waste Water Treatment Directive, and Spain is still paying heavy fines following a ruling of the Court of Justice of the EU of July 2018 (around EUR 72 million has been paid).

Spain is the main performer in the EU in the field of wastewater reuse, although it is focussed mainly on some Spanish regions.

Water Framework Directive – water quantity

The total of water abstracted from Spanish surface and groundwater sources amounted to 30,504.20 hm3 in 2019 (EEA, 2022). As shown in Figure 1., the largest share is taken by agriculture (68.09%), followed by public water supply (15.65%), and electricity cooling (14.90%).

Figure 1. Water abstraction per sector in Spain, 2019



Source: EEA (2022)

In Spain, the water exploitation index plus (WEI+)[1] is 23.71%, which is higher than the 20% that is generally considered an indication of water scarcity. Spain is ranked 3rd (from high to low score) at the EU level. Spain requires an authorisation for all abstractions from both surface and groundwater sources. The country is developing an electronic water register to control all water permits.

Floods Directive

Due to its diverse climate and geographical diversity, Spain confronts an array of flood risks, spanning river floods, flash floods, and coastal inundations. To adhere to the directive's provisions, Spain has embarked on a series of strategic actions:

Flood Risk Assessment: Spain has conducted flood risk assessments, systematically identifying regions vulnerable to flooding. These assessments encompass the meticulous pinpointing of flood-prone locales and the in-depth analysis of potential flooding consequences.

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Flood Hazard Maps: Spain has prepared flood hazard maps, serving as vital cartographic tools that vividly illustrate the scope and intensity of flooding across distinct areas. These maps furnish critical insights into the impending impact of flood events.

Flood Risk Management Plans: It delineates a spectrum of measures and strategies to diminish flood risk. Structural interventions, such as constructing flood defenses, are paired with non-structural tactics, including deploying flood forecasting systems and effective warning mechanisms.

Cross-Border Cooperation: Spain has fostered cooperative relationships with neighboring nations and regional organizations. This cooperative ethos enables the harmonization of flood risk management efforts, ensuring a unified approach to cross-border flood hazards.

Drinking Water Directive

The quality of drinking water in Spain has not been indicated as an area of concern.

Bathing Water Directive

In Spain, the Ministry of Ecological Transition and Demographic Challenge (MITECO) is responsible for monitoring and assessing the quality of bathing waters. The monitoring is conducted throughout the bathing season, which typically runs from May to September. The water quality is assessed based on parameters such as microbiological and physicochemical indicators. In 2020, Spain achieved a compliance rate of 97% with the EU's minimum standards for bathing water quality. However, it is worth noting that there were still 58 bathing spots in Spain that did not meet the EU standards. In Spain, the regional authorities are responsible for implementing and enforcing measures to maintain and improve the quality of bathing waters. These measures may include the identification and addressing of pollution sources, regular monitoring, and public awareness campaigns promoting good practices for bathing water hygiene.

Urban Waste Water Treatment Directive

Spain has encountered difficulties in fully adhering to the Urban Waste Water Treatment Directive (UWWTD). The European Commission has expressed concerns regarding the inadequate wastewater collection and treatment in various population centers across Spain. As a matter of fact, Spain has been taken to the EU Court of Justice by the European Commission for failing to comply with the directive, resulting in fines totaling approximately EUR 72 million. According to the European Commission, 133 population centers in Spain have not been meeting the requirements for wastewater collection and treatment as outlined in the UWWTD. Spain stands out as one of the member states requiring further action to ensure compliance. While the Spanish government has made some headway in addressing the concerns raised by the European Commission, there remains a pressing need to establish wastewater collection systems in all population centers and enhance wastewater treatment to meet the prescribed standards. This endeavor may necessitate investments in the construction of new infrastructure or the enhancement of existing treatment facilities.

It is worth noting that Spain is a prominent player in wastewater reuse within the EU, although this effort primarily concentrates on specific Spanish regions.

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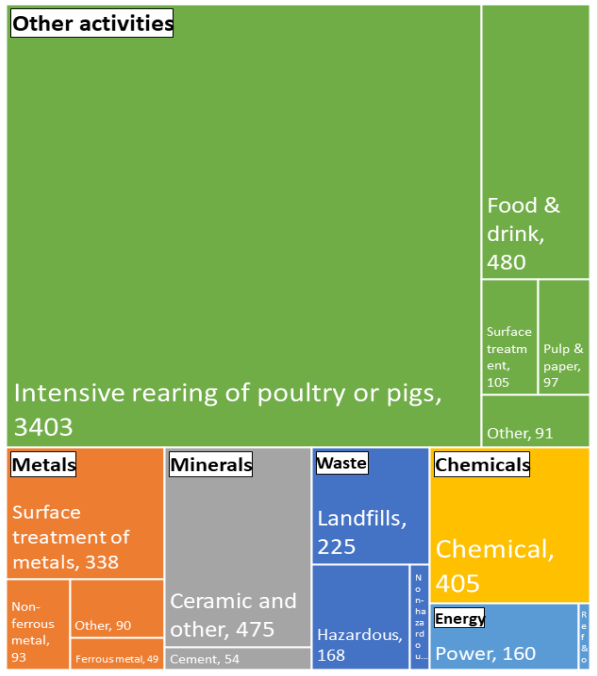
Industrial Emissions Directive

In Spain, around 6 280 industrial installations are required to have a permit based on the Industrial Emissions Directive (IED). As shown in Figure 2., the sectors with most installations are intensive rearing of poultry and pigs (54%), followed by the food and drink sector (8%) and mineral production (8%). There has been an increase of almost 700 installations since 2015, essentially in the sector of intensive rearing of poultry and pigs.

Figure 2. IED industrial installations per sector in Spain, 2018



Source: EEA (2021)

Industrial emissions to water mainly result from: i) the chemicals sector and energy sector for heavy metals; ii) the waste management sector (including landfills) for polycyclic aromatic hydrocarbons (PAH); iii) intensive rearing of poultry and pigs for total nitrogen and total phosphorus, and iv) the pulp and paper sector for total organic carbon.

Habitats Directive

Spain has a rich biodiversity. It covers four of the nine bio-geographical regions defined for the implementation of the Habitats Directive: Alpine, Atlantic, Mediterranean and Macaronesian, and three of the five marine regions: Atlantic, Mediterranean and Macaronesian (see Figure 3.). Spain hosts 117 habitat types and 426 species covered by the Habitats Directive. The country also hosts populations of 165 bird taxa listed in the Birds Directive Annex I.

As shown in Figure 4., the share of habitats in good conservation status amounted to 8.91% for the reporting period 2013-2018, which is a decrease compared with the 12.3% in the previous period (2007-2012). Concerning protected species, 18.93% were assessed as having a good conservation

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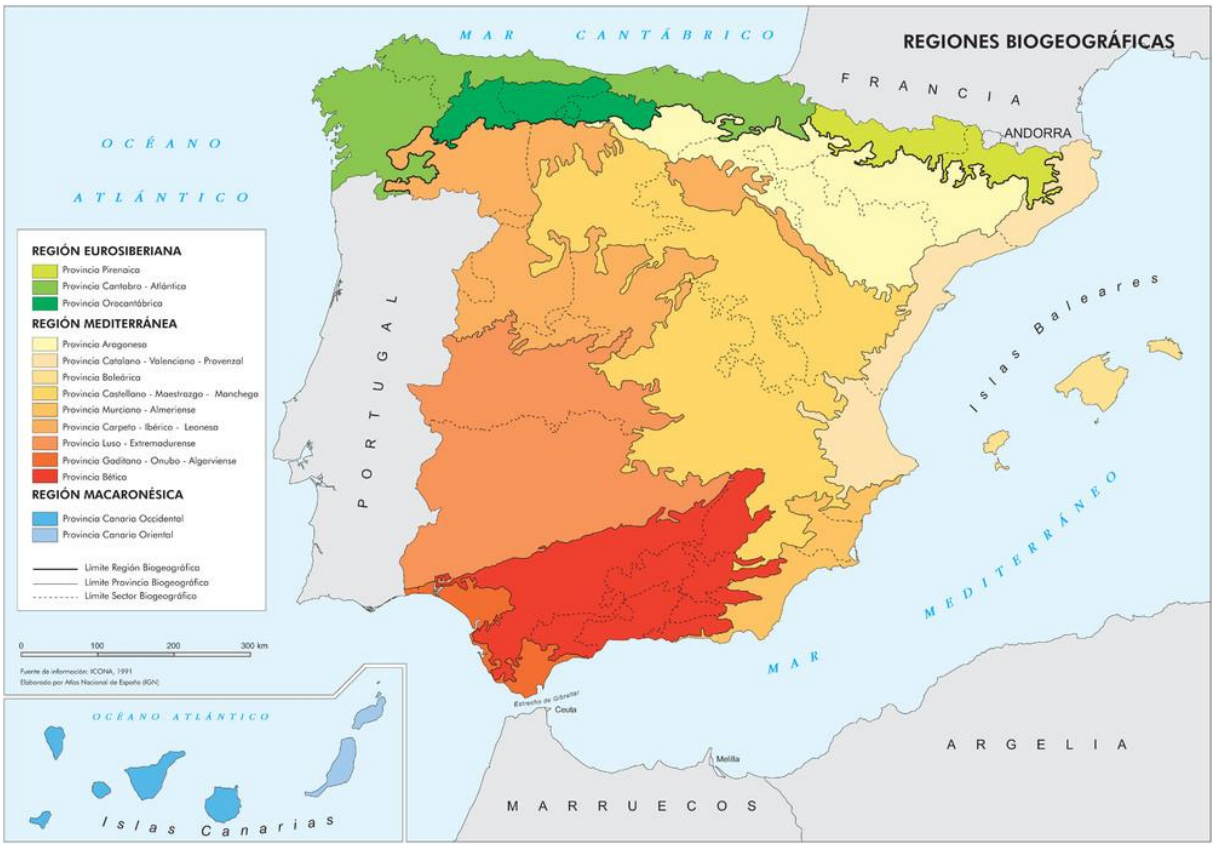
status in the period 2013-2018, which is less than the 21.63% in the previous period 2007-2012 (see Figure 5.).

Figure 3. Map of the biogeographic regions of Spain



Source: National Atlas of Spain – IGN

At the same time, the share of habitats in bad conservation status increased from 14,34% to 17% and the share of species in bad conservation status increased from 18,65% to 26.63%. The main pressures are: agriculture; spatial developments and infrastructure; transport; forestry, and alien and problematic species.

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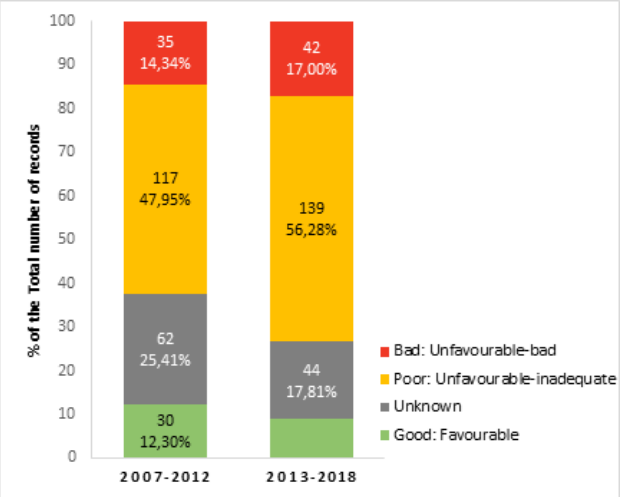
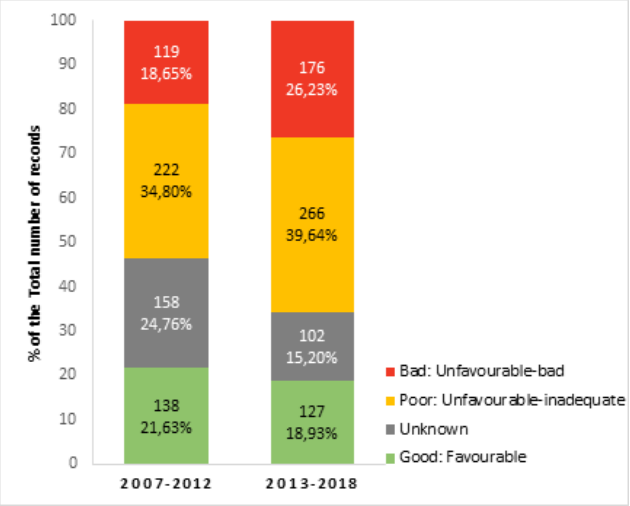
Figure 4. Conservation status of habitats in Spain, 2007-2012 and 2013-2018



Source: EEA (2021)

Figure 5. Conservation status of species in Spain, 2007-2012 and 2013-2018



Source: EEA (2021)

The degradation of protected water-dependent habitats within Natura 2000 is a frequent concern. The Court of Justice of the EU ruled in June 2021 that Spain has failed to correctly implement the EU nature and water legislation in the Doñana area.[3]

Energy and climate related legislation

Climate Change and Energy Transition Law: This law, which entered into force on May 20th, 2021, is a significant piece of legislation in Spain's efforts to combat climate change and transition to a sustainable energy system. The law sets a target of achieving climate neutrality by 2050 and aims to decarbonize the economy by 2050 through a 100% renewable electricity system. It also establishes goals for reducing greenhouse gas emissions, increasing the share of renewables in energy

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consumption, and improving energy efficiency by 2030. The law prohibits new exploration authorizations for hydrocarbon research permits or exploitation concessions and encourages the use of renewable gases. Additionally, it sets a deadline for new passenger cars and light commercial vehicles to be emissions-free by 2040 and requires municipalities to implement sustainable urban mobility plans.

More Energy Plan: The More Energy Plan, approved by the Government of Spain, aims to achieve a more sustainable and efficient energy system. The plan focuses on promoting renewable energy sources, improving energy efficiency, and reducing greenhouse gas emissions. It includes measures such as incentivizing renewable energy development, promoting energy efficiency in buildings, and supporting research and innovation in the energy sector.

3. *Potential support for a WEFE nexus approach*

Based on the previous sections of this country profile of Spain, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 3.).

Table 3. Tentative assessment of potential support for a WEFE nexus approach based on current institutional settings in Spain

	High	Medium	Low
Political will and decisiveness		X	
Division of responsibilities	X		
Planning mechanisms	X		
Coordination mechanisms		X	
Stakeholder representation and engagement		X	
Knowledge infrastructure	X		
Financial resources		X	

4. *Challenges and opportunities*

Several challenges and opportunities can be identified that are relevant from a WEFE nexus perspective based on documents produced in the EU context, including the 2022 EIR report for Spain, associated publications on the implementation of EU environmental policy, and the Spanish Recovery and Resilience Plan (RRP).

Challenges:

- Improve coordination and cooperation among the competent authorities and mainstream sustainability into other policy areas.
- Improve water management and infrastructure, inter alia by completing urban wastewater treatment facilities.
- Establish appropriate conservation objectives and measures for all Natura 2000 protected

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sites and prevent the degradation of water-dependent habitats.
- Integrate Natura 2000 conservation objectives in other policies, such as River Basin Management Plans.
- Address the problem of groundwater pollution in hot spots of nitrates and address eutrophication of surface waters where agriculture pressure is significant.

Opportunities:

- The Spanish government approved the National Plan for Wastewater Treatment, Sanitation, Efficiency, Savings and Reuse (DSEAR Plan) in July 2021.[108]
- Spain adopted a National Strategy for the Conservation of Pollinators in September 2020[109], as well as a National Strategy for Green Infrastructure, Connectivity and Ecological Restoration in July 2021.[110]
- The Spanish Recovery and Resilience Plan (RRP) earmarks around 40% of its budget to climate change objectives and also includes measures to improve the knowledge of the country's natural heritage and encourage its digitalisation, to ensure ecological connectivity based on nature-based solutions, and to promote green infrastructure.
- Spain is involved in the Ecosystem Service Partnership (ESP)[111], connecting over 3 000 ecosystem services scientists, policy makers and practitioners.
- The LIFE ALNUS TAEJO project[112], together with Portugal, aims to protect and restore rivers and riverbanks dominated by residual alluvial forests, whereas the LIFE REMAR project[113], aims to demonstrate the viability of using managed aquifer recharge (MAR) technology at WWTP's.

[108] https://www.miteco.gob.es/content/dam/miteco/es/agua/temas/planificacion-hidrologica/dsear_plan_book_english_tcm30-538717.pdf
[109] https://www.miteco.gob.es/en/biodiversidad/publicaciones/fauna_flora_estrategias_polinizadores.html
[110] https://www.miteco.gob.es/en/biodiversidad/temas/ecosistemas-y-conectividad/infraestructura-verde/infr_verde.html
[111] https://www.es-partnership.org/
[112] LIFE20 NAT/ES/000021
[113] LIFE20 ENV/ES/000284

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ANNEX 7: Country profile of The Netherlands

The Netherlands in a few facts

# of inhabitants	17,6 million
Surface area	34 188 km2
GDP per capita	130 pps[114]
Significant bodies of water (RBDs)	Rhine; Meuse; Scheldt; Ems
Polity	decentralized unitary state
Layers of government	central government; 12 provinces; 355 municipalities
Legislative powers at the sub-national level	no
Decentralisation index	1.8 (11 out of 27)[115]
Water Exploitation Index plus (WEI+)	4.15% (2017)[116]

1. Institutional settings

Distribution of tasks and responsibilities

The Netherlands' layers of government consist at national level of 12 ministries, and at subnational level of 12 provinces, 21 regional water authorities ('waterschappen'), and 342 municipalities.[117] Water governance competences are divided between national, regional and local levels. As shown in Table 1., the **Ministry of Infrastructure and Water Management**[118] has the primary responsibility for water policy in almost all areas. However, the Ministry of Economic Affairs and Climate Policy is responsible for climate mitigation policy, and the Ministry of Agriculture, Nature and Food Quality for issues related to nature protection and agriculture. *Rijkswaterstaat* is the executive body of the Ministry of Infrastructure and Water Management, responsible for implementing water-related policies and regulations.[119] At the regional level, provinces and regional water authorities play important roles, whilst municipalities are responsible for the implementation of water-related local policies.

The Netherlands Food and Consumer Product Safety Authority *(Nederlandse Voedsel- en Warenautoriteit (NVWA)*[120] is an executive body of the Ministry of Agriculture, Nature and Food

[114] pps = purchasing power standard
[115] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[116] The water exploitation index plus (WEI+) is a measure of total fresh water use as a percentage of the renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned to the environment after use.

[117] https://ec.europa.eu/environment/environmental_governance/assessment/findings_eu-countries_en.htm (NL)
[118] https://www.rijksoverheid.nl/ministeries/ministerie-van-infrastructuur-en-waterstaat (NL)
[119] https://www.rijkswaterstaat.nl/ (NL) and https://www.rijkswaterstaat.nl/en/about-us/our-organisation (EN)
[120] https://www.nvwa.nl/ (NL) and https://english.nvwa.nl/ (EN)

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Quality, responsible for implementing policies in the areas of animal and plant health, food safety and nature protection. It is also responsible for monitoring, control and enforcement of legislation in these areas.

The Netherlands Enterprise Agency (*Rijksdienst voor Ondernemend Nederland* (RVO)) is an executive body of the Ministry of Economic Affairs and Climate Policy, responsible for implementing policies and regulations relating to climate, energy and the circular economy.

Table 1. Main actors responsible for WEFE nexus relevant governance in the Netherlands

WEFE nexus pillars	Policy making	Executive level
Water	Ministry of Infrastructure and Water Management	*Rijkswaterstaat*; provinces; regional water authorities; municipalities
Energy	Ministry of Economic Affairs and Climate Policy	Netherlands Enterprise Agency; provinces; municipalities
Food	Ministry of Agriculture, Nature and Food Quality	Netherlands Food and Consumer Product Safety Authority; provinces
Ecosystems	Ministry of Agriculture, Nature and Food Quality	Netherlands Food and Consumer Product Safety Authority; provinces

Coordination mechanisms

Multi-level coordination

Important coordination mechanisms for multi-level governance are provided by the institutionalised contacts between the central government and the umbrella organisations for the provinces (*Interprovinciaal Overleg* (IPO))[121], regional water authorities (*Unie van Waterschappen* (UvW))[122] and municipalities (*Vereniging van Nederlandse Gemeenten* (VNG))[123] which all perform important roles in policy development and implementation. Coordination between different layers of government has been strengthened by the conclusion of agreements in specific policy areas. In 2011, regional and local authorities and drinking water companies agreed upon the **Governmental Agreement on Water** (*Bestuursakkoord Water*). In 2013, authorities and societal actors concluded the Agreement on Energy for Sustainable Growth (*Energieakkoord voor Duurzame Groei*) at the national level. As a follow up, stakeholders from five economic sectors including electricity, built environment, industry, agriculture and land use, and mobility concluded the Agreement on Climate (*Klimaatakkoord*) in 2019. Its successor was recently launched as National Climate Platform (*Nationaal Klimaat Platform*). In these latter initiatives, the regional water authorities have been,

[121] https://www.ipo.nl/ (NL)
[122] https://unievanwaterschappen.nl/ (NL) and https://dutchwaterauthorities.com/ (EN)
[123] https://vng.nl/ (NL)

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and still are, represented by their umbrella organization **Union of Regional Water Authorities** (*Unie van Waterschappen*).

Multi-sector coordination

Since 2018, the central government, provinces, regional water authorities and municipalities are working on a joint agenda to strengthen intergovernmental cooperation in several domains which they consider as most challenging in the years to come. Among the issues covered are climate mitigation and adaptation, circular economy, sustainable agriculture, and nature and biodiversity.

SDG implementation

SDG implementation is overseen by a high-level SDG coordinator. Focal points for SDG implementation exist at each ministry. The government reports annually on the progress made in respect to the SDGs to the Parliament. Integration into policy is done by mainstreaming SDG objectives in national policies and funds. There is no separate budget for SDGs as their objectives are integrated in existing and future policies.

Stakeholder involvement and participation

Public participation is considered one of the pillars of Dutch policy. It is regulated in general terms in the General Administrative Law Act (*Algemene Wet Bestuursrecht*). The Environmental Management Act (*Wet milieubeheer*) provides rules about participation in national, provincial and municipal planning procedures, in EIA and SEA procedures and in some spatial planning plans. Much effort is invested in interactive processes of policy development and multi-stakeholder approaches. The Ministry of Infrastructure and Water Management created a special Directorate for Participation, facilitating and organising societal participation processes. This Directorate issued a code defining what societal participation entails and its minimum requirements (*Code Maatschappelijke Participatie*). The new Environment and Planning Act that is expected to come into force on January 1, 2024 will make citizen participation a mandatory aspect of all administrative procedures involving spatial planning.

Access to information and transparency

As shown in Table 2., water-related environmental information is readily accessible online to the general public, although several public authorities do not make all relevant information available. In addition, the identification and interpretation of these data may be complex, especially for those who are not experts in the field of water policy related issues. To tackle this problem, the joint authorities are increasingly making information available through the **portal Atlas Living Environment** (*Atlas Leefomgeving*) in the form of searchable maps. Water relevant themes in the Atlas include ‘green and water’ and ‘climate change’.

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Table 2. Sources of water policy related information online in the Netherlands

Name	Website	Type of data
Help Desk Water (*Helpdesk Water*)	https://www.helpdeskwater.nl/ (NL)	General information on water-related issues
Information Center Water (*Informatiehuis Water*)	https://www.ihw.nl/ (NL)	Water quality data
Knowledge Center Infomil (*Kenniscentrum Infomil)*	https://www.infomil.nl/ (NL) and https://rwsenvironment.eu/ (EN)	General information on water-related issues
Ministry of Infrastructure and Water Management, The State of our Water (*De Staat van Ons Water*)	https://www.onswater.nl/onderwerpen/de-staat-van-ons-water/documenten/rapporten/2022/05/18/staat-van-ons-water-2021 (NL)	Water policy assessment
Netherlands Assessment Agency (*Planbureau voor de Leefomgeving-PBL*), Compendium for the Living Environment (*Compendium voor de Leefomgeving*)	http://www.clo.nl/onderwerpen/water-en-milieu (NL) and https://www.clo.nl/en (EN)	Environmental trends and indicators
Pollutant Release and Transfer Register (*Emissieregistratie*)	http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx (NL)	Emissions of substances
Portal Atlas Living Environment (portal Atlas Leefomgeving)	www.atlasleefomgeving.nl (NL)	Searchable maps
RIVM (Rijksinstituut voor Volksgezondheid en Milieu-RIVM)	www.rivm.nl/rvs (NL)	Risks related to substances
STOWA	https://www.stowa.nl (NL)	Knowledge center regional water authorities
Waterschapsspiegel	https://www.waterschapsspiegel.nl/ (NL)	Database including statistics from the different water authorities

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2. State of implementation of EU legislation

Water Framework Directive – water quality

The Netherlands is located in a delta that is formed by four river basins: the Rhine, the Meuse, the Scheldt and the Ems (European Commission, 2021). The associated RBDs are each managed by dedicated international entities, including the International Commission for the Protection of the Rhine (ICPR)[124], the International Meuse Committee[125], the International Scheldt Commission[126] and the International Ems Committee.[127] These entities are also responsible for establishing the joint RBMPs for the countries involved.

For each of the four RBDs, the Dutch government has drawn up a Programme of Measures (PoMs) in accordance with the directive and the respective RBMPs. These Dutch PoMs each provide a list of specific local/regional measures for water abstraction, point sources, diffuse sources, hydromorphology and water movement, and other region-specific purposes.

Progress in the implementation of the PoMs is not reported at a central level, but at the level of the regional water authorities in a central on-line portal called WAVES.[128] Efforts to link this information on progress of measures with the Key Types of Measures (KTMs) are ongoing, but have not yet been reported centrally by the Dutch authorities. Therefore it is not yet possible to make a direct link between the measures that are implemented and the KTMs (and its underlying measures), although such an overview is expected shortly.

Adaptation to climate change is addressed by the **nation-wide Delta Programme**[129], in which the central government, regional water authorities, provinces and municipalities are working together on climate proofing water risk management.

With respect to the WFD, the Dutch government presents each year a report to the House of Representatives on the state of implementation of water policy in the Netherlands. This is done through 'De Staat van ons Water' reports (**'The state of our waters'**).[130]

Following its assessment of the 2nd RBMPs, the European Commission (2021) particularly encouraged the Netherlands to:

- Assess the effectiveness of existing agricultural measures and identify which additional measures are needed to achieve the objectives of the WFD;
- Ensure that for chemical pollution from non-agricultural sources, the PoM is based on a reliable assessment of the pressures involved, and

[124] https://www.iksr.org/en/ (EN)
[125] http://www.meuse-maas.be/ (FR, NL)
[126] https://www.isc-cie.org/en/ (EN)
[127] https://www.ems-eems.de/ (DE, EN, NL)
[128] https://waves.databank.nl/ (NL)
[129] https://english.deltaprogramma.nl/ (EN)
[130] https://www.onswater.nl/documenten/rapporten/2022/05/18/staat-van-ons-water-2021 (NL)

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- Provide information on the estimated costs of the proposed measures and the baseline to be used for monitoring progress.

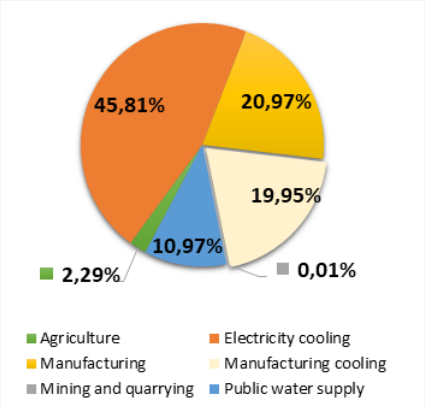
Based on the EIR 2022 process, the European Commission concluded that the Netherlands has made progress as regards water pollution, although challenges remain.[131] Most urgently, the Netherlands needs to substantially reinforce their Nitrates Action Programme with measures that match the severity and the urgency of the situation, in line with the obligations under the Nitrates Directive, and to ensure that the objectives of the WFD and the legislation for Natura 2000 and air quality are met. With regard to water management, efforts should be made to improve coordinated implementation between water, marine and nature policies.

Water Framework Directive – water quantity

The total of water abstracted from Dutch surface and groundwater sources was 11 600.55 hm^3 in 2019 (EEA, 2022). As shown in Figure 1., the largest share is taken by electricity cooling (45.81%), followed by manufacturing (20.97%) and manufacturing cooling (19.95%).

The Netherlands uses a register to record water abstractions that are more than 150.000 m^3 per year (European Commission, 2022). Abstractions for drinking water are registered in the Register of Protected Areas. For groundwater abstractions of up to 10 m^3 per hour, an exemption from the permit obligation may be allowed. For surface waters, small abstractions are permitted without notification, as long as sufficient surface water is available. Mid-sized abstractions have to be notified and may require a permit to protect nature or buildings. Abstractions over 50 m^3 per hour require a permit.

Figure 1. Water abstraction per sector in the Netherlands, 2019



Source: EEA (2022)

[131] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022SC0268 (EN)

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In the Netherlands, the water exploitation index plus (WEI+)[132] was 4.15% in 2017, well below the 20% that is generally considered an indication of water scarcity. EU wide, the Netherlands is ranked at the 12th position (from high to low score) in terms of WEI+.

Floods Directive

Based on the findings from its first Flood Risk Management Plan (FRMP), the European Commission (2019)[133] particularly encouraged the Netherlands to:

- Define objectives in an as specific and measurable way as possible and explain the process and links with prior and ongoing efforts in the same field, and
- Provide information on the estimated costs of the proposed measures and the baseline to be used for monitoring progress.

Urban Waste Water Treatment Directive

The Netherlands reported for the reference year 2018 the following data[134]:

- 309 agglomerations ≥2,000 p.e.3 with a total waste water load of 19,712,887 p.e.;
- 319 urban waste water treatment plants >2,000 p.e., with a total design capacity of 21,602,000 p.e., of which:
    - 1 plant was equipped with technology for primary and secondary treatments;
    - 318 plants were equipped with technology for more stringent treatment than secondary.

In reaction to this report, the European Commission concluded that all wastewater is collected and treated in full compliance with the directive.

Industrial Emissions Directive

In the Netherlands, around 4 000 industrial installations are required to have a permit based on the Industrial Emissions Directive (IED). As shown in Figure 2., the sectors with most installations are intensive rearing of poultry and pigs (60%), followed by waste management, including landfills (22%), food and drink (5%) and chemicals (4%).

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

[133] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2019:0075:FIN:EN:PDF

[134] https://water.europa.eu/countries/uwwt/netherlands (EN)

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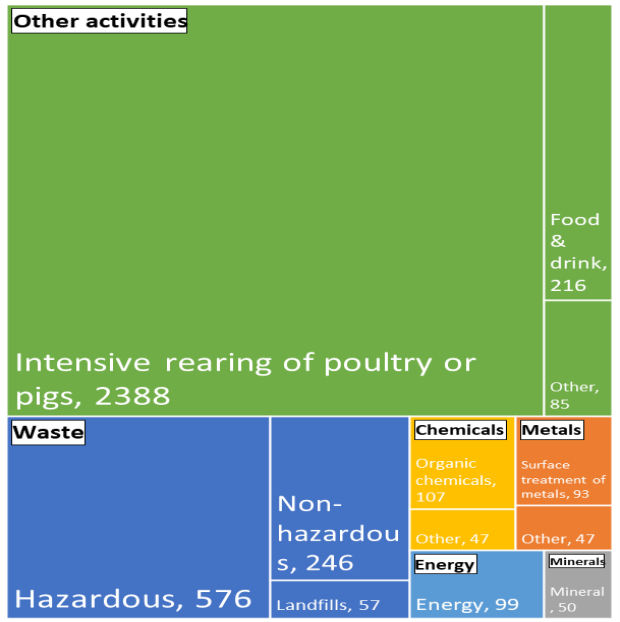
Figure 2. IED industrial installations per sector in the Netherlands, 2018



Source: EEA (2021)

Industrial emissions to water mainly result from: (i) waste management for nitrogen, phosphorous, total organic carbon and heavy metals, and (ii) refineries for polycyclic aromatic hydrocarbons (PAHs). Under the IED framework the Netherlands showed a significant decrease (53.4%) in releases of heavy metals like Cd, Hg, Ni, PL and (38%) in Total Organic Carbon, TOC to water over the last decade (EEA, 2021).

Habitats Directive

The Netherlands hosts 52 habitat types and 80 species covered by the Habitats Directive. The country also hosts populations of 70 bird taxa listed in the Birds Directive Annex I.

The share of habitats with a good conservation status slightly increased from 3.85% to 11.54% in the period 2013-2018, compared with the situation between 2007-2012 (see Figure 3.). As regards protected species, the share of habitats with a good conservation status increased from 22.78% in 2012 to 26.25% in 2018 (see Figure 4.). In the same period, the share of habitats with a bad conservation status increased from 46.15% to 53.85%, whereas the share of species with such a status decreased from 50.63% to 38.75%. The main pressures are agriculture, human-induced changes in water regimes (e.g. drainage) and natural succession due to high nitrogen depositions.

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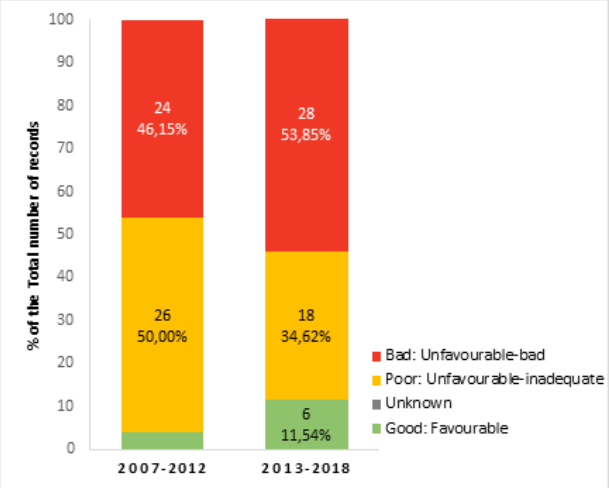
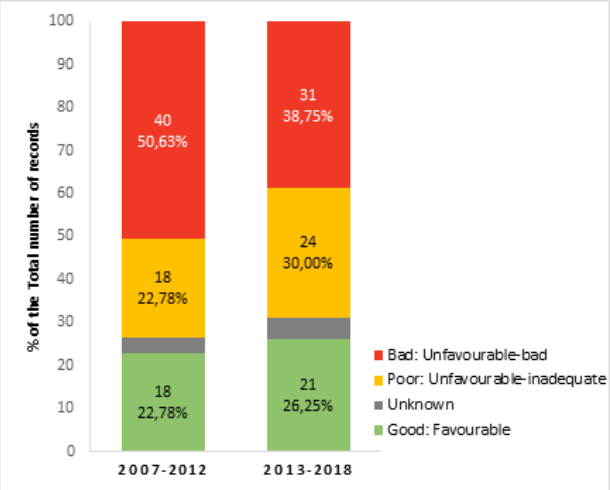
Figure 3. Conservation status of habitats in the Netherlands, 2007-2012 and 2013-2018



Source: EEA (2021)

Figure 4. Conservation status of species in the Netherlands, 2007-2012 and 2013-2018



Source: EEA (2021)

Overall, the reporting by the Netherlands is considered by EEA as relatively complete, as the proportion of mandatory information that is missing or reported as unknown is 3%.[135] This is a relatively low percentage compared with other EU member states.

A major reason for the deterioration of habitats is the continued significant pressure from agriculture, in particular due to nitrogen deposition affecting many sensitive habitats from bogs to forests as well as human-induced changes in water regimes. Furthermore, the situation for forested

[135] https://www.eea.europa.eu/themes/biodiversity/state-of-nature-in-the-eu/article-17-national-summary-dashboards/data-quality-and-completeness (EN)

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areas protected under the nature directives is considered severe, as more than half of assessments show a bad conservation status.

In order to deal with its biodiversity challenges, the Netherlands launched a **Program of Strengthening Biodiversity** (*Programma Versterken Biodiversiteit*)[136] in 2019 that builds on the 2030 Biodiversity Strategy and strives to achieve 100% of the objectives of the Birds and Habitats Directives by 2050.

Energy and climate related legislation

The Netherlands has an integrated **National Energy and Climate Plan** (NECP) for 2021-2030.[137] This plan is consistent with the long-term strategy. The national objective is to reduce emissions by 49% (compared to 1990) by 2030 and become climate neutral by 2050. Between 1990 and 2020, economy wide greenhouse gas emissions in the Netherlands decreased by 24%. The country's greenhouse gas emission intensity is smaller than the EU's average, but its per capita emissions remain high.

The Renewable Energy Directive (REDII) aims to raise the share of renewable energy in the European Union to 32% by 2030. In its NECP, the Netherlands has announced that it aims to attain a share of renewable energy of at least 19.6% by 2025 and at least 27.0% by 2030. However, the share of renewable energy is increasing faster than before due to policy adjustments introduced last year, particularly with regard to allowing the construction of additional offshore wind farms.[138]

3. *Potential support for a WEFE nexus approach*

Based on the previous sections of this country profile, a first indication can be given about the potential support for a WEFE nexus approach in terms of the existing institutional settings (see Table 3.).

Table 3. Potential support for WEFE nexus approach based on current institutional settings in the Netherlands

	High	Medium	Low
Political will and decisiveness			X
Division of responsibilities / competencies		X	
Planning mechanisms		X	
Coordination mechanisms		X	
Stakeholder representation and engagement		X	
Knowledge infrastructure	X		
Financial resources	X		

[136] https://zoek.officielebekendmakingen.nl/kst-26407-130.pdf
[137] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022SC0268 (EN)
[138] https://www.pbl.nl/sites/default/files/downloads/pbl-2022-climate-and-energy-outlook-of-the-netherlands-2022-4839.pdf

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The main arguments for this tentative assessment are the clear division of public responsibilities concerning water- related topics, with the Ministry of Infrastructure and Water Management and the Regional Water Authorities performing key roles. In addition, planning and coordination mechanisms are in place at different levels. Overall stakeholders are well represented at the political as well as the policy making and implementation levels. Furthermore, the knowledge infrastructure is very well developed. However, practice in the past years has shown that at decisive moments there is a lack of political will and vigor to implement stricter policies, especially in relationship with the agricultural sector. A common explanation for this hesitance is the several centuries old culture of so-called *poldering* according to which stakeholders in water management keep discussing different action perspectives until they achieve consensus (e.g. Schreuder, 2001; van Tielhof, 2021)

Related to this, Wuijts et al. (2023) argue that an important problem in the Netherlands is that stakeholders, also within organisations, have different views on ambitions, achievements and necessary follow-up actions. This is problematic because for realising water quality ambitions in practice, cross-sectoral cooperation (e.g. from agriculture and spatial development) as well as strengthened interlinkages between these related policy fields is crucial. They conclude that in order to increase effectiveness, a better understanding of the underlying mechanisms for this lock-in will be necessary, as this will enable the development of practical tools and instruments to support cross-sectoral and multi-level collaboration.

4. Challenges and opportunities

Based on the 2022 EIR report for the Netherlands, associated publications on the implementation of EU environmental policy and the Recovery and Resilience Plan (RRP) for the Netherlands, the following challenges and opportunities can be identified that are relevant from a WEFE nexus perspective.

Challenges:

- Improve the coordinated implementation between water, marine and nature policies.
- Ensure the completion of the Natura 2000 network by the designating the still pending few sites and updating the large number of designation decrees to reflect more accurate lists of species and habitats for the sites concerned.
- Improve the conservation status of habitats and species, in particular by addressing the extremely high pressure from agricultural activities, and from the changes in water regimes.
- Reinforce the Nitrates Action Programme with measures that match the severity and the urgency of the situation to: (i) reduce nitrates pollution in particular in the ground waters of the sand and loess regions, (ii) tackle eutrophication and (iii) help farmers switch to more sustainable and less intensive production methods.

Opportunities:

- The Netherlands' Recovery and Resilience Plan (RRP) allocates nearly one billion euro million to reduce nitrogen emissions and address their negative effects on nature through a

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subsidy scheme for the cessation of intensive pig farming (€275 million) and a comprehensive Nature Restoration scheme **(**€714 million**).**

- The Dutch government launched a Program of Strengthening Biodiversity in 2020 that builds on the 2030 Biodiversity Strategy and strives to achieve 100% of the objectives of the Birds and Habitats Directives by 2050.
- A government funded 'Societal Natural Capital Programme' has been implemented by Corporate Social Responsibility (CSR) Netherlands to inspire, stimulate and facilitate businesses in different economic sectors to account for natural capital impacts, dependencies and risks in their operations.
- The Netherlands has acquired a high level of expertise in ecosystem accounting and associated trend analysis.

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ANNEX 8: Selected good practices in EU member states facilitating a WEFE nexus approach

EU member states	Good practices facilitating a WEFE nexus approach
Austria	The Austrian government has executed a comprehensive study "Austria's Water Treasure" (2023) as a guide for water management until 2050 in order to enable sustainable groundwater utilisation.[139]
Belgium	Under the umbrella of Blue Deal Belgium[140], Flanders aims to: (i) accelerate the restoration and creation of wetlands; (ii) integrate waterbodies and other natural environments together into a broader network that spans both cities and rural areas; (iii) install water buffers at large scale; (iv) use innovative water-saving technologies; and (v) invest in research on water conservation.
Bulgaria	Bulgaria's RRP will provide support to a green transition, *inter alia* addressing issues of biodiversity, water supply and sewerage, and sustainable agriculture.
Croatia	Croatia has developed a reporting system based on best practices (EstuarIS project) in order to share knowledge about environmental data management and reporting in the field of water.
Czechia	Czechia enhanced the support base for its 3rd RBMPs by reserving ample time for the public consultation, allowing the public and all stakeholders to express their views.
Cyprus	Cyprus' RRP proposes a set of measures to transform and modernise water resource management and to improve the cooperation and coordination between the various water management authorities.
Denmark	The Water Valley Denmark initiative stimulates the development and use of innovative water technology that enables water consumption to become more resource efficient, cost effective and quality assured.[141]
Estonia	Estonia is one the pioneers of wetland restoration, demonstrating that restored wetlands can bring multiple benefits and co-exist with successful farming practices (e.g. EU Pärnu river basin project).
Finland	Finland has ambitious nature protection and restoration programmes, among which the HELMI programme focusing on mires, wetlands, coastal habitats and semi-natural grasslands[142], and the SOTKA project aiming to improve the status of waterfowl.[143]

[139] https://info.bml.gv.at/en/
[140] https://bluedeal.integraalwaterbeleid.be/about-blue-deal
[141] https://watervalleydenmark.com/
[142] https://ym.fi/en/helmi-habitats-programme
[143] https://mmm.fi/en/sotka-project

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France	The Agricultural Biodiversity Observatory (*Observatoire Agricole de la Biodiversité* or OAB)[144], is a participatory science programme that provides farmers with biodiversity observation protocols to help them gain a better understanding of biodiversity in agriculture.
Germany	In 2023, a National Water Strategy[145] was launched by the Federal Ministry of Environment aiming to take systematic action to ensure a sound management of water resources by modernizing water infrastructure.
Greece	Greece created a governance structure in 2020 to protect and manage Natura 2000 sites more effectively, consisting of a Natural Environment & Climate Change Agency at the strategic level as well as management bodies for all Natura 2000 sites at the operational level.
Hungary	Hungary adopted its 3rd national biodiversity strategy in August 2023, aiming at the long-term preservation of the country's wildlife and natural resources and setting the goals to be met by 2030.
Ireland	The Irish administration has been restructured to improve water governance coordination between authorities at local, regional and national levels as well as to ensure engagement with people at local level for solutions at catchment level.
Italy	A new enlarged Ministry of Ecological Transition was formed in 2021, combining environmental and energy responsibilities plus a Interministerial Committee for Ecological Transition (CITE).
Latvia	Experts from Estonia, Germany, Latvia, Poland, and Sweden have formed the Coalition Clean Baltic to exchange experiences on river restoration.
Lithuania	The Lithuanian Natura 2000 network is currently being strengthened by a major EU LIFE project called NATURALIT (2018-2027)[146] that promotes environmentally friendly farming and sustainable use of forests, and raises public awareness of ecological issues.
Malta	Malta is involved in a LIFE project[147] that develops baseline assessments on water demand and supply, explores water efficient technologies, and elaborates master plans for sixteen valley catchments in the Maltese Islands.
Netherlands	The RRP of the Netherlands allocates nearly 1 billion Euro to reduce nitrogen emissions and address their negative effects on nature through a subsidy scheme for the cessation of intensive pig farming and a comprehensive Nature Restoration scheme.
Poland	In its work to achieve the Sustainable Development Goals (SDGs), Poland focuses especially on SDG 6 (increasing available water resources).

[144] https://www.observatoire-agricole-biodiversite.fr/
[145] https://www.bmuv.de/en/download/national-water-strategy-2023
[146] https://naturalit.lt/en/objectives-actions
[147] https://webgate.ec.europa.eu/life/publicWebsite/project/details/4816

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Portugal	Portugal is currently preparing the PENSAARP 2030, a new national strategic plan for the management of water supply, wastewater and pluvial water.
Romania	Romania's RRP aims to support several key reforms of the water sector, particularly by strengthening the regulatory framework for the sustainable management of water and wastewater and accelerating public access to quality services.
Slovenia	Slovenia's RRP aims to invest over EUR 50 million to support improved drinking water supply and water-saving projects.
Slovakia	Slovakia's RRP focuses on priorities relating to a reform of landscape planning and of nature protection and water management.
Spain	The Spanish government approved the National Plan for Wastewater Treatment, Sanitation, Efficiency, Savings and Reuse (DSEAR Plan) in July 2021.[4]
Sweden	Sweden has set a so-called generational goal and 16 associated environmental quality objectives as a promise to future generations of clean air, a healthy living environment, and rich opportunities to enjoy nature.[148]

[148] https://naturvardsverket.diva-portal.org/smash/get/diva2:1477059/FULLTEXT01.pdf

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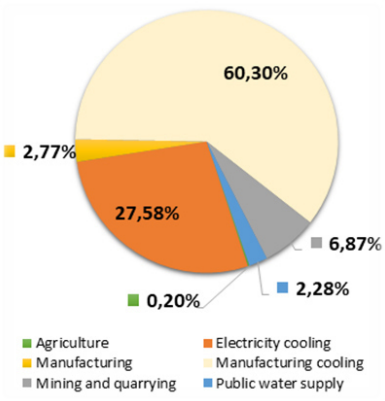
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

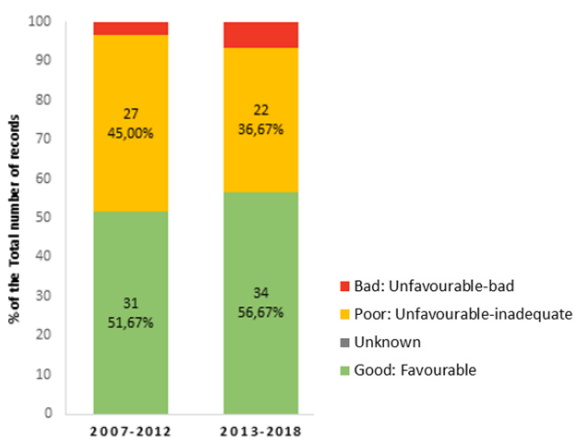
National water governance strategies and institutional settings: A WEFE nexus perspective

-Estonia-

# of inhabitants	**1.4 million**
Surface area	**43 110 km2**
GDP per capita	**87 pps [1]**
Significant bodies of water (RBDs)	**Ida; Lääne**
Polity	**unitary republican state**
Layers of government	**central government; 79 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.6 (14 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**5.44% (2019) [3]**



Water abstraction per sector in Estonia - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Estonia - Source: EEA (2021)

Water bodies with less than good ecological status in Estonia - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment	Estonian Environment Agency, Estonian Environmental Board, Estonian Environmental Research Centre.
Energy	Ministry of Economic Affairs & Communication, Ministry of Environment, Ministry of Regional Affairs & Agriculture.	Local authorities
Food	Ministry of Regional Affairs and Agriculture	Local authorities
Ecosystems	Ministry of Environment	Estonian Environment Agency, Estonian Environmental Board, Estonian Environmental Research Centre.

More information on WEFE nexus governance in the EU

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Implement the 2019 Water Infrastructure Investment Plan
- Address issues with small-scale drinking water and wastewater treatment systems
- Establish conservation objectives and measures for all Natura 2000 sites
- Reduce surface water eutrophication from agriculture
- Provide clear information to farmers on how to comply with nature and nitrates policies

OPPORTUNITIES

- **Estonia is a pioneer in wetland restoration, demonstrating its potential to co-exist with successful farming practices (e.g. EU Pärnu river basin project)[3]**
- **The new Estonian Nature Conservation Development Plan focuses on the restoration of peatlands, grasslands and forests**
- **Estonia's Recovery and Resilience Plan supports a shift towards sustainable forms of energy production leading to less pressure on water resources and reduced pollution**
- **The LIFE IP CleanEst project[4] (2019–2028) develops a methodology to assess freshwater ecosystems and their associated services**

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000-award/meet-natura-2000-heroes/improving-parnu-river-basin-its-migratory-fish_en
[5] https://lifecleanest.ee/en

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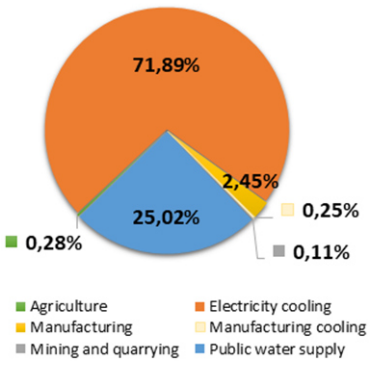
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

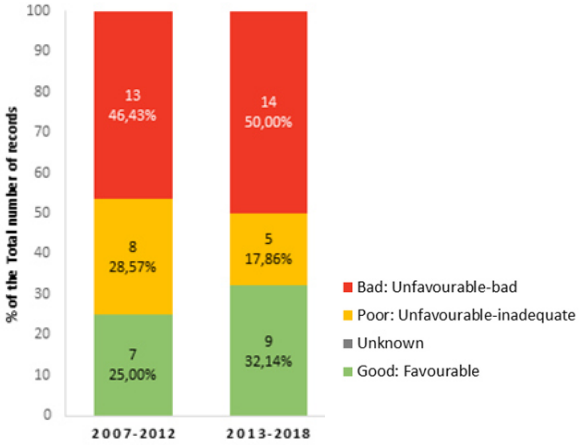
National water governance strategies and institutional settings: A WEFE nexus perspective

-Luxembourg-

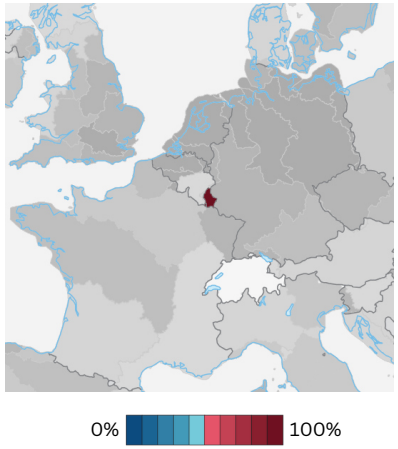
# of inhabitants	**0.6 million**
Surface area	**2 586 km2**
GDP per capita	**261 pps [1]**
Significant bodies of water (RBDs)	**Rhine**
Polity	**unitary state**
Layers of government	**central government; 3 districts; 12 cantons; 102 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.2 (23 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**2.92% (2017) [3]**



Water abstraction per sector in Luxembourg - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Luxembourg - Source: EEA (2021)



Water bodies with less than good ecological status in Luxembourg - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment, Climate, and Sustainable Development	Water Management Agency
Energy	Ministry of of Energy and Spatial planning; Ministry of Economy	--
Food	Ministry of Agriculture, Viticulture and of Rural Development; Ministry of Consumer Protection	--
Ecosystems	Ministry of Environment, Climate, and Sustainable Development	--

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://drenkwaasser.lu

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Establish conservation objectives and measures for all Natura 2000 sites
- Integrate biodiversity into other policy frameworks
- Reduce nitrates pollution and address hotspots of eutrophication
- Support the assessment of ecosystem services and ecosystem-accounting
- Develop national business and biodiversity platforms

OPPORTUNITIES

- **Luxembourg's Recovery and Resilience Plan supports local 'Naturpakt' for groundwater protection and restoration of watercourses**
- **The country's government, together with drinking-water providers, has launched a website focused on tap water[4] targeting the general public**
- **Luxembourg aims to create 8 steering committees to improve Natura 2000 site management and communication among stakeholders**
- **Several projects on ecosystem services accounting: Values Project[5], Nature4cities[6], River Ecosystem Service Index[7]**

[5] www.lifecycle-values.lu/
[6] www.nature4cities.eu
[7] www.resi-project.info

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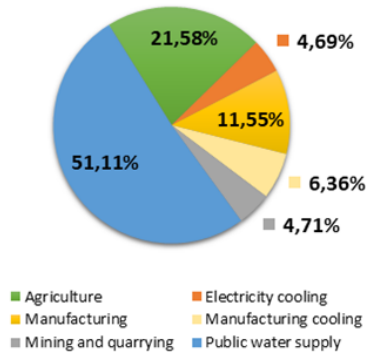
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

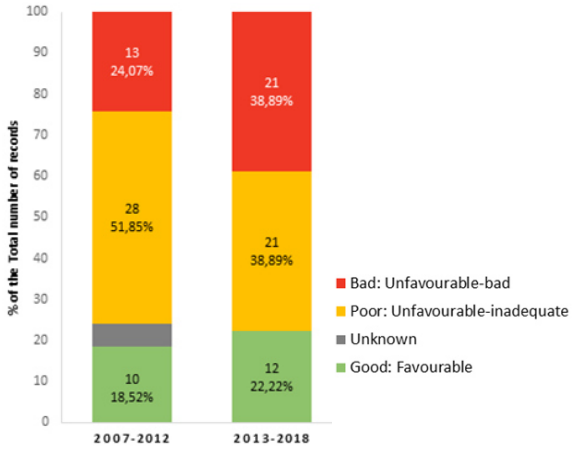
National water governance strategies and institutional settings: A WEFE nexus perspective

-Lithuania-

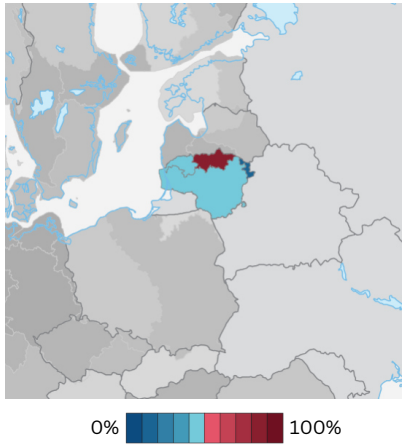
# of inhabitants	**2.8 million**
Surface area	**62 643 km2**
GDP per capita	**90 pps [1]**
Significant bodies of water (RBDs)	**Nemunas**
Polity	**parliamentary democracy and decentralised unitary state**
Layers of government	**central government; 60 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.5 (17 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.38% (2019) [3]**



Water abstraction per sector in Lithuania - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Lithuania - Source: EEA (2021)



Water bodies with less than good ecological status in Lithuania - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment	Environmental Protection Agency
Energy	Ministry of Energy, Ministry of Environment	--
Food	Ministry of Agriculture	--
Ecosystems	Ministry of Environment	--

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://naturalit.lt/en/home/

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Restore river hydromorphology
- Assess the necessity of new modifications to water bodies
- Improve coordination of water and nature policy frameworks
- Support the full implementation of wastewater treatment facilities
- Address surface water eutrophication from agriculture

OPPORTUNITIES

- EU LIFE project NATURALIT (2018-2027)[4]:
  - strengthen country's Natura 2000 network
  - promote environment-friendly farming and sustainable use of forests
  - raise public awareness of ecological issue
- Major reductions in water use following the shut down of the nuclear energy facility
- Lithuania's Recovery and Resilience Plan aims to invest in on & offshore renewable energy plants (solar and wind)
- Well-developed network of water quality monitoring stations
- Significant reductions in releases of heavy metals (e.g. cadmium, mercury, nickel and lead) and organic carbon

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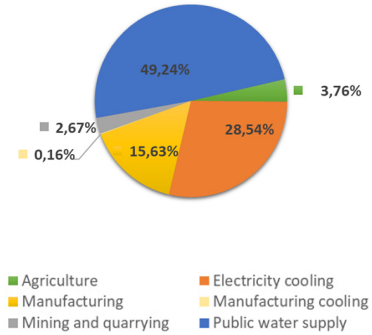
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

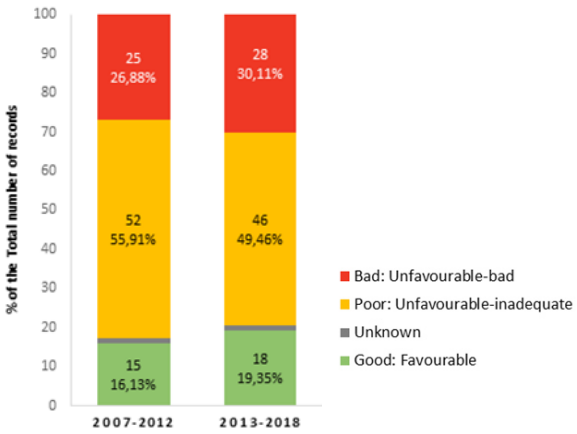
National water governance strategies and institutional settings: A WEFE nexus perspective

-Czechia-

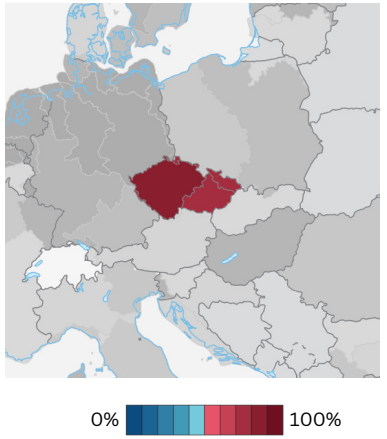
# of inhabitants	**10.8 million**
Surface area	**77 212 km2**
GDP per capita	**91 pps [1]**
Significant bodies of water (RBDs)	**Danube; Elbe; Odra**
Polity	**unitary state**
Layers of government	**central government; 14 regions; 6 258 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.9 (9 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**19.53% (2017) [3]**



Water abstraction per sector in Czech Republic - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Czech Republic - Source: EEA (2021)



Water bodies with less than good ecological status in Czech Republic - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment; Ministry of Agriculture	water authorities; regions; municipalities
Energy	Ministry of Industry and Trade	Energy Regulatory Office; regions; municipalities
Food	Ministry of Agriculture	regions; municipalities
Ecosystems	Ministry of Environment	--

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://www.cbd.int/doc/world/cz/cz-nbsap-v2-en.pdf

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Apply nature-based solutions to enable a more natural hydromorphology of surface water bodies
- Reduce agricultural pollution of surface water and groundwater by nitrates and chemicals
- Stimulate capacity building in terms of ecosystem accounting and develop a pilot project
- Boost investments to improve the water status in all river basin districts
- Increase the use of economic instruments (e.g. nitrogen fertiliser tax and water consumption charge) to promote sustainable water governance

OPPORTUNITIES

- **Czechia enhanced the support base for the 3rd River Basin Management Plans by reserving ample time for public consultation, allowing the public and all stakeholders to express their views**
- **The country's biodiversity strategy (2016-2025)[3] focuses on the recognition of natural resources, their protection and responsible use**
- **Czechia's Recovery and Resilience Plan allocates a major part of the budget to:**
  - **climate change mitigation and adaptation**
  - **protection of biodiversity and natural resources**

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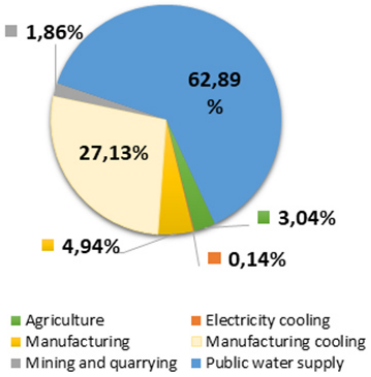
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

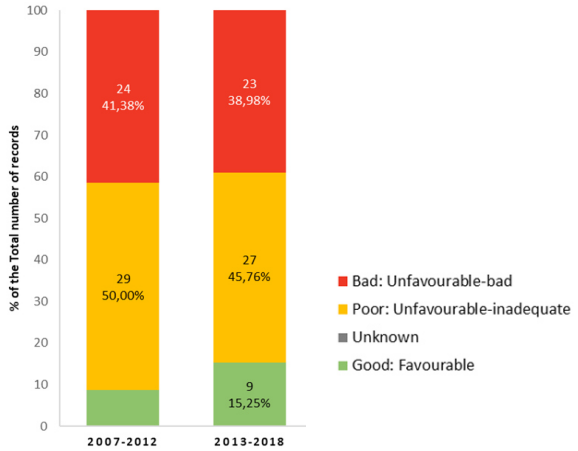
National water governance strategies and institutional settings: A WEFE nexus perspective

-Ireland-

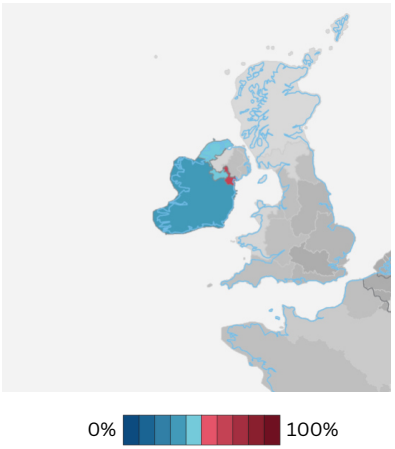
# of inhabitants	**5.2 million**
Surface area	**68 655 km2**
GDP per capita	**234 pps [1]**
Significant bodies of water (RBDs)	**Ireland; North Western**
Polity	**parliamentary democracy and unitary state**
Layers of government	**central government; 3 regions; 26 countries; 3 city councils ; 2 city and county councils**
Legislative powers at the sub-national level	**No**
Decentralisation index	**0.8 (27 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**2.98% (2017) [3]**



Water abstraction per sector in Ireland - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Ireland - Source: EEA (2021)



Water bodies with less than good ecological status in Ireland - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Department of Housing, Planning and Local Government	Water Forum; Office of Public Works; Environmental Protection Agency; Irish Water; regional assemblies; Local Authorities Waters Programme
Energy	Department of the Environment, Climate and Communications	Climate Action Regional Offices; regional assemblies
Food	Department of Agriculture, Food and the Marine	regional assemblies
Ecosystems	Department of the Environment, Climate and Communications	regional assemblies

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] http://citizen-science.ie/
[5] https://lawaters.ie/
[6] https://exploreyourshore.ie/

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Complete the designation of nature protection areas and put in place the necessary conservation plans and measures
- Take practical steps to address the serious decline of waders in Natura 2000 sites and the wider countryside
- Reduce water pollution from nutrients and address hydromorphological pressures
- Ensure appropriate control over water abstraction and hydromorphological changes
- Improve wastewater management infrastructure

OPPORTUNITIES

- **The Irish administration has been restructured**
  - to improve water governance coordination among authorities at local, regional and national levels
  - to ensure local engagement for solutions at the catchment level
- **Many citizen science initiatives, including Citizen Science Ireland[4], LAWPRO[5] water quality monitoring, Explore Your Shore[6] and Dragonfly Ireland project[7] to promote public participation in the monitoring and collection of data.**
- **Irish Natural Capital Accounting for Sustainable Environments (INCASE) (2019-2023)[8] develops capital accounts for different Natura 2000 sites in Ireland.**

[7] https://biodiversityireland.ie/surveys/dragonfly-ireland/
[8] https://www.incaseproject.com/

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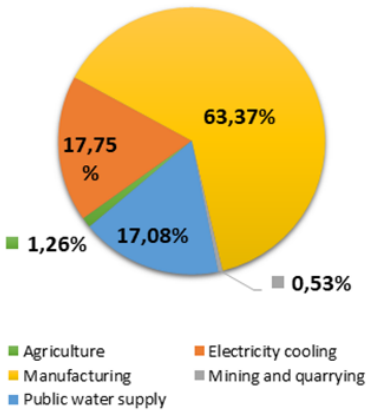
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

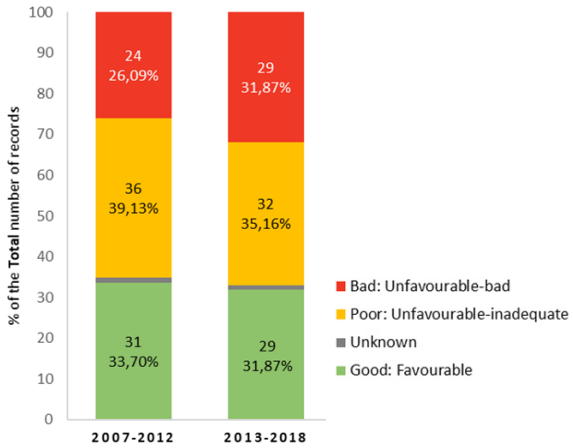
National water governance strategies and institutional settings: A WEFE nexus perspective

-Finland-

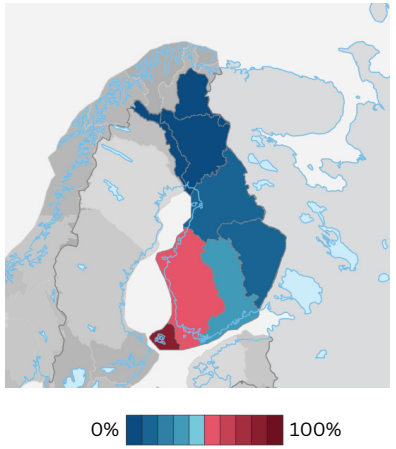
# of inhabitants	**5.6 million**
Surface area	**304 316 km2**
GDP per capita	**109 pps [1]**
Significant bodies of water (RBDs)	**Kymijoki Gulf; Oulojoki; Vuoksi**
Polity	**unitary state organised on a decentralised basis**
Layers of government	**central government; 19 provinces including the autonomous region of Åland Islands; 310 municipalities**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**2.3 (5 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.61% (2017) [3]**



Water abstraction per sector in Finland - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Finland - Source: EEA (2021)



Water bodies with less than good ecological status in Finland - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of the Environment; Ministry of Agriculture and Forestry	Finnish Environment Institute (SYKE); Regional State Administrative Agencies; municipalities
Energy	Ministry of Employment and the Economy	The Energy Authority; Regional State Administrative Agencies; municipalities
Food	Ministry of Agriculture and Forestry	The Finnish Food Authority
Ecosystems	Ministry of the Environment	Natural Resources Institute Finland (Luke); Centre for Economic Development; Transport and the Environment

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://ym.fi/en/national-biodiversity-policy.
[5] https://ym.fi/en/helmi-habitats-programme

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Invest in the water supply system
- Improve the protection of wetlands, peatlands and grassland
- Integrate biodiversity concerns into other policies
- Offset agricultural intensification and resulting water eutrophication

OPPORTUNITIES

- **Finland aims to adopt a new national biodiversity strategy and action plan[4]**
- **Finland has ambitious nature protection and restoration programmes:**
  - **HELMI focusing on mires, wetlands, coastal habitats and semi-natural grasslands[5]**
  - **SOTKA aiming to improve the status of waterfowl[6]**
- **The Finnish Biodiversity Information Facility[7] is an open access data repository, allowing users to search and download information, and to record and share their own observations**
- **Finland's Recovery and Resilience Plan aims to invest in clean energy production and infrastructure**

[6] https://mmm.fi/en/sotka-project
[7] https://laji.fi

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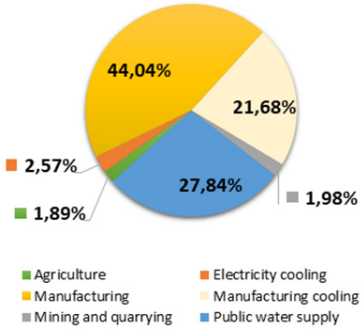
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

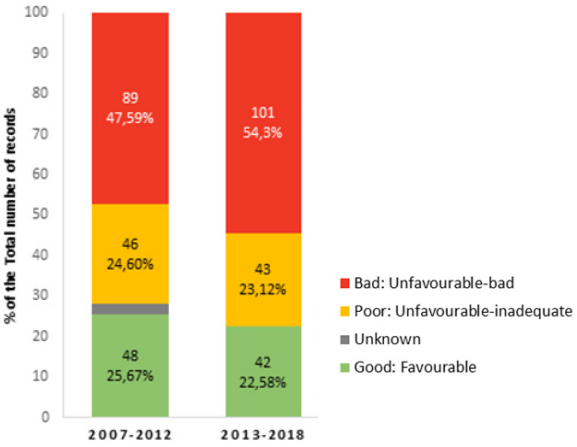
National water governance strategies and institutional settings: A WEFE nexus perspective

-Sweden-

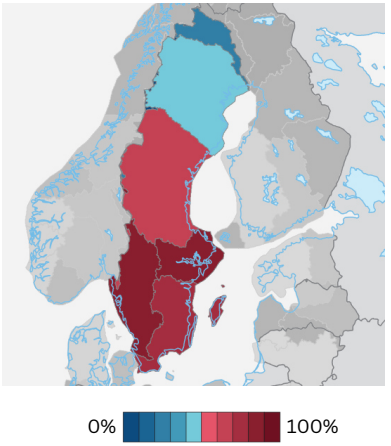
# of inhabitants	**10.5 million**
Surface area	**407 300km2**
GDP per capita	**119 pps [1]**
Significant bodies of water (RBDs)	**Bothnian Sea**
Polity	**unitary and decentralised state**
Layers of government	**central government; 21 regions; 290 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**2.4 (4 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.69% (2017) [3]**



Water abstraction per sector in Sweeden - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Sweeden - Source: EEA (2021)



Water bodies with less than good ecological status in Sweeden - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Climate and Enterprise	Swedish Agency for Marine and Water Management; Swedish Environmental Protection Agency; 5 water districts; stakeholder water councils
Energy	Ministry of Climate and Enterprise	Swedish Energy Agency
Food	Ministry of Rural Affairs and Infrastructure	Swedish Board of Agriculture
Ecosystems	Ministry of Climate and Enterprise	Swedish Environmental Protection Agency

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Support assessment of ecosystem services and ecosystem accounting
- Assess the why and how of new modifications to water bodies
- Reinforce the nitrates action programme to better address eutrophication of waters
- Improve the wastewater management infrastructure
- Provide practical advice to farmers and land managers to improve management of Natura 2000 sites

OPPORTUNITIES

- **Sweden's generational goal and its 16 associated environmental quality objectives to ensure for future generations: clean air, healthy living environment, and rich opportunities to enjoy nature [4]**
- **Ample use of the LIFE programme for nature purposes (e.g. Ecostreams for LIFE[5], LIFE RestoRED[6] and GRIP on LIFE[7])**
- **The Coalition Clean Baltic Experts (Germany, Poland, Sweden, Estonia and Latvia) to exchange experiences on river restoration**
- **Tool developed by the Swedish water authorities to support municipal decision-makers on water measures and their benefits**
- **The Swedish Board of Agriculture promotes the implementation of the Nitrates Directive by providing to farmers advice on manure, fertilizer use, and farm management practices**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://naturvardsverket.diva-portal.org/smash/get/diva2:1477059/FULLTEXT01.pdf
[5] https://www.ecostreamsforlife.com/
[6] https://www.liferestored.se/
[7] https://www.skogsstyrelsen.se/en/about-us/our-task/project/grip-on-life/

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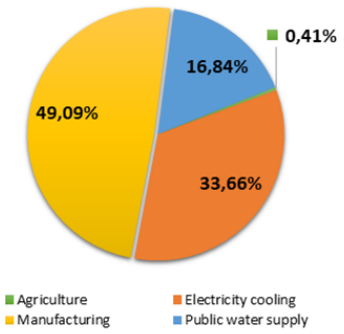
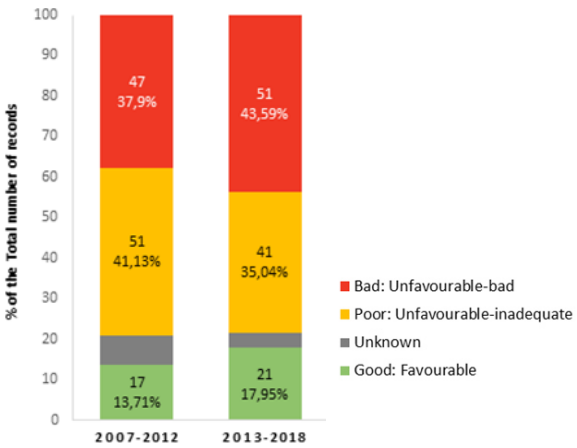
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Austria-

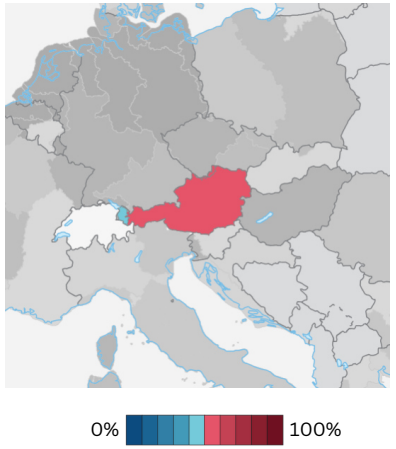
# of inhabitants	**9.1 million**
Surface area	**82 159 km2**
GDP per capita	**125 pps [1]**
Significant bodies of water (RBDs)	**Danube**
Polity	**federal state**
Layers of government	**central government; 9 federal states; 95 districts (including 15 cities); 2 098 municipalities**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**1.5 (18 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**1.78% (2017) [3]**



Water abstraction per sector in Austria - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Austria - Source: EEA (2021)



Water bodies with less than good ecological status in Austria - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Federal Ministry of Agriculture, Forestry, Regions and Water Management	Provinces; municipalities
Energy	Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology	Environment Agency Austria; provinces; municipalities
Food	Federal Ministry of Agriculture, Forestry, Regions and Water Management	provinces
Ecosystems	Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology	Environment Agency Austria, provinces, municipalities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://info.bml.gv.at/en/

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Improve conservation objectives and measures for species and habitats in Natura 2000 sites
- Restore river and floodplain habitats and improve river connectivity
- Adapt existing infrastructure, such as sewerage systems, to manage heavier rainfall events
- Identify and address sources of nutrient pollution in agricultural areas
- Support ecosystem services' assessments and natural capital accounting

OPPORTUNITIES

- **The Austrian government has executed the Austria's Water Treasure study (2023) as a guide for water management until 2050[4]**
- **A Biodiversitätsdialog 2030 has been held about measures to restore and protect wet habitats, and agricultural landscapes**
- **Austria's Recovery and Resilience Plan supports climate and environmental objectives to further the green transition**
- **A new biodiversity fund has been created to finance nature protection and restoration measures that will receive a top-up of EUR 50 million from Austria's RRP.**
- **77 local action LEADER groups have been set up to advance a bottom-up approach that engages local actors in developing rural areas**

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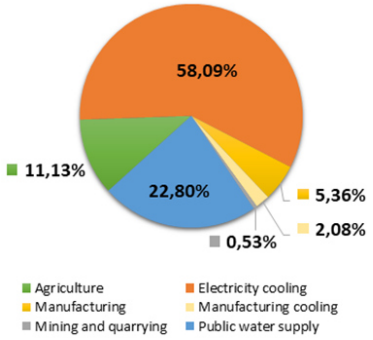
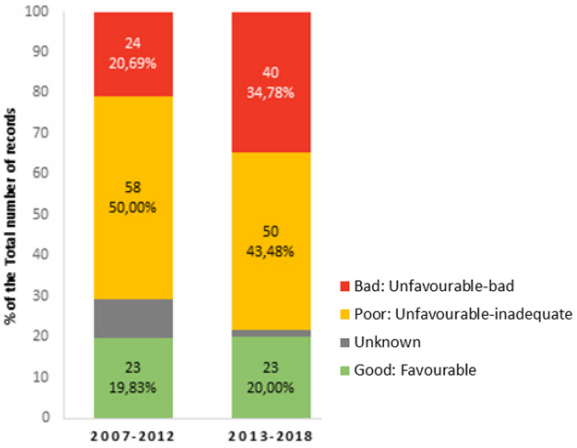
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Poland-

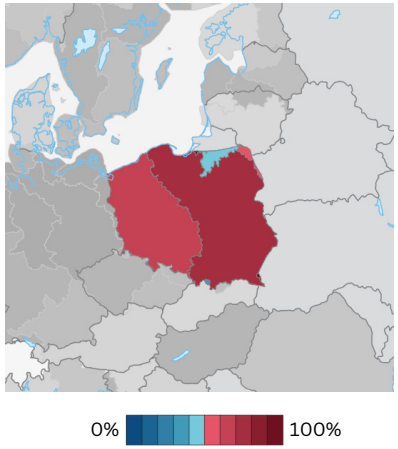
# of inhabitants	**37.7 million**
Surface area	**307 236 km2**
GDP per capita	**79 pps [1]**
Significant bodies of water (RBDs)	**Oder; Vistula**
Polity	**unitary state with local government (samorząd terytorialny) organised at three tiers**
Layers of government	**central government; 16 regions ; 314 counties; 2 478 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.9 (8 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**6.87% (2017) [3]**



Water abstraction per sector in Poland - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Poland - Source: EEA (2021)



Water bodies with less than good ecological status in Poland - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment	State Water Holding Polish Waters; National Water Management Authority; National Water Agency; Regional Water Management Boards; local authorities
Energy	Ministry of Climate; Ministry of Development; Ministry of State Assets; Ministry of Finance	Polish National Energy Conservation Agency; Energy Regulatory Office; National Atomic Energy Agency; regional and local authorities
Food	Ministry of Agriculture and Rural Development	National Center for Support to Agriculture; Agency for Restructuring and Modernisation of Agriculture and its regional and local offices
Ecosystems	Ministry of Environment	Chief Inspectorate of Environmental Protection; Institute of Environmental Protection; regional, county and local authorities

More information on WEFE nexus governance in the EU

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Invest in wastewater treatment infrastructure
- Address eutrophication issues caused by agriculture for both inland and marine waters
- Improve the implementation of the Natura 2000 legislation
- Improve knowledge about the Natura 2000 network to promote societal acceptance
- Address threats to the Natura 2000 network, such as urban sprawl, road infrastructure, and intensive forestry and agriculture

OPPORTUNITIES

- **Poland focuses especially on SDG 6 (increasing available water resources)**
- **Poland has drafted a list of solutions to overcome water shortages and to cope with drought, both in cities and in rural areas**
- **The Kampinos Wetlands (2013-2019) and the Kampinos WetLIFE (2020-2026) projects aim to protect and restore wetlands at the 'Puszcza Kampinoska' Natura 2000 site[4]**
- **Poland will receive major contributions from the cohesion policy funds in 2021-2027 to close implementation gaps of EU legislation**
- **Poland's Recovery and Resilience Plan focuses inter alia on measures to improve water management in rural areas**

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4]https://www.kampinoskiebagna.pl/en/home-kampinos-wetlands-1/ & https://www.kampinoskiebagna.pl/en/home-kampinos-wetlands-2/

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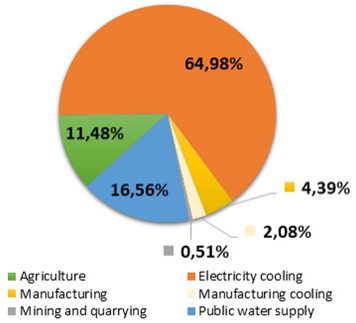
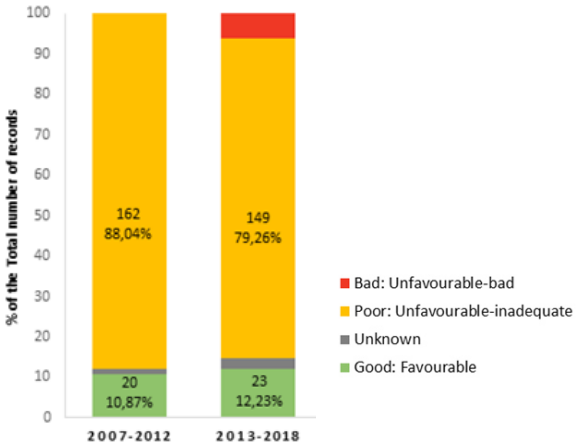
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Bulgaria-

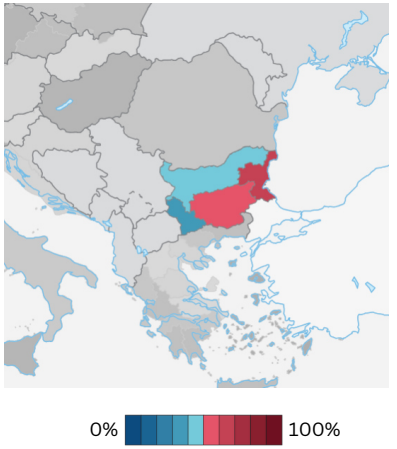
# of inhabitants	**6.4 million**
Surface area	**110 001 km2**
GDP per capita	**59 pps [1]**
Significant bodies of water (RBDs)	**Black Sea; Danube; East Aegean; West Aegean**
Polity	**unitary republican state**
Layers of government	**central government; 6 planning regions; 28 districts; 265 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.4 (19 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**1.78% (2017) [3]**



Water abstraction per sector in Bulgaria - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Bulgaria - Source: EEA (2021)



Water bodies with less than good ecological status in Bulgaria - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment and Water	Environment Agency; river basin directorates; regional inspectorates for environment and water
Energy	Ministry of Energy	districts and municipalities
Food	Ministry of Agriculture, Food and Forestry	regional directorates for agriculture
Ecosystems	Ministry of Environment and Water	Environment Agency; regional inspectorates for environment and water

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Assess the why and how of new modifications to water bodies
- Improve the wastewater management infrastructure
- Create a national structure for the management of the country's rich natural heritage
- Establish conservation objectives and measures for all Natura 2000 sites
- Integrate nature policy in other national plans, projects and policies

OPPORTUNITIES

- **Bulgaria's Recovery and Resilience Plan addresses climate change, biodiversity, water supply and sewerage infrastructure, and sustainable agriculture**
- **A new biodiversity strategy for Bulgaria has been prepared**
- **Mapping and assessment has been done for Freshwater Ecosystem Services (FEMA) and Wetland Ecosystem Services (WEMA).**
- **Bulgaria received major EU support for better management of nature protection areas in 2014-2020**

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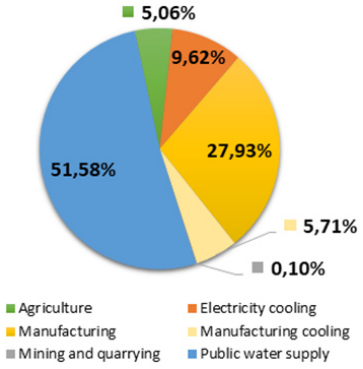
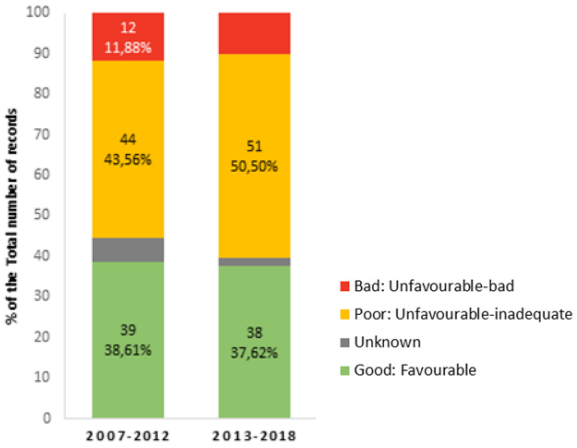
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Slovakia-

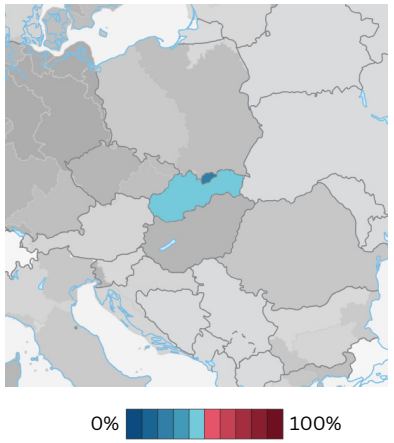
# of inhabitants	**5.4 million**
Surface area	**49 702 km2**
GDP per capita	**67 pps [1]**
Significant bodies of water (RBDs)	**Danube: Vistula**
Polity	**unitary state composed of regions and municipalities**
Layers of government	**central government; 8 self-governing regions; 2 926 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.2 (24 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.39% (2017) [3]**



Water abstraction per sector in Slovakia - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Slovakia - Source: EEA (2021)



Water bodies with less than good ecological status in Slovakia - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment	state (co-)owned enterprises; municipalities
Energy	Ministry of Economy	state (co-)owned enterprises
Food	Ministry of Agriculture and Rural Development	state owned enterprises responsible for hydromeliorations in agriculture
Ecosystems	Ministry of Environment	State Nature Conservancy ; state (co-)owned enterprises; state institutions; municipalities

More information on WEFE nexus governance in the EU

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Improve the coordinated implementation of water and nature policies
- Safeguard landscape structures and ecological stability in protected areas
- Revitalise watercourses and act against a degradation of available water resources
- Reduce pressure from the agricultural sector and improve water retention in soils
- Improve the absorption of EU funds for investments and reforms

OPPORTUNITIES

- **The Slovakian Ministry of Agriculture and Rural Development is currently developing a new nexus-based concept, Soil-the Carbon and Water Bank of Landscape, that aims to protect and restore soil and its water retention capacity**
- **The Slovakian Recovery and Resilience Plan focuses on the reform of landscape planning, nature protection and water management**
- **The country has considerable potential provided by rich biodiversity resources and a high level of protected areas**
- **Experience is gained with ecosystem services assessments under the EU LIFE programme**

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

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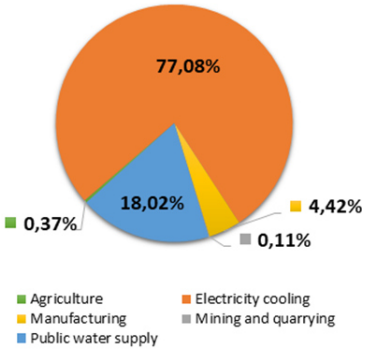
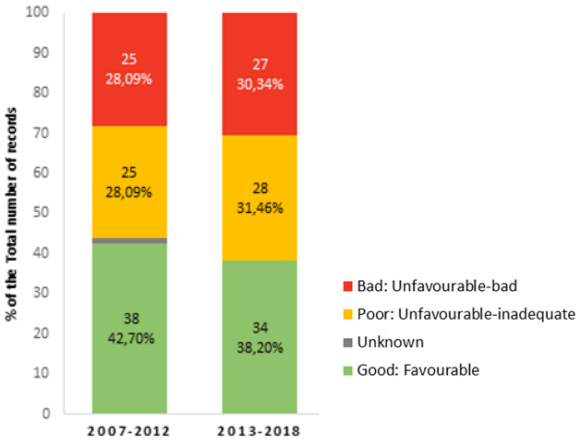
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Slovenia-

# of inhabitants	**2.1 million**
Surface area	**20 145 km2**
GDP per capita	**92 pps [1]**
Significant bodies of water (RBDs)	**Adriatic; Danube**
Polity	**decentralised unitary state**
Layers of government	**central government; 12 regions; 212 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.8 (10 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.7% (2017) [3]**



Water abstraction per sector in Slovenia - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Slovenia - Source: EEA (2021)

Water bodies with less than good ecological status in Slovenia - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of the Environment and Spatial Planning	--
Energy	Ministry of Infrastructure	--
Food	Ministry of Agriculture, Forestry and Food	--
Ecosystems	Ministry of the Environment and Spatial Planning	--

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Assess the why and how of new modifications to water bodies
- Take action on nitrates' groundwater hotspots and address eutrophication of surface waters
- Improve wastewater management infrastructure
- Implement the necessary habitat and species conservation measures for all protected areas
- Improve the coordinated implementation of water, marine and nature policies

OPPORTUNITIES

- **Shortcomings in biodiversity protection are addressed within the LIFE Integrated Project for enhanced management of Natura 2000 in Slovenia.**
- **According to its Recovery and Resilience Plan, Slovenia will invest in improved drinking water supply and water-saving projects**
- **Slovenia has set up a satellite observation system to monitor watercourses**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

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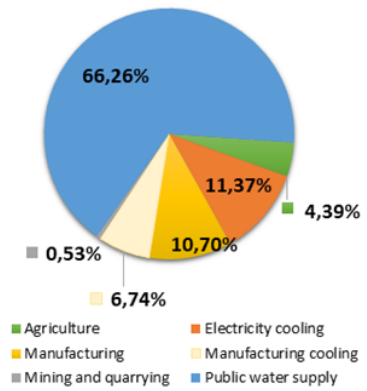
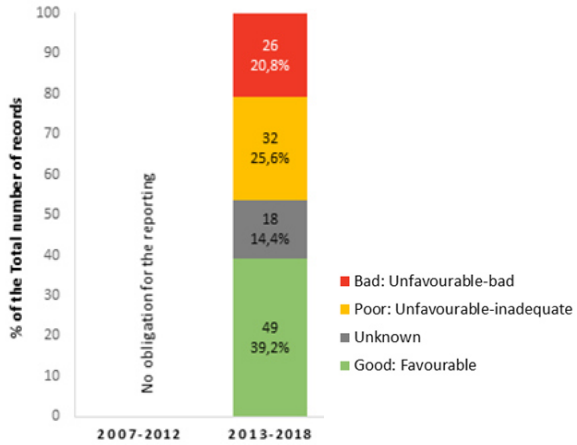
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Croatia-

# of inhabitants	**3.9 million**
Surface area	**55 896 km2**
GDP per capita	**73 pps [1]**
Significant bodies of water (RBDs)	**Danube**
Polity	**unitary state**
Layers of government	**central government; regional level (20 counties and City of Zagreb); local level (128 towns and 428 municipalities)**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.6 (16 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.36% (2017) [3]**



Water abstraction per sector in Croatia - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Croatia - Source: EEA (2021)

Water bodies with less than good ecological status in Croatia - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environmental Protection and Energy	Croatian Waters; regional and local authorities
Energy	Ministry of Environmental Protection and Energy	Croatian Energy Regulatory Agency; regional and local authorities
Food	Ministry of Agriculture	regional and local authorities
Ecosystems	Ministry of Environmental Protection and Energy	Croatian Agency for the Environment and Nature; State Institute for Nature Protection

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Address leakages in water supply networks
- Improve wastewater management infrastructure
- Cooperate with water, energy and agriculture sectors to support Natura 2000 management
- Establish conservation objectives and measures for all Natura 2000 sites
- Help farmers understand how to comply with biodiversity and nitrates legislation

OPPORTUNITIES

- **Croatia has developed a system for sharing water environmental data**
- **Croatia coordinates procedures for the Water Framework Directive and the Industrial Emissions Directive**
- **The Croatian Agency for the Environment and Nature fulfils a coordinating role in the field of ecosystem services assessment**

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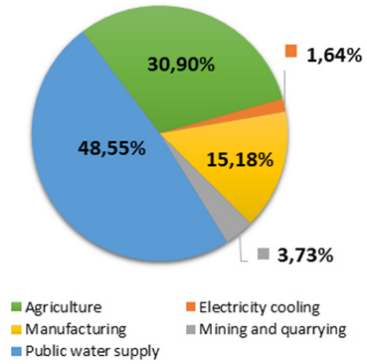
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

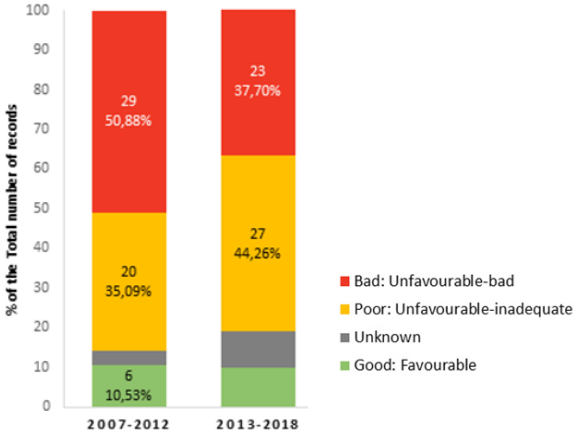
National water governance strategies and institutional settings: A WEFE nexus perspective

-Latvia-

# of inhabitants	**1.9 million**
Surface area	**63 290 km2**
GDP per capita	**74 pps [1]**
Significant bodies of water (RBDs)	**Daugasva ; Gaujas ; Lielupes ; Ventas**
Polity	**a parliamentary democracy and a unitary state**
Layers of government	**central government; 9 cities ; 110 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**2.5 (2 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**0.22% (2017) [3]**



Water abstraction per sector in Latvia - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Latvia - Source: EEA (2021)

Water bodies with less than good ecological status in Latvia - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environmental Protection and Regional Development	State Environmental Service; Latvian Environment; Geology and Meteorology Center; Latvian Institute of Aquatic Ecology; municipalities
Energy	Ministry of Economics	municipalities
Food	Ministry of Agriculture	Food and Veterinary Service; municipalities
Ecosystems	Ministry of Environmental Protection and Regional Development	State Environmental Services; Latvian Environment; Geology and Meteorology Center; Latvian Institute of Aquatic Ecology; municipalities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://goodwater.lv/en/home/
[5] https://www.ldf.lv/en/

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Improve wastewater management infrastructure
- Address issues of leakage, infiltration and rupture of water supply and distribution
- Integration of biodiversity concerns into other national and local policies
- Reduce emissions and nitrates from agriculture and increase nutrient use efficiency
- Establish conservation objectives and measures for all Natura 2000 sites

OPPORTUNITIES

- Latvia participates in the LIFE GoodWater integrated project aiming to implement the measures in the Daugava, Gauja, Lielupe and Venta RBMPs[4]
- The Coalition Clean Baltic Experts (Germany, Poland, Sweden, Estonia and Latvia) to exchange experiences on river restoration
- The Latvia LIFE MarshMeadows project[5] aims to restore the local hydrological regime

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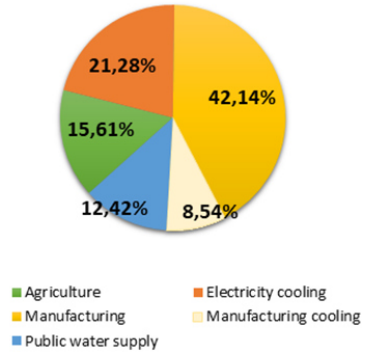
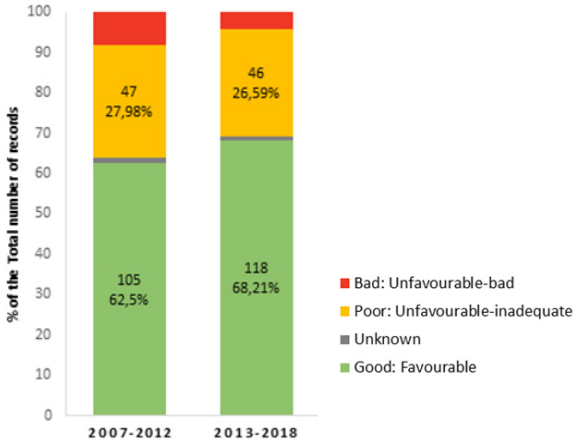
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Romania-

# of inhabitants	**19 million**
Surface area	**234 270 km2**
GDP per capita	**77 pps [1]**
Significant bodies of water (RBDs)	**Danube**
Polity	**sovereign, independent, unitary, indivisible national state**
Layers of government	**central government; 42 departments; 103 larger cities; 217 towns; 2 861 rural municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.4 (20 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**4.40% (2017) [3]**



Water abstraction per sector in Romania - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Romania - Source: EEA (2021)

Water bodies with less than good ecological status in Romania - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of the Environment, Water and Forests	National Administration Romanian Waters (NARW); National Environment Protection Agency (NEPA); County Environmental Protection Agencies; municipalities
Energy	Ministry of the Economy, Energy and the Business Environment	counties; municipalities
Food	Ministry of Agriculture and Rural Development	County Departments of Agriculture and municipalities
Ecosystems	Ministry of the Environment, Water and Forests	National Environment Protection Agency (NEPA); National Agency for Protected Natural Areas (ANANP); County Environmental Protection Agencies

More information on WEFE nexus governance in the EU

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Invest in water supply network, reduce leakage and improve wastewater infrastructure
- Establish conservation objectives and measures for all Natura 2000 sites
- Strengthen communication with stakeholders to improve conservation of species and habitats
- Ensure that the agency in charge of protected areas (ANANP) has sufficient technical and administrative capacity

OPPORTUNITIES

- **The Fish For Life project focuses on restoration of fish migration corridors in the Gilort river[4]**
- **Biodiversity and Natura 2000 toolkits have been produced for key economic sectors through a stakeholder participatory process**
- **The Romanian Recovery and Resilience Plan supports key reforms of the water sector**
  - **by a stronger regulatory framework that improves public access to quality services**
  - **by establishing a mechanism for interlinking the various sectors that have an impact on biodiversity.**
- **The Blueing the Black Sea Program[5] aims to reduce the discharge of nitrogen and phosphorous into water bodies**

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://fishforlife.ro/en/
[5] https://www.worldbank.org/en/events/2021/04/22/romania-blueing-the-black-sea-consultations

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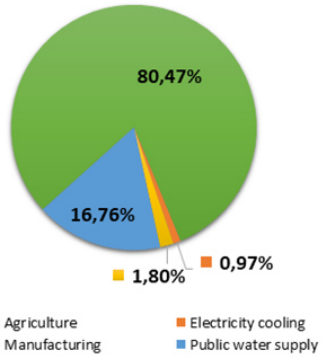
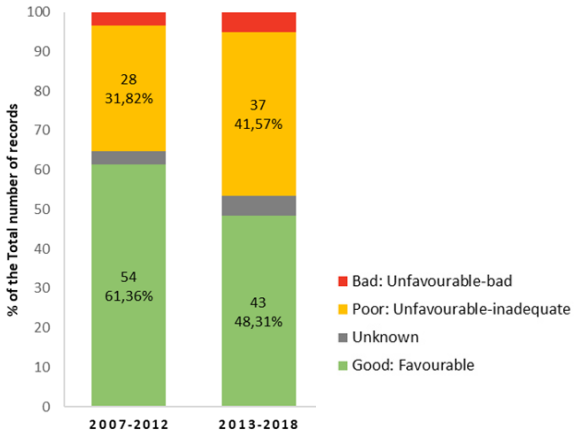
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Greece-

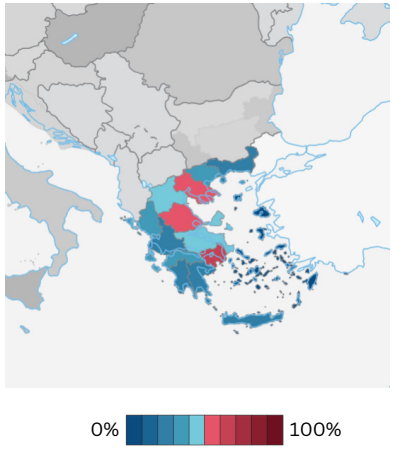
# of inhabitants	**10.4 million**
Surface area	**130 048 km2**
GDP per capita	**68 pps [1]**
Significant bodies of water (RBDs)	**Aegean Islands; Crete; Western Macedonia; et al**
Polity	**unitary state organised on a decentralised basis**
Layers of government	**central government; 13 regions; 7 decentralised administrations; 325 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.3 (21 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**39.37% (2017) [3]**



Water abstraction per sector in Greece - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Greece - Source: EEA (2021)



Water bodies with less than good ecological status in Greece - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment and Energy; National Council for Water	Special Secretariat for Water; Regional Water Departments; municipalities
Energy	Ministry of Environment and Energy	regional authorities; municipalities
Food	Ministry of Rural Development and Food	regional authorities; municipalities
Ecosystems	Ministry of Environment and Energy	Natural Environment and Climate Change Agency

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Address the substantial leakages within the water distribution system
- Prevent potential health risks associated with more frequent and severe drought episodes
- Create awareness of the Natura 2000 network and its benefits
- Inform farmers and land managers on how to implement the Natura 2000 and Nitrates Directives
- Support the development of national business and biodiversity platforms

OPPORTUNITIES

- **Natural Environment & Climate Change Agency has been established to manage Natura 2000 sites more effectively**
- **Under its Recovery and Resilience Plan, Greece allocates part of its national budget to clean energy, resilient infrastructure and sustainable agriculture**
- **Ecosystem assessment developments in Greece are taking place under the umbrella of the LIFE-IP 4Natura project (2017-2025) [4]**
- **Greece received EU support for 26 LIFE projects focusing on nature and environment in recent years**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://edozoume.gr/en/

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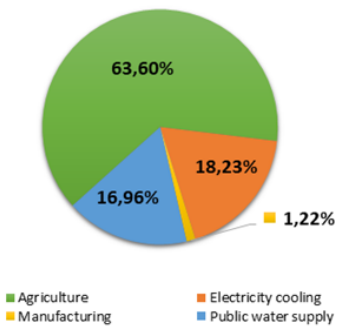
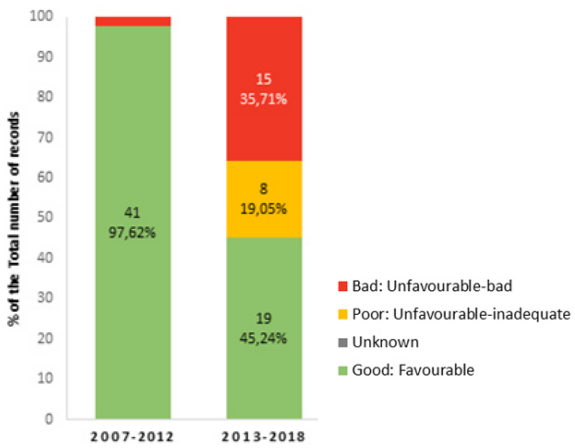
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Cyprus-

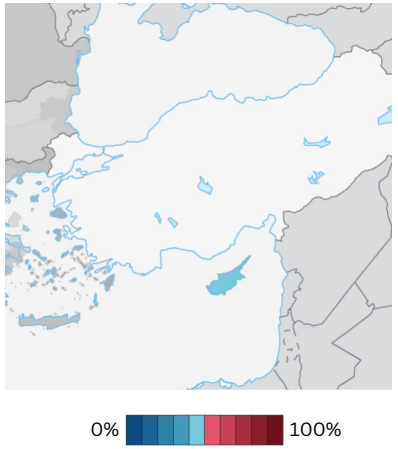
# of inhabitants	**0.9 million**
Surface area	**9 213 km2**
GDP per capita	**92 pps [1]**
Significant bodies of water (RBDs)	**Cyprus**
Polity	**unitary presidential republic**
Layers of government	**central government; 6 districts; 39 municipalities; 478 communities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.1 (15 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**70.63% (2017) [3]**



Water abstraction per sector in Cyprus - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Cyprus - Source: EEA (2021)



Water bodies with less than good ecological status in Cyprus - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Agriculture, Rural Development and Environment	Water Development Department; districts; municipalities; communities; local water supply authorities
Energy	Ministry of Energy, Commerce and Industry	Energy Department; districts; municipalities; communities
Food	Ministry of Agriculture, Rural Development and Environment	provincial agricultural offices; municipalities; communities
Ecosystems	Ministry of Agriculture, Rural Development and Environment	Department of Environment; districts; municipalities; communities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Address issues of severe water scarcity
- Improve the wastewater management infrastructure
- Establish conservation objectives and measures for all Natura 2000 sites
- Launch an awareness-raising campaign about the Natura2000 network and its benefits
- Support the development of national business and biodiversity platforms

OPPORTUNITIES

- **Cyprus' Recovery and Resilience Plan aims to:**
  - **transform and modernise water resource management**
  - **to improve the coordination between water management authorities, the adoption of smart technologies, the promotion of water reuse and the expansion of the wastewater treatment infrastructure**
- **A new governmental strategy and action plan for biodiversity have been formulated for the next decade (2020-2030)**

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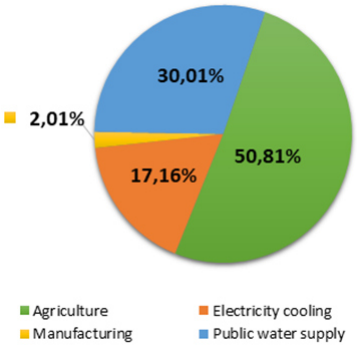
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

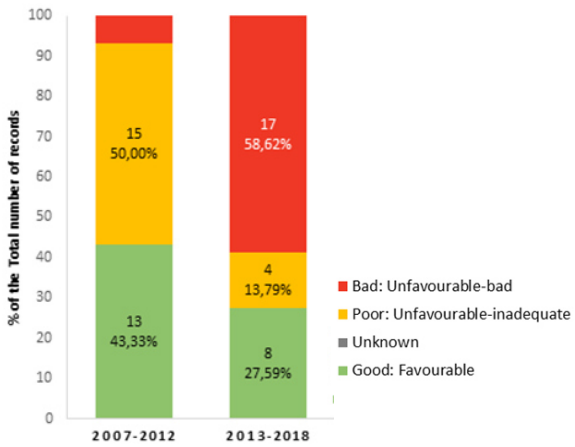
National water governance strategies and institutional settings: A WEFE nexus perspective

-Malta-

# of inhabitants	**0.5 million**
Surface area	**316 km2**
GDP per capita	**313 pps [1]**
Significant bodies of water (RBDs)	**Malta**
Polity	**decentralised unitary state and parliamentary republic**
Layers of government	**central government; 6 regional committees; 68 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**0.8 (26 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**29.6% (2019) [3]**



Water abstraction per sector in Malta - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Malta - Source: EEA (2021)

Water bodies with less than good ecological status in Malta - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry for the Environment, Energy and Enterprise	Energy and Water Agency; Environmental and Resources Authority; Regulator for Water and Energy Services; Water Services Corporation
Energy	Ministry for the Environment, Energy and Enterprise	Energy and Water Agency; Regulator for Water and Energy Services
Food	Ministry for Agriculture, Fisheries & Animal Rights	Malta Food Agency
Ecosystems	Ministry for the Environment, Energy and Enterprise	Environment and Resources Authority

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://webgate.ec.europa.eu/life/publicWebsite/project/details/4816

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Address water scarcity issues and degrading quality of groundwater
- Prioritise the designation of Natura 2000 sites and implementation of conservation measures
- Diminish the pressures from development, construction, and infrastructure
- Reduce nitrates pollution from agriculture and continue monitoring
- Involve the agricultural sector in maintaining biodiversity through voluntary payment schemes

OPPORTUNITIES

- **Malta**
  - **develops baseline assessments on water demand and supply**
  - **explores water efficient technologies**
  - **elaborates master plans for 16 valley catchments[4]**
- **Investments are made to stimulate water reuse and reduce pressures on groundwater**
- **Ambjent Malta agency has now a new role in habitat restoration projects and dissemination of information on protected areas**
- **Malta is involving business plans in protecting biodiversity and promoting natural capital assessments**

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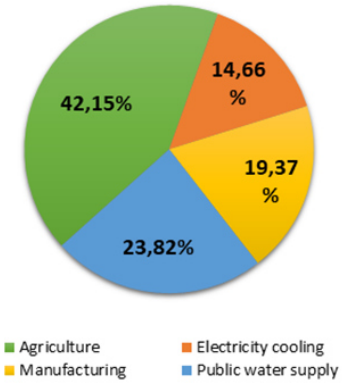
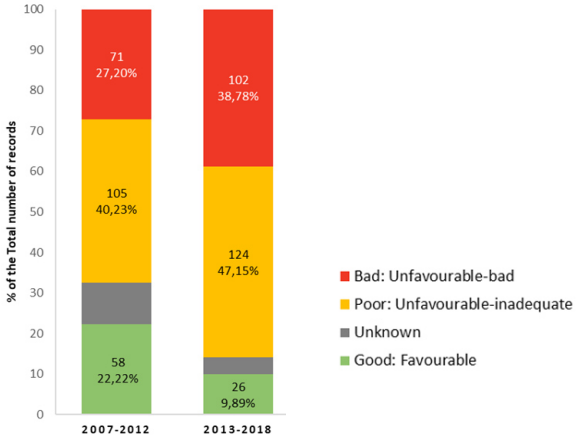
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Italy-

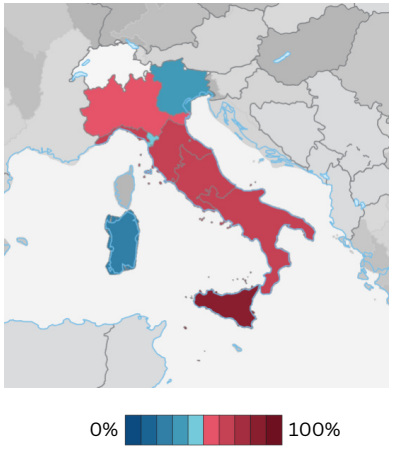
# of inhabitants	**58.9 million**
Surface area	**297 825 km2**
GDP per capita	**96 pps [1]**
Significant bodies of water (RBDs)	**Alpi Orientali; Appenino Settentrionale; Padono et al**
Polity	**democratic republic with a bicameral parliamentary system**
Layers of government	**central government; 20 regions ; 2 self-governing provinces; 110 provinces; 15 metropolitan areas; 7 960 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.7 (13 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**15.58% (2017) [3]**



Water abstraction per sector in Italy - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Italy - Source: EEA (2021)



Water bodies with less than good ecological status in Italy - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of the Environment and Energy Security	Italian Authority for Energy, Networks and the Environment (ARERA); regional and local authorities
Energy	Ministry of the Environment and Energy Security	Italian Authority for Energy, Networks and the Environment (ARERA)
Food	Ministry of Agriculture, Food Sovereignty and Forestry	Provinces
Ecosystems	Ministry of the Environment and Energy Security	Italian Authority for Energy, Networks and the Environment (ARERA)

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Establish conservation objectives and measures for all Natura 2000 sites
- Improve wastewater management infrastructure
- Reduce leakages in water distribution system
- Reduce nitrates pollution from agriculture and clean up nitrates hotspots
- Address high water consumption in Southern regions, particularly from agriculture

OPPORTUNITIES

- **The Ministry of Ecological Transition was formed in 2021, combining environmental and energy responsibilities plus an Interministerial Committee for Ecological Transition (CITE).**
- **Italy aims for a strong focus on policy coherence for sustainable development and a culture of sustainability through education, training, information and communication**
- **The Italian Recovery and Resilience Plan supports improved water management by reducing leakages in the water distribution system and investing in urban wastewater treatment**
-

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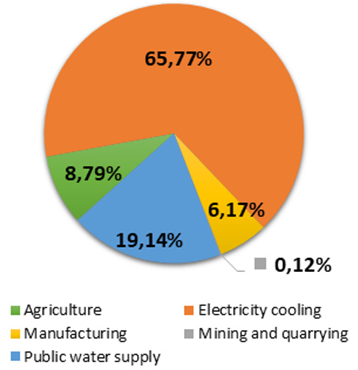
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

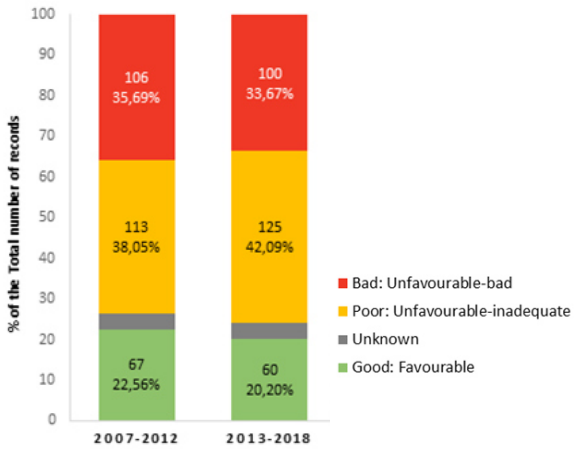
National water governance strategies and institutional settings: A WEFE nexus perspective

-France-

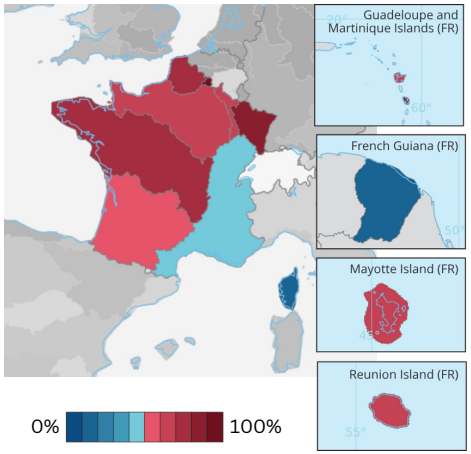
# of inhabitants	**68.1 million**
Surface area	**633 886 km2**
GDP per capita	**101 pps [1]**
Significant bodies of water (RBDs)	**Garonne; Loire; Rhône; Seine**
Polity	**unitary state organised on a decentralised basis under the 1958 Constitution**
Layers of government	**18 regions (13 metropolitan and 5 overseas regions); 101 departments; 35 358 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.7 (12 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**6.14% (2017) [3]**



Water abstraction per sector in France - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in France - Source: EEA (2021)



Water bodies with less than good ecological status in France - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry for the Ecological and Inclusive Transition	Comité National de l'Eau; Water Agencies; local water commissions
Energy	Ministry for the Energy Transition	departments; municipalities
Food	Ministry of Agriculture and Food	regional directorates; departments; municipalities
Ecosystems	Ministry for the Ecological and Inclusive Transition	regional directorates (DREALs); departments; municipalities

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Create more ecological connection zones between protected Natura 2000 sites , more diversified funding sources and visibility of Natura 2000 sites
- Support assessment of ecosystem services and natural capital accounting
- Improve wastewater management infrastructure
- Assess the why and how of new modifications to water bodies
- Prevent damage caused from agricultural, forestry and fishing practices

OPPORTUNITIES

- **France adopted a national strategy for protected areas, which aims to protect 30% of the national territory from 2022, with a third under strong protection**
- **The Chambers of Agriculture provide tools and technical resources to help farmers complying with the nitrates legislation[4] and also assists with biodiversity matters (diagnostics, training, etc.)[5]**
- **The Agricultural Biodiversity Observatory (Observatoire Agricole de la Biodiversité or OAB) provides farmers with biodiversity observation protocols to help them gain a better understanding of biodiversity in agriculture**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://chambres-agriculture.fr/agriculteur-et-politiques/politiques-environnementales/directive-nitrates/
[5] https://chambres-agriculture.fr/agriculteur-et-politiques/politiques-environnementales/biodiversite/, https://chambres-agriculture.fr/exploitation-agricole/gerer-son-entreprise-agricole/favoriser-la-biodiversite/

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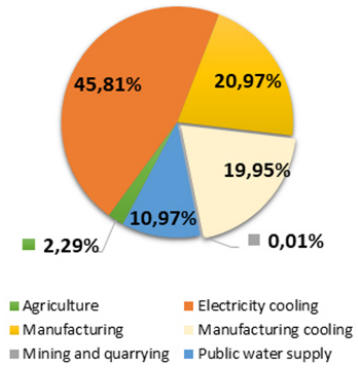
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

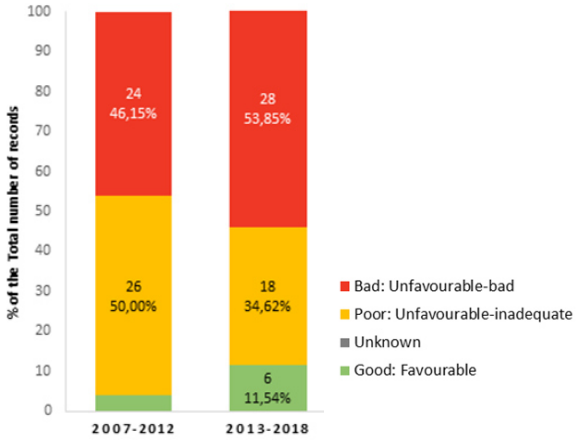
National water governance strategies and institutional settings: A WEFE nexus perspective

-The Netherlands-

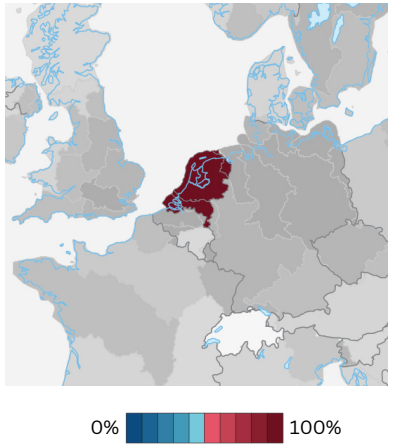
# of inhabitants	**17.6 million**
Surface area	**34 188 km2**
GDP per capita	**130 pps [1]**
Significant bodies of water (RBDs)	**Rhine; Meuse; Scheldt; Ems**
Polity	**decentralized unitary state**
Layers of government	**central government; 12 provinces; 355 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.8 (11 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**4.15% (2017) [3]**



Water abstraction per sector in The Netherlands - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in The Netherlands - Source: EEA (2021)



Water bodies with less than good ecological status in The Netherlands - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Infrastructure and Water Management	Rijkswaterstaat; provinces, regional water authorities; municipalities
Energy	Ministry of Economic Affairs and Climate Policy	Netherlands Enterprise Agency; provinces; municipalities
Food	Ministry of Agriculture, Nature and Food Quality	Netherlands Food and Consumer Product Safety Authority; provinces
Ecosystems	Ministry of Agriculture, Nature and Food Quality	Netherlands Food and Consumer Product Safety Authority; provinces

More information on WEFE nexus governance in the EU

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Improve the coordinated implementation between water, marine and nature policies.
- Ensure the completion of the Natura 2000 network
- Improve the conservation status of habitats and species, in particular by addressing the pressures from agricultural activities and changes in water regimes
- Reinforce the Nitrate Action Programme and help farmers switch to more sustainable and less intensive production methods
-

OPPORTUNITIES

- **The Netherlands' Recovery and Resilience Plan allocates nearly 1 billion euro to reduce nitrogen emissions through a subsidy scheme for the cessation of intensive pig farming and a comprehensive Nature Restoration scheme**
- **The Netherlands launched a biodiversity program in 2020 and strives to achieve 100% of the objectives of the Birds and Habitats Directives by 2050**
- **The 'Societal Natural Capital Programme' has been implemented to inspire and facilitate businesses in different economic sectors to account for natural capital impacts, dependencies and risks in their operations**
- **The Netherlands has a high level of expertise in ecosystem accounting and associated trend analysis.**

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

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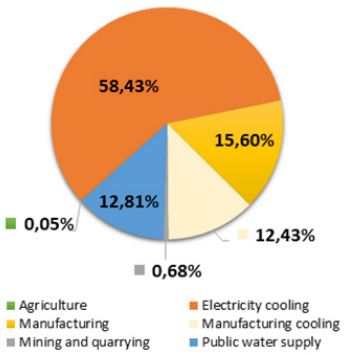
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

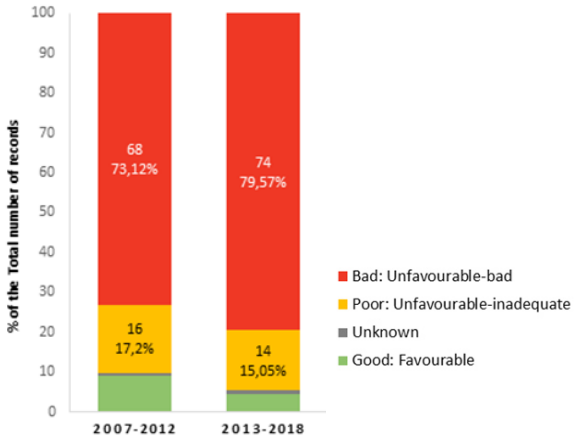
National water governance strategies and institutional settings: A WEFE nexus perspective

-Belgium-

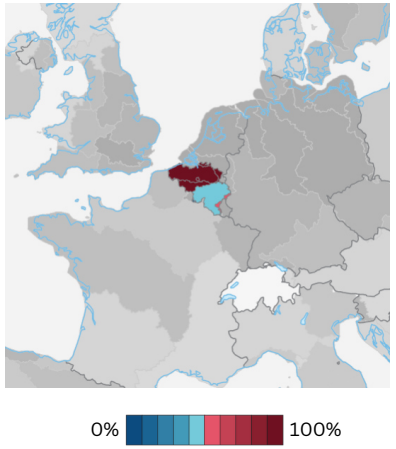
# of inhabitants	**11.6 million**
Surface area	**30 452 km2**
GDP per capita	**121 pps [1]**
Significant bodies of water (RBDs)	**Meuse; Scheldt**
Polity	**complex federal state**
Layers of government	**central government; 3 regions; 10 provinces; 581 municipalities**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**2.1 (7 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**7.31% (2017) [3]**



Water abstraction per sector in Belgium - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Belgium - Source: EEA (2021)



Water bodies with less than good ecological status in Belgium - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Climate, Environment, Sustainable Development and Green Deal	Federal Public Service for Public Health; Food Chain Safety and Environment; Brussels Environment; Environnement Wallonie; Flanders Environment Agency; municipalities
Energy	Ministry of Energy	Department for Energy Wallonie
Food	Ministry of Self-Employed, SMEs and Agriculture, Institutional Reforms and Democratic Renewal	Ministry of Self-Employed, SMEs and Agriculture, Institutional Reforms and Democratic Renewal
Ecosystems	Ministry of Climate, Environment, Sustainable Development and Green Deal	Federal Public Service for Public Health, Food Chain Safety and Environment; Brussels Environment; Environnement Wallonie, Flanders Environment Agency; municipalities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Assess the why and how of new modifications to water bodies
- Improve water quality by tackling nitrates pollution in particular
- Establish conservation objectives and measures for all Natura 2000 sites
- Invest in water infrastructure and wastewater treatment installations

OPPORTUNITIES

- **Under the umbrella of Blue Deal Belgium[4], Flanders aims to accelerate its water-retention actions through:**
  - **(i) the restoration and creation of wetlands**
  - **(ii) integration of waterbodies and other natural environments together into a broader network that includes both cities and rural areas**
  - **(iii) the installation of water buffers at large scale**
  - **(iv) the use of innovative water-saving technologies**
  - **(v) investing in research on water conservation**
- **Flanders facilitates compliance with the Nitrates Directive by offering online tools for farmers and promoting peer-to-peer learning**

[3] The threshold for water scarcity is set at > 20%
[4] https://bluedeal.integraalwaterbeleid.be/about-blue-deal

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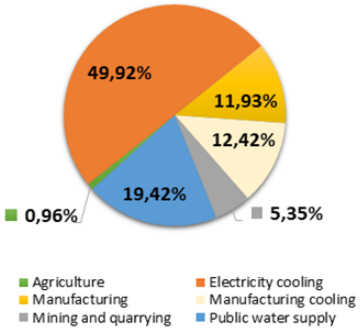
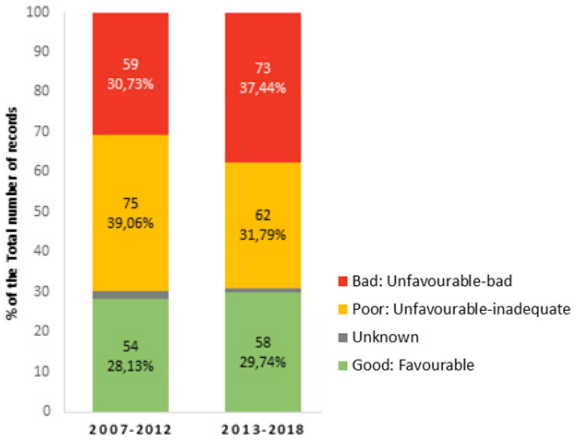
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Germany-

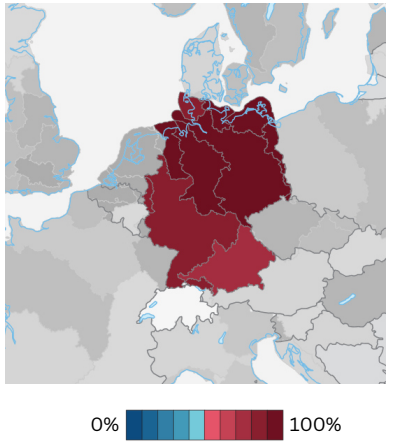
# of inhabitants	**83.2 million**
Surface area	**353 296 km2**
GDP per capita	**117 pps [1]**
Significant bodies of water (RBDs)	**Elbe; Rhine; Weser; et al**
Polity	**federal state**
Layers of government	**central government; 16 federal states (Länder); 401 counties (294 Landkreise, 107 kreisfreie Städte); 11,054 municipalities**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**2.5 (1 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**5.46 % (2017) [3]**



Water abstraction per sector in Germany - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Germany - Source: EEA (2021)



Water bodies with less than good ecological status in Germany - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)	federal states; municipalities
Energy	Federal Ministry for Economic Affairs and Energy (BMWi)	federal states; municipalities
Food	Federal Ministry for Food and Agriculture (BMEL)	federal states; municipalities
Ecosystems	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)	federal states; municipalities

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Establish conservation objectives and measures for all nature protection sites
- Develop a reporting system to inform policy makers on the ecological and economic effects of policy decisions
- Ensure compliance with the Nitrates Directive, especially in intensive farming areas
- Inform stakeholders about the advantages of natural capital accounting

OPPORTUNITIES

- **A National Water Strategy[4] was launched by the Federal Ministry of Environment in 2023, aiming to modernize water infrastructure**
- **A Federal Action Plan on Nature Based Solutions for Climate and Biodiversity[5] was published in 2022, to create synergies between nature and climate protection**
- **Investment priorities in Germany have shifted towards greater support to policies aimed at stimulating sustainability transitions in a wide set of economic sectors.**
- **In the 2014-2020 period, Germany received EU support for 37 LIFE projects (for nature and environment)**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://www.bmuv.de/en/download/national-water-strategy-2023
[5] https://www.bmuv.de/en/download/federal-action-plan-on-nature-based-solutions-for-climate-and-biodiversity

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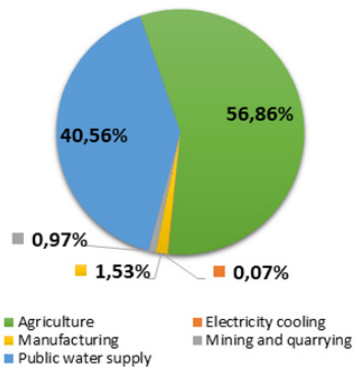
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

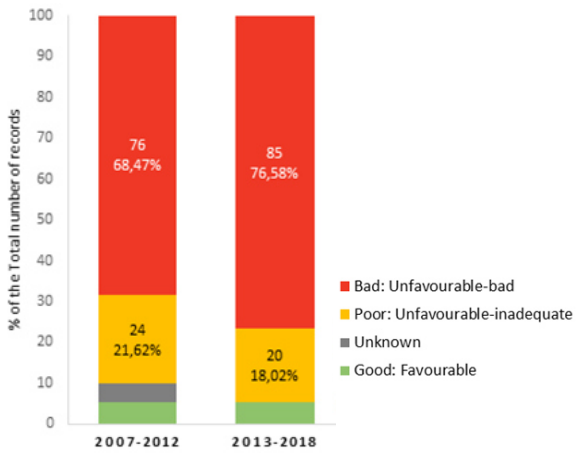
National water governance strategies and institutional settings: A WEFE nexus perspective

-Denmark-

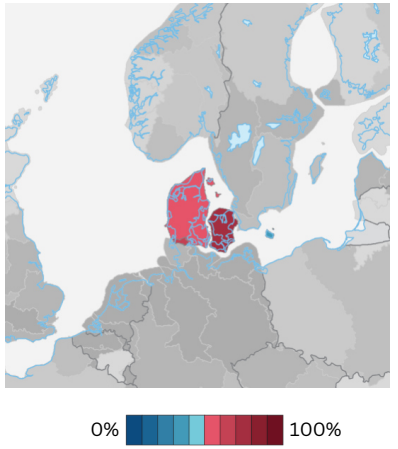
# of inhabitants	**5.9 million**
Surface area	**41 987 km2**
GDP per capita	**136 pps [1]**
Significant bodies of water (RBDs)	**Jutland and Funen; Sealand**
Polity	**unitary state organised on a decentralised basis**
Layers of government	**central government; 5 regions; 2 special-status regions (Faroe Islands and Greenland); 98 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**2.4 (3 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**1.49% (2017) [3]**



Water abstraction per sector in Denmark - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Denmark - Source: EEA (2021)



Water bodies with less than good ecological status in Denmark - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment	Danish Environmental Protection Agency (Miljøstyrelsen); regional water councils
Energy	Ministry of Climate, Energy and Utilities	Danish Energy Agency
Food	Ministry of Food, Agriculture and Fisheries	Danish Agricultural Agency
Ecosystems	Ministry of Environment	Danish Nature Agency

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Reduce the main pressures from agriculture, especially the emissions of nitrogen
- Ensure that conservation objectives and measures are clearly defined, sufficiently detailed and linked with other relevant legislation and plans
- Stimulate the mapping and assessment of ecosystem services
- Support the development of national business and biodiversity platforms

OPPORTUNITIES

- **The Water Valley Denmark initiative stimulates the development and use of innovative water technology that enables water consumption to become more resource efficient, cost effective and quality assured[4]**
- **Danish water consumption has been significantly reduced by stimulating water utilities to keep their level of non-revenue water below 10% as well as awareness raising of the importance of saving water, systematic leakage detection and implementing modern ICT tools.**
- **A major effort has been done to identify hindering factors in water management and potential areas for action**
- **An agreement on a green transition of the agricultural sector in 2021[5] that aims at a reduction of nitrogen emissions**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://watervalleydenmark.com/
[5] https://en.fvm.dk/focus-on/the-agreement-on-a-green-transition-of-the-agricultural-sector

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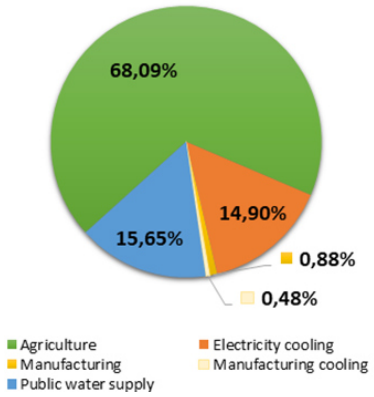
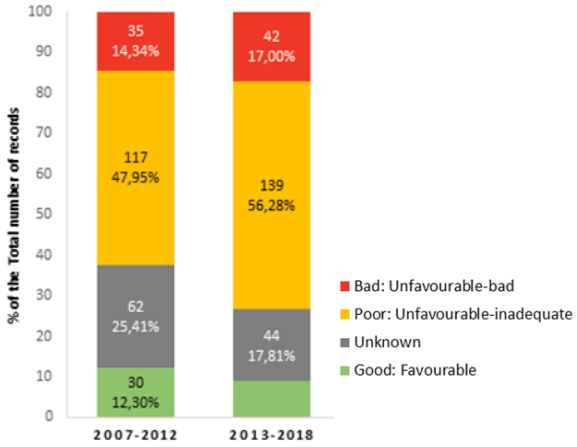
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

National water governance strategies and institutional settings: A WEFE nexus perspective
-Spain-

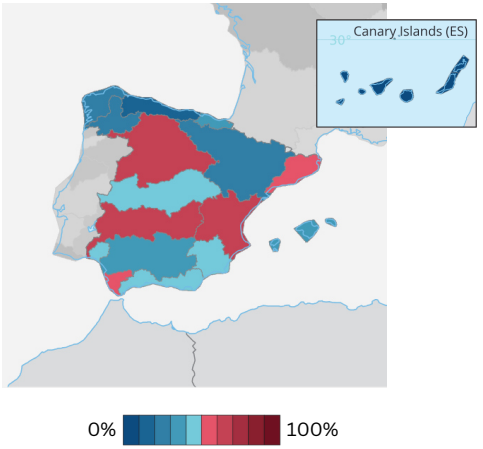
# of inhabitants	**47.4 million**
Surface area	**502 654 km2**
GDP per capita	**85 pps [1]**
Significant bodies of water (RBDs)	**Cantábrico; Duero; Ebro; Guadalquivir; Guadiana; Júcar; Miño-Sil; Seguía; Tajo; et al**
Polity	**decentralised unitary state with a parliamentary monarchy under the 1978 Constitution; federal or quasi-federal state**
Layers of government	**central government; 17 self-governing regions; 50 provinces; 2 autonomous cities (Ceuta and Melilla); 8 131 municipalities**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**2.2 (6 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**23.71% (2017) [3]**



Water abstraction per sector in Spain - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Spain - Source: EEA (2021)



Water bodies with less than good ecological status in Spain - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry for the Ecological Transition and the Demographic Challenge (MITECO); National Council on Water (Consejo Nacional del Agua); autonomous communities (regional government)	River Basin Authorities (Confederaciones Hidrográficas); irrigation communities; municipalities
Energy	MITECO; State Secretariat for Energy; Directorate General for Energy Policy and Mines	--
Food	Ministry of Agriculture, Fishery and Food; autonomous communities (regional government)	autonomous communities; municipalities
Ecosystems	MITECO; autonomous communities (regional government)	Spanish Environmental Agency (EPA); National Parks Agency (OAPN); municipalities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://webgate.ec.europa.eu/life/publicWebsite/project/details/5645
[5] https://webgate.ec.europa.eu/life/publicWebsite/project/details/5726
[6] https://www.es-partnership.org/

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Improve coordination and cooperation among authorities
- Improve water distribution and wastewater management infrastructure
- Establish conservation objectives and measures for all Natura 2000 sites
- Integrate Natura 2000 conservation objectives in River Basin Management Plans
- Reduce nitrates pollution from agriculture and clean up nitrates hotspots

OPPORTUNITIES

- **The LIFE ALNUS TAEJO project[4], together with Portugal, aims to protect and restore rivers and riverbanks**
- **-The LIFE REMAR project[5] aims to demonstrate the viability of using managed aquifer recharge (MAR) technology at WWTP's**
- **The Spanish government approved the National Plan for Wastewater Treatment, Sanitation, Efficiency, Savings and Reuse (DSEAR Plan) in July 2021[7]**
- **Spain adopted a national Strategy for Green Infrastructure, Connectivity and Ecological Restoration in July 2021[8]**
- **Spain participates in the Ecosystem Service Partnership (ESP)[6], connecting over 3 000 ecosystem services scientists, policy makers and practitioners**

[7] https://www.miteco.gob.es/content/dam/miteco/es/agua/temas/planificacion-hidrologica/dsear_plan_book_english_tcm30-538717.pdf
[8] https://www.miteco.gob.es/en/biodiversidad/temas/ecosistemas-y-conectividad/infraestructura-verde/infr_verde.html

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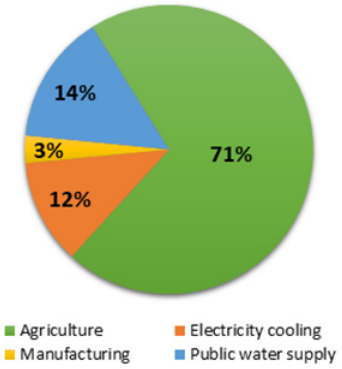
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

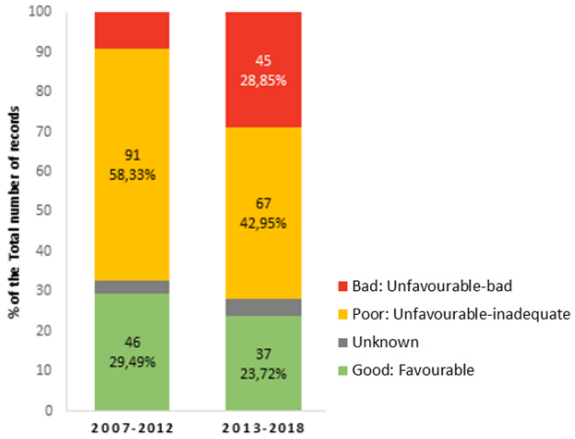
National water governance strategies and institutional settings: A WEFE nexus perspective

-Portugal-

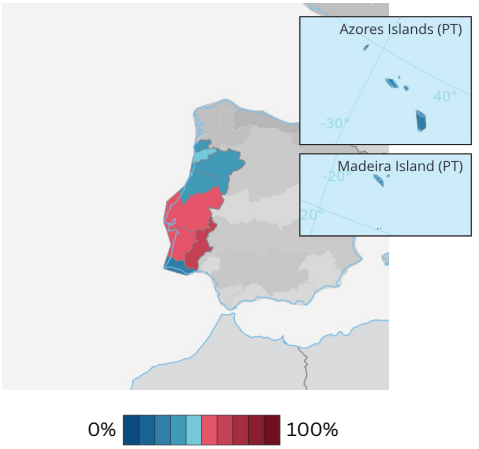
# of inhabitants	**10.4 million**
Surface area	**90 996 km2**
GDP per capita	**77 pps [1]**
Significant bodies of water (RBDs)	**Douro; Tagus and West Rivers; Vouga, Mondego and Lis; et al**
Polity	**republican state and parliamentary democracy**
Layers of government	**central government; 2 autonomous regions (The Azores and Madeira); 308 municipalities; 3091 civil parishes (Freguesias)**
Legislative powers at the sub-national level	**Yes**
Decentralisation index	**1.6 (15 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**12.67% [3]**



Water abstraction per sector in Portugal - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Portugal - Source: EEA (2021)



Water bodies with less than good ecological status in Portugal - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of Environment and Energy Transition	Portuguese Environment Agency; River Basin District Administrations (multi-stakeholder forums); Aguas de Portugal; ERSAR the water and waste regulation authority
Energy	Ministry of Environment and Energy Transition	Portuguese Environment Agency
Food	Ministry of Agriculture, Forestry and Rural Development	--
Ecosystems	Ministry of Environment and Energy Transition	Portuguese Environment Agency

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Invest in water supply infrastructure and reduce water leakages
- Improve wastewater treatment infrastructure and develop the potential of water reuse
- Improve the coordinated implementation between water, marine and nature policies
- Reduce nitrates pollution from agriculture in groundwater and address eutrophication of surface waters
- Implement nature-based solutions and river restoration

OPPORTUNITIES

- **Portugal is currently preparing the PENSAARP 2030, a new national strategic plan for the management of water supply, wastewater and pluvial waters**
- **The "We are ON the network (Natura 2000)" communication campaign demonstrated through its tailor-made educational activities how to achieve major and long-lasting impacts**
- **The Portuguese Initiative on Business and Biodiversity promotes the introduction of biodiversity strategies within businesses through voluntary arrangements**
- **Local governments are actively creating LEADER groups consisting of public and private stakeholders implementing community-led local development plans**

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%

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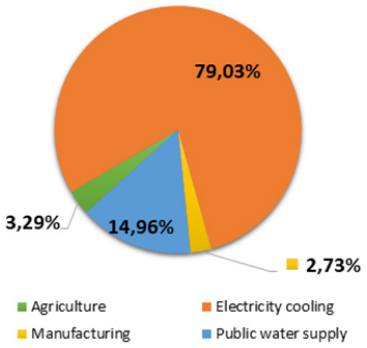
RETOUCH NEXUS
REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

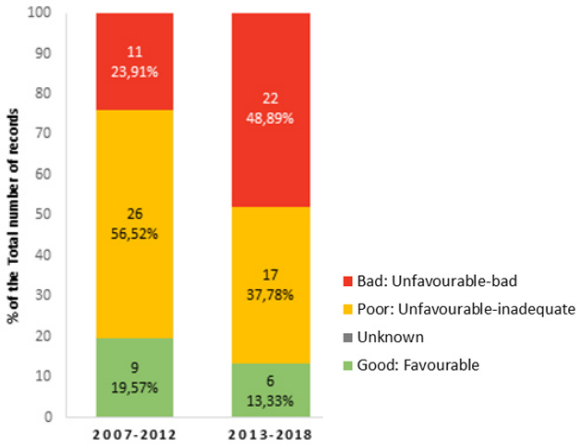
National water governance strategies and institutional settings: A WEFE nexus perspective

-Hungary-

# of inhabitants	**9.6 million**
Surface area	**91 248 km2**
GDP per capita	**77 pps [1]**
Significant bodies of water (RBDs)	**Danube**
Polity	**unitary State organised on a decentralised basis**
Layers of government	**central government; 19 counties; 3 175 municipalities**
Legislative powers at the sub-national level	**No**
Decentralisation index	**1.4 (21 out of 27) [2]**
Water Exploitation Index plus (WEI+)	**1.19% (2017) [3]**



Water abstraction per sector in Hungary - Source: EEA (2022)



Conservation status for habitats in 2007-2012 and 2013-2018 in Hungary - Source: EEA (2021)

Water bodies with less than good ecological status in Hungary - Source: EEA (2021)

Main actors responsible for WEFE nexus relevant governance

NEXUS PILLARS	POLICY MAKING	POLICY EXECUTION
Water	Ministry of the Interior; Rural Development Ministry; General Directorate of Water Management	Regional Water Directorates; counties; municipalities
Energy	Ministry of National Development ; Ministry of Innovation and Technology	State Secretariat for climate and energy policy; municipalities
Food	Ministry of Agriculture	municipalities
Ecosystems	Ministry of Agriculture	municipalities

More information on WEFE nexus governance in the EU

[1] EU purchasing power standard
[2] https://portal.cor.europa.eu/divisionpowers/Pages/Decentralization-Index.aspx
[3] The threshold for water scarcity is set at > 20%
[4] https://una.city/nbs/gyor/moson-danube-complex-project
[5] https://una.city/nbs/gyor/nagy-pandzsa-project-flood-protection
[6] https://www.grasslandlifeip.hu/en

WEFE NEXUS PERSPECTIVE

CHALLENGES

- Establish conservation objectives and measures for all Natura 2000 sites
- Decrease the pressure on habitats and species, in particular from agriculture
- Resolve issues concerning the quality of drinking water
- Improve wastewater treatment infrastructure
- Support ecosystem services assessment and accounting

OPPORTUNITIES

- **Hungary has adopted its 3rd national biodiversity strategy in August 2023**
- **Two river restoration projects in the Mosoni-Danube River area[4] and Nagy-Pándzsa[5] are applying nature-based solutions to reduce flood risks and improve ecology**
- **Hungary has developed an online national ecosystem map that is publicly available and an assessment of 12 ecosystem services**
- **In 2019, the LIFE-integrated project GRASSLAND[6] started aiming to improve the conservation status of grasslands and related species.**
- **Hungary is participating in several projects to strengthen water monitoring**

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