Good practices of innovative legal and regulatory instruments

WP2 Good practice inventory

GOVAQUA Deliverable 2.2

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Governance innovations for a transition to sustainable and equitable water use in Europe

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Contents

Summary

This report presents the case studies and assessments of good practices of legal and regulatory instruments in the project *Governance innovations for a transition to sustainable and equitable water use in Europe* (GOVAQUA). The good practices focus on approaches related to the implementation of ecological flows (e-flows) to maintain ecological integrity, water allocation to reconcile different water uses when addressing water scarcity situations, and the regulation of sustainable water use in international value chains. The good practices stem from Austria, England, Germany and France, with geographical applicability ranging from regional to EU levels (one even with global applicability), and the levels of water governance from catchment to national level (and extending to value chains). Notably, the value chain regulations described have a broader focus than just water-related issues, since the legislation targets due diligence by large enterprises.

The data collection and analysis of good practices involved a mix of methods (desk review, legal analysis, interviews, observation) and material (primary legal sources, official documents, scientific and grey literature). The data collection and assessment of the good practices coincided with legislative changes and a shift in political priorities both at the EU and national levels, which impacted especially the work on water use in value chains, since the practices assessed, and the policy objectives to assess them against, were under revision as the data gathering and analysis took place.

In light of increasing droughts, water scarcity and competition of economic sectors and environmental needs for water resources, the strengthening of the implementation of ecological flows (e-flows) and improvement of water allocation systems are key pillars to enhancing Europe's water resilience. The e-flows case studies in this report, **Priorisation of ecological minimum flows in a river network highly regulated for hydropower (Austria)** and **Catchment abstraction management strategies and hands-off flows (the UK)**, present good practices for the regulatory design and implementation of e-flows contributing to good ecological status objectives of the Water Framework Directive (WFD) and the EU Water Resilience Strategy aims for protecting the water cycle. The **good practices on reconciliating water uses and water allocation** assessed in this report illustrate how collective allocation systems such as ***Organisme Unique de Gestion Collective*** **(OUGCs)** and territorial planning frameworks such as ***projets de territoire pour la gestion de l'eau*** **(PTGEs)** in France can better address structural water scarcity under climate change. They exemplify ways to strengthen quantitative water management under the WFD and build water resilience.

Requiring enterprises to assess dependencies and impacts across their value chains, both within the home country and further upstream, is becoming the norm. The case studies on public and private value chain regulations in this report focuses on the forerunners in this area – t**he French Duty of Vigilance Law**, **the German Supply Chain Act** and the **Alliance for Water Stewardship International Water Stewardship Standard**. There is still room for improvement of the design of these instruments to ensure effectiveness, transparency and inclusiveness relating to sustainable and equitable water use. Lessons learnt should be carried over when the EU instruments in the areas of Sustainable Finance and Corporate Responsibility are transposed into Member State national law.

1 Introduction

The overarching objective of the *Governance innovations for a transition to sustainable and equitable water use in Europe* (GOVAQUA) project is to identify, assess, develop, and validate innovative water governance approaches that accelerate the transition towards sustainable and equitable water use in Europe. This endeavour encompasses a spectrum of innovations, ranging from legal and regulatory measures to advancements in public and stakeholder participation, collaboration, economic and financial instruments, and digital tools. This GOVAQUA Deliverable report (D2.2) presents the work carried out within task 2.2 of WP2, aimed at reviewing and assessing how innovative legal and regulatory instruments, which support sustainable and equitable water use, are implemented at different levels (EU, national, subnational).

This report builds on the work that was carried out by the GOVAQUA WP 2 team and presented in Deliverable 2.1, *GOVAQUA policy matrix* (Kampa et al. 2024). Deliverable 2.1 outlined the environmental and sectoral legislation and policies at EU and national levels (in the six countries of the GOVAQUA Living Labs (i.e. France, Spain, Sweden, Finland, Romania, England in UK)), divided into three thematic clusters pre-identified for WP 2: ecological flows (e-flows), water allocation, and water use and water impacts and dependencies in value chains. Based on this policy matrix and further literature review, specific good practice cases relating to these three clusters were selected. The chosen good practices of innovative legal and regulatory instruments were outlined and further described in two project internal reports, Milestone 6 and Milestone 7. This Deliverable 2.2 report presents the final inventory of good practice cases (see Table 1 for an overview), and the assessments of these good practices. It also discusses the conditions under which these good practices can be successful tools for sustainable and equitable water governance.

Table 1. Overview table of all the good practice cases assessed within task 2.2.

Name of the good practice	Type of innovative practice	Geographical applicability	Level of water governance
Priorisation of ecological minimum flows in a river network highly regulated for hydropower (Austria)	Ecological flows	National	National
Catchment abstraction management strategies and hands-off flows to support environmental flows (England)	Ecological flows	National	Catchment, River basin district
User based allocation in agriculture (France)	Water allocation	National	Catchment
Quantitative water management plans (France)	Water allocation	National	Catchment
The Corporate Duty of Vigilance Law and the role of courts in advancing value chain water governance (France)	Company value chains	National	National, value chains
The German Supply Chain Act (LkSG) and due diligence obligations with specific reference to water-related issues	Company value chains	National	National, value chains
The role of soft law in governing sustainable and equitable water use in organisations' value chains: the AWS Standard	Company value chains	Local, EU, Global	Catchment, value chains

The first thematic cluster (sub-chapters 3.1 and 3.2) focuses on the implementation of ecological flows (e-flows) at national and sub-national levels aimed at allocating sufficient water to ecosystems to maintain a certain level of ecological integrity. E-flow is the amount of water required for the aquatic ecosystem to continue to thrive and provide the services relied upon (Tharme, 2003). Sub-chapter 3.1 presents the regulatory instruments on ecological flows implementation in Austrian law, including the river basin management plan and the stepwise approach developed for implementation in the river network, restoration ordinances, as well as the permit system. Sub-chapter 3.2 describes Catchment Abstraction Management Strategies (CAMS) and hands-off flows in England, key mechanisms to assess water availability, manage the licensing process for water abstractions sustainably and at the catchment scale, and respond to the requirements of river basin management plans (RBMP) under the Water Framework Directive (WFD).

The second thematic cluster (sub-chapters 3.3 and 3.4) focuses on good practices in water allocation regimes, e.g., innovative rules to reconcile different water uses when addressing water scarcity situations. Water allocation mechanisms define who is allowed to access water, how much may be taken and when, how it must be returned, and the conditions attached to the use of the water (OECD, 2015b). Sub-chapter 3.3 presents the *Organisme Unique de Gestion Collective* (OUGC) in France, a type of organised but adaptive and flexible user group with allocation responsibilities for agricultural water. Sub-chapter 3.4 focuses on the French Quantitative Water Management Plans (p*rojets de territoire pour la gestion de l'eau;* PTGE), which are built around a shared diagnostic of water resources and pressures, followed by a participatory exploration of scenarios and an agreed, multi-annual action plan.

The third thematic cluster (sub-chapters 3.5, 3.6 and 3.7) focuses on the regulation of sustainable water use and water impacts and dependencies in international value chains[1]. Multiple jurisdictions have in recent years enacted new laws regulating the due diligence and sustainability reporting requirements, with the aim of assessing, mitigating, preventing, and ending (adverse) social and environmental impact of companies' activities in companies' own operations as well as in their (international) value chains. Some of these laws include issues related to water and sanitation, explicitly or implicitly. Actions to promote corporate sustainability have also been taken at the European Union level, including the adoption of several regulations and directives requiring companies to collect data on risks and impacts, and report on their findings, in their own operations and their

[1] The terms "value chain" and "supply chain", both used in this deliverable, are often used interchangeably (in policy, practice and research) to refer to the actors, resources, information, and financing involved in the production and movement of a product (or service) from raw material to complete product. There are, however, nuances in their meaning: the *supply chain* often refers to the actual physical flow within and between specific actors, who "touch" the product when processing or moving it from point of origin to point of consumption, and sometimes also beyond use (reverse logistics; circular supply chains). The *value chain* then refers to the full range of activities that are needed to take the product (or service) from ideation through production to end-of-life value recovery, and can include also supporting functions within an organisation (e.g., R&D, financing, corporate governance). EU and its member states use both terms in in regulating enterprises and their impact locally and globally, but not consistently – the EU even introduced the term "chain of activities" in the CSDDD, as a result of the differing views and negotiations between the EU institutions.

value chains (CSRD[2], SFDR[3], Taxonomy[4], CSDDD[5]; see also Deliverable 2.1, GOVAQUA policy matrix (Kampa et al. 2024)) focuses on the German Supply Chain Act. In the past 15 years, global initiatives, guidelines and tools that focus on the role of businesses and their value chains under the banners of corporate water stewardship and water security have also emerged, proliferated and gradually matured (Sojamo and Rudebeck, 2024, p. 292). Water stewardship is a concept and practice that emphasises that businesses in water-intensive sectors are critical water managers (Sojamo and Rudebeck, 2024, p. 296). Private water governance initiatives steer business actors to focus on human rights protection or environmental impact mitigation activities at the operational site that often go further than what public regulation requires and are fit for the operational environment and conditions (Puharinen, Belinskij and Sojamo, 2021, p. 181). Sub-chapter 3.7 presents one of these Standards, the Alliance for Water Stewardship International Water Stewardship Standard. 3.7

The Task 2.2 work, and this Deliverable 2.2, link to the GOVAQUA aims and elements (see **Error! Reference source not found.**) as follows:

- Provides input for the systematic comparison of cases, through Qualitative Comparative Analysis (QCA), in WP 1.
- Provides descriptions of legal and regulatory good practice innovations, to potentially be implemented or adjusted for the GOVAQUA Living Lab contexts, or the catchment, river basin or national levels of water governance (e.g. national legislator).
- Provides input to the development of Policy Briefs in WP 7, which target policy-makers, the river basin manager community and enterprises in the context of the EU Water Resilience Strategy and the implementation of the EU Sustainable finance and Corporate Responsibility legal instruments in EU Member States (especially, transposition of the due diligence directive (CSDDD)).

The report proceeds as follows: after this introduction, the general methodology used in Task 2.2 is presented in chapter 2. This includes the definition of good practices, the assessment criteria used in GOVAQUA in general and the modifications made for Task 2.2 in particular, and a general overview of the data gathering and analysis methods used in the case studies and assessments. Then, the seven good practices are presented in chapter 3. Finally, chapter 4 presents the conclusions drawn from the work carried out within Task 2.2.

[2] Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, OJ L 322, 16.12.2022, pp. 15–80, http://data.europa.eu/eli/dir/2022/2464/oj.

[3] Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector, OJ L 317, 9.12.2019, pp. 1–16, http://data.europa.eu/eli/reg/2019/2088/oj.

[4] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, OJ L 198, 22.6.2020, pp. 13–43, http://data.europa.eu/eli/reg/2020/852/oj.

[5] Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859, OJ L, 2024/1760, 5.7.2024, http://data.europa.eu/eli/dir/2024/1760/oj.

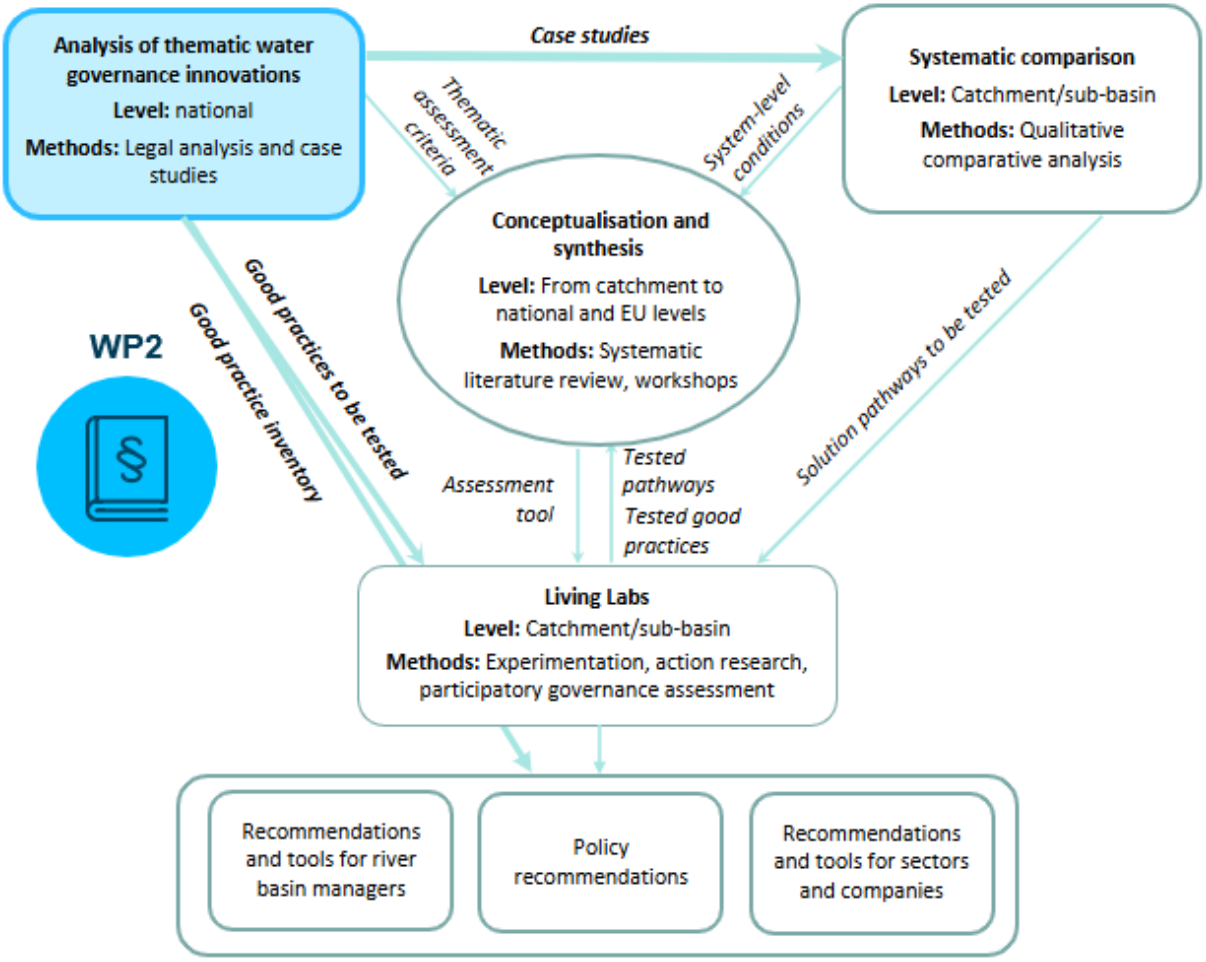

Figure 1. WP 2 positioning within the GOVAQUA project.

2 Methodology

2.1 Good practice definition

A good water governance practice in the GOVAQUA project is defined as follows:

A good water governance practice exemplifies an innovative instrument, approach or arrangement that contributes to achieving water-related policy goals and targets in a sustainable and equitable manner. It has been tested in practice, assessed and validated by stakeholders and independent evaluators in a specific context against specific principles and criteria.

Water governance good practices originate from certain contexts and are tied to the water issues of that context. Therefore, they entail certain prerequisites from their implementation environment. Thus, broadly applicable "best practices" for water governance cannot be discerned[6]. However, within good practices implementation different performance levels can be achieved, typically requiring different levels of effort and resources, building on a continuous improvement.

The good practices documented in the GOVAQUA project are all examples of emerging water governance innovations that are not yet broadly applied but hold promise for replicability and up-scaling in the EU context. The difference of this good practice documentation to the "macro level" water governance assessments, initiated e.g., by the OECD and the self-assessment tool developed in the GOVAQUA project (Özerol et al., 2024), is that the focus of the good practice is at a "micro level", on an instrument, approach or arrangement, rather than the broader water governance context such as a nation or a basin.

The documented good practices are primarily intended to illustrate and validate existing niche practices and to provide innovative ideas for national and basin level water managers and other decision makers in water governance. The practices are also relevant to other water governance actors, such as NGOs, companies and research institutes that initiate or participate in water governance processes.

2.2 Good practice criteria

General criteria for good water governance practices applied here have been adapted from the 12 OECD water governance principles (OECD 2015a).[7] The full list of criteria developed for the purposes of the GOVAQUA project can be found in Annex I. While the criteria aim to be comprehensive, they are not equally relevant for all innovative instruments, approaches and arrangements assessed, but can be

[6] Note: For example, the recent OECD *Handbook of What Works Solutions for the Local Implementation of the OECD Principles on Water Governance* (OECD 2024) only makes reference to "evolving water governance practices" that "respond to the challenges underlying each of the 12 (OECD Water Governance) Principles", drawing lesson from "successful" and "challenging" implementation examples. Nevertheless, OECD generally advances identification of "good water governance" practices.

[7] Original principles: effectiveness (clear roles and responsibilities, appropriate scales within basin systems, policy coherence, capacity); efficiency (data and information, financing, regulatory frameworks, innovative governance); and trust and engagement (integrity and transparency, stakeholder engagement, managing trade-offs, monitoring and evaluation) (OECD 2015a).

weighted. For each good practice, additional detailed criteria regarding the type of the innovation, i.e., legal and regulatory, participatory and collaborative, economic and financing or digital solutions, can be applied. Furthermore, we expect that in reality, most good practices do not fulfil all the criteria, or at least not all at the same time. For the practices documented by GOVAQUA factors concerning challenges in meeting the criteria are also reported.

In the case of innovative legal and regulatory instruments, the good practice descriptions are relatively long, since the background and context are important for gaining an understanding of how the good practice was designed, their implementation within national boundaries (or other scale), and the conditions for their success, partial failure or remaining challenges. The following criteria have been applied in the assessment of legal and regulatory instruments:

Effectiveness

1. Address a problem or a need related to sustainable and equitable water use
2. Connect and contribute to water-related policy goals and targets
3. Define and follow clear roles and responsibilities for different stakeholders
4. Are linked to appropriate scales within basin or other water governance systems
5. Match or advance the level of technical, financial and institutional capacity in the given water governance system

Efficiency

1. Utilize, share and enhance adequate water-related data and information
2. Are cost-effective and/or help mobilizing financing for associated water solutions
3. Connect to and advance sound regulatory frameworks

Inclusivity and are reflexivity

1. Are built on or advance transparent and accountable processes and outcomes
2. Are built on or advance equal participation and collaboration between stakeholders and water justice
    a. Recognise the different types of stakeholders and their different needs
    b. Equally distribute the benefits, harms and costs that result from the practice among different stakeholders, and address and resolve trade-offs and potential conflicts between users
    c. Involve different stakeholders and integrate their different types of knowledge into the decision-making process,
3. Include and advance regular monitoring and evaluation mechanisms

The list of assessment criteria follows the GOVAQUA list of good practice criteria, with a few exceptions: Gender-sensitiveness has been excluded from the list because the innovations under review consist mainly of legal and regulatory instruments at national level. In EU countries, gender equality and non-discrimination are already embedded within the constitutional framework and provisions concerning the protection of human rights and fundamental freedoms. These constitutional guarantees ensure that legal and regulatory instruments must comply with principles of equality and non-discrimination, including gender-related aspects.

In addition to the criteria listed above, the Task 2.2 team assessed some additional aspects under each criterion. Regarding **effectiveness**, the clarity, legal authority and implementation of the legal and regulatory instruments were assessed. Guiding questions in this regard included whether the instrument has clear objectives, goals and targets; who is empowered to apply the instrument and

how far the enforcement power goes; and whether there are sufficient resources/capacity for overseeing and enforcing implementation. Under the **efficiency** criteria, the Task 2.2 team assessed also whether key actors have access to relevant technology, data and analytical tools. Regarding the **inclusivity and reflexivity** criteria, the Task 2.2 team assessed transparency and availability of information, guided by questions such as: is there sufficient information on the crucial target groups; is any other type of necessary information available for the instrument application; and is the target group sufficiently informed about potential benefits or how best to comply with instrument? Also, the level of opposition against the instruments was assessed where applicable, and whether there is access to remedy (e.g., dispute resolution mechanisms, options to appeal). When it comes to the **generalizability and replicability** of the practices, the Task 2.2 team considered aspects and (necessary) pre-conditions such as the regulatory framework, data availability (scientific basis), stakeholder engagement, financial resources and technical capacity.

2.3 Data gathering, analysis and assessment

GOVAQUA WP2, Task 2.2, reviewed and assessed how innovative legal and regulatory instruments supporting sustainable and equitable water use are implemented at different (e.g., EU and national) levels. The systematic review and analysis of good practice cases aimed at presenting the scope and steps needed to implement the good practice, uncovering the conditions for success or failure of implementation, and the replicability and scalability of innovative regulatory instruments for sustainable water use.

The good practice cases presented in this report were selected on the basis of key findings in the review of national policies on e-flows, water allocation and value chains in WP2 of GOVAQUA (see Deliverable 2.1), additional literature review of potential good practices in the thematic clusters, and the level of relevance to water management challenges faced in one or more Living Labs of GOVAQUA.

Methods used for examining the selected good practice cases include desk research (including scientific and grey literature), legal analysis (based on primary and secondary legal sources), document analysis (official decisions; publicly available instructions; certification reports), observation (participation in workshops and meetings), expert interviews (in person and over e-mail) and survey data. For the cases supported by expert interviews, the interview guides are attached in Annex II. The GOVAQUA Good practice template for innovative water governance instruments, approaches and arrangements for reaching the aims of the Water Framework Directive (WFD), the European Green Deal (EGD) and the Sustainable Development Goals (SDG) is attached in Annex I.

The work to arrive at this inventory of good practices of legal and regulatory instruments took place between the finalization of Deliverable 2.1 in July 2024 and December 2025. During this time, two milestone reports were prepared to document the progress of the case studies, and these were submitted by the end of September 2024 (Milestone 6) and the end of September 2025 (Milestone 7). The progress of the good practices assessments and the content of Milestone 7 were presented to the Living Lab representatives and project consortium partners at the GOVAQUA project's General Assembly meeting in Wallingford, UK, in May 2025, and at a project meeting in Microsoft Teams (online) on 1 October 2025. Feedback received at these events was incorporated in this final Deliverable report.

It should be noted that the data collection and assessment of the good practice cases coincided with legislative changes and a shift in political priorities at both EU and national levels. The European Commission introduced the Omnibus (I) Simplification Package in February 2025, aimed to cut red tape and make compliance with sustainability rules easier for businesses, and, thus, boosting EU

competitiveness. On 16 December 2025, the European Parliament approved a provisional agreement on updated sustainability reporting and due diligence rules for companies. The changes included reduced scopes of the sustainability reporting regulation (CSRD) and the due diligence directive (CSDDD), reduced obligations for firms, and delayed application of the CSDDD (from July 2027 to July 2029) (European Parliament, 2025). The harmonized liability regime (CSDDD) was removed. The introduction of the Omnibus package and the debates surrounding it had an impact especially on the work relating to water use and water impacts and dependencies in company value chains, since the practices assessed, and the policy objectives to assess them against, were in flux. The changing political priorities were visible also at Member State level: the German coalition agreement included provisions to abolish Germany's Supply Chain Act (CDU-Bundesgeschäftsstelle, 2025), although abolishment was softened into amendments to the law, put forward in the fall 2025.

At the same time as Omnibus (I) was debated, the Alliance for Water Stewardship International Water Stewardship Standard - which had been chosen as a good practice to illustrate the role of soft law in enhancing sustainable water use in value chains -, was undergoing a revision aimed at increasing the Standard's practicality, utility and value. While initial efforts were targeted to align the Standard with the EU Corporate Sustainability Reporting Directive (CSRD), the proposed changes to the requirements related to indirect water use (i.e. water use in the organisation's supply chain) were commented on by stakeholders, resulting first in exclusion of this type of requirements from the Standard, and then them being re-introduced with a broader scope (i.e. the value chain instead of supply chain). The AWS members approved the final draft of Standard V3.0 on 15 December 2025 (Alliance for Water Stewardship, 2025h).

3 Good practices of legal and regulatory instruments

3.1 Priorisation of ecological minimum flows in a river network highly regulated for hydropower (Austria)

General description

Austria has adopted a strategic approach to restoring ecological flows as part of its national river basin management planning. After the adoption of the EU Water Framework Directive (WFD), stronger provisions for ecological flows came into place. Since 2010, Austria has had a regulatory standard for e-flows in place (Ecological Status Ordinance) which is legally binding for all federal provinces. The implementation of the ecological flows requirements takes place through the programme of measures in the national river basin management plan (RBMP) and specific ordinances adopted for measures implementation at federal province level.

Given its hydropower-dominated river network and very high number of almost 30,000 elements of old hydraulic infrastructure (approximately one infrastructure per river km), achieving ecological flow conditions while maintaining renewable energy production has posed a complex challenge. In this context, Austria has implemented a stepwise approach in the 1st, 2nd and 3rd river basin management plans to ensure implementation of ecological flows in critical reaches. This priorisation strategy was introduced with the 1st national river basin management plan (RBMP) in 2009, implementing the EU WFD. The competent national authority introduced this phased implementation of measures to take account of the evaluation of the effect of implemented measures from one phase to the next and to achieve better coordination between water ecology and energy production needs. The definition of a priority restoration area to restore e-flows (and river continuity) in phases offers a structured approach that aimed to balance environmental and energy considerations.

The main target group of regulations and the priorisation strategy in the planning are hydropower plant operators, with hydropower being the main pressure in Austria disrupting river flows and continuity. There are more than 5,200 hydropower plants and more than 4,400 river km are impacted by reduced flow. Further, hydropower accounts for 70% of the more than 3,000 water abstraction and diversion points (Schinegger et al., 2019).

The case study illustrates the regulatory instruments on ecological flows implementation in Austrian law including the river basin management plan and the stepwise approach developed for implementation in the river network, restoration ordinances, as well as the permit system. Austria's approach highlights the benefits of coordinated planning and technical innovation but also underscores the importance of securing sustained financial support to maintain momentum.

Figure 2.Small hydropower plant in Austria. @Wikimedia Commons: Drack Bernhard, CC BY-SA 4.0 https://creativecommons.org/licenses/by-sa/4.0

Methodology

The analysis of the e-flows regulatory framework in Austria and of the implementation of e-flows in the hydropower sector was based on a desk-based review of relevant documents. Information was sought on the specific regulations on e-flows developed in recent decades, the strategic approach adopted for the implementation of measures in the river basin management plans, the permit system and other instruments used for implementation in the hydropower sector. The data and information collected were mainly of qualitative nature, while quantitative information has also been available on the extent of water stretches were relevant e-flows measures have been implemented. An interview with experts from a federal province governmental body on water protection was carried out to complement the data collected through desk research. The experts contacted were selected based on their work profile and expertise on the topic of e-flows establishment and implementation.

Table 2 Interviews carried out for the good practice 3.1

Interview code	Represented organisation types
A	Interview in written format with two civil servants on water protection at federal province in Austria. July 2025

Initiator

- Austrian Federal Ministry for Agriculture, Regions and Tourism

Category

- Regulatory

Water issues

- water quantity
- ecosystems

Geographical applicability

- National (Austria)

Level of water governance

- National (Austria)

Stakeholders

- Public authorities
    - National ministry (Federal Ministry for Agriculture, Regions and Tourism)
    - Regional authorities responsible for water management at federal province level
- Industry
    - Hydropower companies
- Citizens
    - NGOs
    - local communities
- Academia
    - research institutes

Context

Regulatory framework on e-flows in Austria

Reduced flow stretches are water stretches in which the discharge volume and dynamics are altered by water abstraction ("Restwasserstrecken"). Provisions regarding ecological flow protection were introduced in the 1990 Austrian Water Act (amendment of the 1959 Wasserrechtsgesetz (WRG)), which declared ensuring the good ecological functioning of surface water a "public interest". According to the 1990 Water Act, water abstraction was to be limited to ensure "ecological functioning". These provisions of the Water Act were obligatory to consider when a water-impacting use needed an authorisation and thus resulted also in specific technical requirements for new (hydropower) projects (Koller-Kreimel, 2014).

The Ecological Status Ordinance (Qualitätszielverordnung Ökologie Oberflächengewässer)[8] which came into force in 2010 sets values for the biological, hydromorphological and physico-chemical quality components for the ecological status of all surface water, based on the EU WFD. In paragraph §13, the ordinance introduced guide values for ecological minimum flow and harmonised procedures, applicable to all water body types (Koller-Kreimel, 2014). Ecological minimum flow through fish passes

[8] Verordnung über die Festlegung des ökologischen Zustandes für Oberflächengewässer (Qualitätszielverordnung Ökologie Oberflächengewässer), BGBl. II Nr. 99/2010, in the version of BGBl. Nr. 185/1993 zuletzt geändert durch BGBl. I Nr. 114/2020 (ris.bka.gv.at).

is, in addition, regulated in a national recommendation for fish passes ("Leitfaden zum Bau von Fischaufstiegshilfen") of 2012 (Kampa et al. 2017).

The Ecological Status Ordinance (§ 13 (2))) differentiates between base flow and dynamic flow.

- **Base flow** should be constantly present in the water course bed and should be higher than the natural lowest daily flow, when flows are low. Further, the guide value for the base flow is at least one third of the mean annual low flow for water bodies where the value for the natural lowest daily low flow is less than one third of the natural mean annual low flow, and at least one half of the mean annual low flow for water bodies with a mean discharge lower than 1 m^3/s. In addition to the hydrological values, a base flow must be ensured in the natural fish habitat reaches to ensure fish passability through appropriate minimum water depth and minimum flow velocity (defined in the ordinance annex).
- **Dynamic flow** is required to follow the natural discharge dynamics of a water course over time and is key to ensure the seasonality of natural sediment transport and type-specific substrate composition, sufficient flow during spawning periods, diversity of type-specific, seasonal habitats (for different age stages) and type-specific conditions of oxygen and temperature.

Priorisation approach for e-flows implementation in the RBMP

The actual implementation of the ecological flows requirements takes place through the programme of measures in the national river basin management plan (RBMP) and specific ordinances adopted for measures implementation at federal province level.

The aim of the programme of measures in the Austrian national RBMP is to maintain or achieve good ecological status or potential and to have in place an ecological minimum flow in all waters until 2027 following the guide values of the Ecological Status Ordinance. The base flow is required everywhere, independently of fish passability, including heavily modified water bodies. In the natural fish habitat, requirements include in addition fish passability with necessary minimum water depth and minimum flow velocity. Beyond the base flow, additional measures for dynamic flow may be necessary to achieve good ecological status or potential.

The 1st national RBMP (of 2009) set out a general strategy for restoration to be done stepwise; it defined a priority area for restoration which in practice focuses restoration on selected water stretches. This approach is relevant for the restoration of river continuity and for the restoration of e-flows, and the priority area for restoration is identical for these two aspects. The priority area for restoration aimed to ensure river continuity from downstream to upstream and from "large into small rivers", starting restoration in river stretches which are historically the habitats for medium distance fish migrators (medium distance migrators are the most threatened fish species in Austria). Restoring river continuity includes also the provision of a base flow to guarantee fish passability. The prioritisation for restoring continuity is combining these ecological criteria with administrative criteria (like number of obstacles which have to be restored) relevant not only to hydropower but also other uses linked to river obstacles such as flood protection. Another criterion for selecting the priority water stretches for restoration is ecological effectiveness which means that the restoration of some river stretches might be postponed as there are too many obstacles in the (downstream) part of the river (Rechnungshof Österreich, 2019).

The phased implementation of e-flows continued in the 2nd RBMP (for the period 2015 to 2021) and has been extended in the 3rd RBMP which plans measures ahead of 2021.

In particular for the restoration of e-flows, the following strategy was developed in the three-river basin planning cycles so far:

- **1st RBMP (2009)**: the pressures concerning ecological flow were to be reduced in two phases. In the first phase, the ecological flow allocation should be increased to a base flow sufficient for fish passability by 2015 and, in the second phase by 2021, to a dynamic flow (adapted to natural flow fluctuations) in order to achieve a flow level required to achieve good status (Rechnungshof Österreich, 2019). The Ministry of Environment argued in favour of a two-phase implementation because the evaluation of the effect of the implemented measures of the first phase of ecological flow restoration would support a precise determination of the amount of ecological flow ultimately required and would help to ensure that water ecology and energy production were optimally coordinated (Rechnungshof Österreich, 2019). In particular for hydropower, investment costs and production losses had to be taken into account, considering that ecological restoration was needed for about 2,000 small hydropower plants (Koller-Kreimel, 2017). However, the phased implementation has also been subject of critique by the Court of Auditors who argued that phased implementation was not necessary and led to unnecessary delays in measures implementation (Rechnungshof Österreich (2019).
- **2nd RBMP (2015)**: The 2nd RBMP concluded that a good status was achieved for some water stretches by implementing the base flow. However, as most of the water courses in the priority restoration area continued to have considerable morphological deficits, it no longer appeared cost-effective to increase the ecological flows without further surveys of water course status. The 2nd RBMP concluded that investigations and studies should be carried out in the coming years on individual reduced flow stretches of the first restoration phase in order to prepare for the cost-efficient implementation of the second phase of e-flow restoration in the third planning period up to 2027. Before increasing further ecological flows, it should be investigated if and to what extend further increase is needed and if in addition morphological measures are necessary. This aimed at a more targeted and cost-efficient implementation of the second phase for e-flow restoration in the third planning period (Rechnungshof Österreich (2019).
- **3rd RBMP (2021)**: Because of the still high number of affected water stretches (1700 stretches without achievement of e-flow), the 3rd RBMP continuous with a phased approach and distinguished two phases for implementing e-flows in the third planning cycle. In a first phase, measures are planned to increase ecological flow in and outside the fish habitat for waters with a catchment area > 10 km2. The water bodies in which the amount of ecological flow is to be increased first were selected by the federal provinces (Länder) on the basis of a federal proposal (joint planning process between the Federal Government and the Länder). These water bodies are marked as “high priority” water bodies, and there are about 900 reduced flow sections in 700 water bodies. In these water bodies, the amount of ecological flow should comply with the hydrological guide values of the Ecological Status Ordinance. The base flow according to the Ordinance is necessary in natural waters, even outside the fish habitat and regardless of the question of fish passability, to be able to ensure the most essential ecological functions of a body of water. In the fish habitat, the values required for minimum water depth and minimum flow velocity must also be taken into account for fish passability. In addition to the base flow, adjustments may also be necessary to achieve the target for a dynamic flow. Whether sufficient flow dynamics are already given for good ecological status or potential through the base flow or whether additional specifications are required, must be decided case-by-case. For this purpose, detailed data on the local situation are needed to determine the necessary water allocation, as done in the case of permits. Investigations and planning will

continue on the water bodies not labelled as “high priority” to be able to flesh out the next phase(s) of the implementation of the measures. The investigations concern, on the one hand, the determination of the base flow in waters < 10 km2 and, on the other hand, the extent of the required dynamic proportion of the ecological flow depending on water body type (BMLRT, 2022).

Ecological flows and hydropower

In Austria, hydropower plants are a major pressure disrupting river flows and continuity and disrupting fish migration on the Austrian river network (EC, 2025). At the same time, two thirds of national energy production come from hydropower. Almost 95% of hydropower plants are small hydropower plants with capacity up to 10 MW. Further, there are approximately 2.000 very small hydropower plants (for own use) (Ofenboeck, 2021). Until 2030, Austria plans to add another 5 TWh of hydropower capacity to the grid as per Austria’s Renewables Energy Law. This seems possible from a purely technical perspective, the capacity could – it seems – be increased by 8.69 TWh to 10.12 TWh. In particular, Austria plans to substantially increase pump storage hydropower plants which already account for around 34 % of the total power plant capacity of around 26,200 MW installed in Austria. These power plants are important for smoothening the intermittency of renewable electricity and for balancing power grids (EC, 2025).

Due to the very challenging task of implementing restoration measures for e-flows and river continuity at a very high number of hydropower plants, a strategy including several aspects was followed by Austrian authorities. This included:

- The phased restoration approach of the RBMP based on a priorisation approach.
- Discussions and cooperation with the hydropower sector as early as possible in studies and research, including a study in preparation of the 1st RBMP on the losses in electricity production due to WFD measures (Stigler et al., 2005). Stigler et al. (2005) calculated losses in electricity production due to the increase in water releases in the range of ca. 3% of the total electricity generation from hydropower in Austria. These calculations were made for hydropower plants > 10 MW, and the calculation was carried out individually for each plant.
- Legal instruments involving changes to existing permits. In addition, via the restoration ordinances of the federal provinces, hydropower plant owners must deliver projects for ecological restoration within a specified timeframe, otherwise risking permit expiration.
- Financial support schemes for restoration
- Free advisory services to small hydropower plant owners to find win-win solutions, increasing production efficiency (by refurbishment) and to improve ecology at the same time (Koller-Kreimel, V., 2017).
- Fostering technical efficiency: In the 1st and 2nd river basin planning periods, the energy losses were partly compensated by revitalising the hydropower plants and thus increasing their balancing capacity, so that the losses so far have been well below the value initially calculated and will remain lower even after all measures have been implemented. Among other things, the incentives of the Renewable Expansion Act for the revitalization of existing power plants in the energy sector will contribute to this (BMLRT, 2022).

Since the adoption of the 1st RBMP, hydropower plants in Austria have been implementing step-by-step measures to improve both river continuity and restore ecological flows. The Ecological Status Ordinance requirements for ecological minimum flow are valid for new hydropower plants and based on the national RBMP they are valid also for existing hydropower plants. According to the 1st RBMP,

ecological minimum flow was to be fully restored stepwise until 2027 including at existing hydropower plants to comply with the WFD.

In the current river basin planning period (3rd RBMP of 2022), many of the measures aiming to increase ecological flow target existing hydropower plants on water stretches with a catchment > 10km², considering that reduced flow stretches are to 82% due to hydropower pressures (Ofenboeck, 2021). Existing hydropower plants linked to water diversions should be adapted to the state-of-the-art so that at least a base flow is guaranteed on the water stretch impacted by the diversion (BMLRT, 2022).

The programme of measures of the national RBMP is largely implemented by the nine federal provinces of Austria. At the level of the province (Länder), hydropower plants which are located within the designated restoration areas are selected. The size of the hydropower plants is irrelevant for the definition of measures; however, the criteria applied for the required minimum flow differ. For hydropower plants used for peak electricity generation, their importance for national electricity production is also taken into account. Water stretches which are affected by peak electricity generation are classified as heavily modified water bodies and, in these cases, the requirements for minimum flow are lower. In the 3rd RBMP, studies on minimum flow requirements for the hydropower plants used for peak electricity generation are conducted at the national level (Interview A).

In the federal province of Salzburg, several diversion power plant operators voluntarily installed fish ladders in the first planning period and increased ecological flow releases were included as condition in their authorisation procedure (Rechnungshof Österreich, 2019). The hydropower operators were well informed about the legal framework resulting from the adoption of the 1st RBMP and voluntary cooperation of the permit holders was emphasized for implementing the RBMP. Due to the voluntary approach, the measures (fish passages, ecological flow devices) were well supported, which would not have been the case in a top-down official intervention in the water rights (based on the procedure of amending water rights of §21a WRG 1959). Among the large hydropower operators, there is generally an awareness of the necessity for fish passage aids and ecological flows (Interview A).

The federal provinces can prepare and issue ordinances for each restoration planning period, following the adoption of the national RBMP. The restoration ordinances operationalize the RBMP measures concerning the determination or increase of ecological flows at diversion power plants and the guarantee of ecological minimum flows in all reduced flow sections. The restoration programmes under the ordinances serve the specific legal enforcement of the measures already specified in the RBMP (Land Oberösterreich, 2019).

Issuing restoration ordinances is voluntary for each federal state (Interview A), so in practice some federal states have issued restoration ordinances since the 1st planning period (e.g. Upper Austria, Lower Austria, Tyrol, Styria), while other states have not. In the case of the state of Salzburg, for the 1st and 2nd national River Basin Management Plans, no restoration ordinances were issued. Voluntary cooperation of the consent holders was emphasized, followed by legal procedures under §21a of the Austrian Water Act (WRG 1959) for permit amendment. For the 3rd national RBMP, a restoration ordinance (Land Salzburg, 2025) was issued at federal state level for the first time, since the number of procedures made it impossible to handle individual cases within the timeframe set by the 3rd national RBMP. However, since this was a political process, it took significantly longer than expected which caused delays in the implementation of measures and it is currently still unclear whether the restoration targets can be met on time by 2027 (Interview A).

Overall, the regional restoration ordinances are considered to lead to a significant reduction in administrative costs by eliminating the need for individual adjustment procedures for each hydropower plant, which have proven to be very time-consuming (Land Oberösterreich, 2019). Procedures carried out under a restoration ordinance are more efficient than individual procedures or

a voluntary approach (Interview A). With or without a restoration ordinance in place, a water rights procedure is initiated for e-flows implementation, and an ecological flow and/or fish passage is prescribed by official decision. In all three planning cycles, operators were intensively informed and advised (via information events, information letters, on-site consultations) (Interview A).

Restoration ordinances in the federal province of Upper Austria

In the federal province of upper Austria, the restoration ordinance (of 2019) for the 2nd river basin planning period defined that the requirements for ecological flows would affect around 40 hydropower plants listed in the Annex of the ordinance. Under the ordinance, water right holders were obliged to implement an ecological flow and up to two years after the entry into force of the ordinance, restoration projects were to be submitted for approval under water law (Land Oberösterreich, 2019). An updated restoration ordinance was adopted in 2021 for the 3rd national RBMP planning period. Focus of the updated ordinance were the measures required in the national RBMP as of "high priority" to reach the targets concerning release of ecological flows in waters with catchment >10 km² and which had to be implemented within 3 years after the adoption of the national RBMP in 2021 (Land Oberösterreich, 2021).

Still, challenges remain in the implementation of ecological flows in particular for older hydropower plants, for which usually no or insufficient flow releases into reduced flow stretches were prescribed in their water permits (Rechnungshof Österreich, 2019). As Austria's Court of Auditors recently underlined in its 2024 report on water management in the province Low Austria, the legally binding standard of ecological flow in reduced flow stretches of hydropower plants is not yet implemented to a large extent in older water permits (Rechnungshof Österreich, 2024).

Role of the permit system

Based on the Austrian Water Act of 1959 (WRG 1959, § 21), permits for the use of public waters are granted for a fixed period. Water use permits for uses other than irrigation cannot exceed a duration of 90 years. For hydropower, permits typically have a time limitation of 60–90 years for new large hydropower plants and 30–40 years for new small hydropower plants taking into account the local situation of flow and existing water uses. Existing very old small hydropower plants may have permits without time limitation, but their permits need to be renewed in case of severe changes in water use (Kampa et al., 2017).

In former times, a change to an existing permit was possible in case of a significant change in the hydrological situation. Based on revisions to the Austrian Water Act at the time of adopting the 1st RBMP, changes to permits can be made according to the measures set in the national RBMP. In regional restoration ordinances of the federal provinces, deadlines can be set for measures to guarantee an ecological minimum flow, by which the permit holder has to submit a restoration project to the authorization body (Kampa et al., 2017). If a water right is modified as part of the national RBMP, the permit holder would generally have the possibility to appeal against it (Interview A).

In general, in case of new hydropower permit, the new permit is granted with requirements to follow "state of the art & technologies", which includes a fish pass and ecological flow (Kampa et al., 2017). Also, if a water right has expired, a new permit application must be submitted. This always includes an ecological minimum flow, which is outlined in a project. Deviations from this minimum flow are not allowed. However, there is no obligation to apply for a new permit; it is also possible to

apply for the cancellation of the water right and the decommissioning of the hydropower plant (Interview A).

If a hydropower plant has an unlimited permit and does not fall within the restoration area of the national RBMP, it can take a very long time before an ecological flow is prescribed. For time-limited water rights and within the restoration framework of the national RBMP, implementation is easier. Challenges can arise with plants that are technically very outdated. The required measures to provide a minimum flow are correspondingly higher for these than for plants that already meet a good technical standard (Interview A).

Role of compensation, funding and advisory services for hydropower

When permit renewals take place, hydropower plant owners receive no compensation for reduced output and lost revenue. Compensation is not foreseen in the policy framework of Austria. If a water right expires and a re-issuance is intended, the plant must be upgraded to the state of the art which also includes an ecological minimum flow. Also, no compensation is provided in the context of ecological flow regulations according to the national RBMP (Interview A).

However, structural measures for ecological flow release can be funded. Funds for measures at small hydropower plants can be funded from the Environmental Promotion Act[9], supplemented by regional funding. The operator must provide own funds amounting to 62.5% (Interview A).

In addition, advisory services have been offered to small hydropower plant owners to find solutions which increase technical efficiency and environmental performance. For instance, in the federal province of Salzburg, there is a hydropower advisory service and in each national RBMP cycle, affected hydropower operators receive intensive information and consultation. The Salzburg Hydropower Advisory Service was initiated in 2012 and operates in two stages: The application is submitted to the Water Department at the Office of the Salzburg Regional Government. After a free consultation (preliminary analysis), if there is potential for efficiency improvement, the hydropower operator commissions an external planner to carry out a detailed analysis, which is two-thirds funded by the State of Salzburg. The external consultants are civil engineers or technical offices, nominated as hydropower consultants following a hearing, and who are proficient in the state-of-the-art and familiar with current scientific knowledge. For the implementation of measures to increase efficiency, no funding is provided by the State of Salzburg, Department of Water, as the measures are expected to finance themselves through increased energy production. Information about possible federal funding can be obtained from the responsible authorities (e.g., the Austrian Clearing and Settlement Agency for Renewable Energies (ÖMAG)) (Interview A).

Also, in the federal province of upper Austria, advisory services target small hydropower plants to find win-win-solutions, so that hidden potential to increase energy generation is used and ecology improved at the same time. By 2017, 338 consultations had taken place in this region and as a result 243 hydropower plants were technically and ecologically upgraded. This resulted in average increase of electricity generation by 30% and ecological flow was provided as well. This approach fostered technical efficiency by upgrading, refurbishment or site optimisation (e.g. by installation of ecological flow turbines) (Koller-Kreimel, 2017).

[9] Eligible measures include measures to improve continuity, to reduce the effects of run-offs, to reduce the effects of backwater and measures to reduce the effects of hydropeaking. Source: https://www.bmluk.gv.at/en/topics/water/grants/subsidisation-of-aquatic-ecology-for-enterprises.html

Effectiveness of the practice

Evidence from the national RBMPs shows that the measures taken are yielding tangible benefits. In total, there are ca 3000 reduced flow stretches in Austria with a total length of more than 4,400 km. Since the adoption of the 1st RBMP in 2009 and until the latest assessment in the 3rd RBMP of 2021, steady progress has been achieved in terms of the share of water stretches where ecological minimum flows have been implemented, thus **contributing to sustainable water use and the implementation of the environmental objectives of the WFD**. Since 2010, increases of flow have been achieved for ca. 500 reduced flow stretches in ca. 450 water bodies (Ofenboeck, 2021; BMLRT, 2022). In the 1st planning period, released flows were increased in approximately 200 reduced flow stretches, increasing fish passability and in some cases achieving good status. In the 2nd planning period, the phased implementation of measures continued but due to the lack of funding options for restoring continuity at barriers, implementation was possible in fewer stretches than in the 1st period (BMLRT, 2021). According to the 3rd RBMP, there are currently still around 1,700 reduced flow stretches in which the ecological minimum flow to achieve good ecological status has not yet been established.

Due to the large number of affected stretches, the restoration process continues in phases. In 2021, about 43% of the reduced flow stretches already had an ecological minimum flow in place but 57% of reduced flow stretches still had no ecological minimum flow to achieve good ecological status. In 2015, the share of stretches with no ecological minimum flow was higher, namely 69% of the reduced flow stretches. Thus, between 2015 and 2021, progress has been made in the implementation of e-flows to reduce pressures from reduced flows (BMLRT, 2022). Despite this progress, challenges remain for fully meeting WFD targets in the 3rd planning cycle of river basin management by 2027, as there is still a large number of affected reduced flow stretches with no ecological flow in place to achieve good ecological status.

On **roles, responsibilities and scales for action**, the programme of measures of the national RBMP is largely implemented by the nine federal provinces of Austria who are thus empowered with the implementation of e-flows within their territory. They can prepare (but are not obliged) and issue ordinances for each planning period, following the adoption of the national RBMP. The restoration ordinances operationalize the RBMP measures concerning the determination or increase of ecological flows at diversion hydropower plants and the guarantee of ecological flows in all reduced flow sections.

Efficiency of the practice

In terms of **cost-effectiveness**, the regional restoration ordinances which some federal provinces have adopted to legally enforce the RBMP measures for ecological flows at hydropower plants lead to a significant reduction in administrative costs by eliminating the need for individual adjustment procedures for each hydropower plant, which have proven to be very time-consuming. This contributes to the efficiency of the approach used for e-flows implementation. However, there is scope for further improvement in the implementation of e-flows for hydropower plants with older unlimited permits which do not fall within the prioritized restoration area of the national RBMP. For these hydropower plants, it can take a very long time before an ecological flow is prescribed.

Another aspect contributing to the efficiency of the approach is the fact that partial compensation of energy losses from e-flows has been achieved through technical upgrades. In many cases, HPP operators have refurbished their facilities and increased balancing capacity, offsetting the energy production losses caused by maintaining minimum ecological flows. As a result, energy losses have remained below the levels originally anticipated since the 1st river basin planning cycle. To support appropriate technical solutions for efficiency improvement, small hydropower operators have access

to advisory services which involve detailed analysis by nominated hydropower consultants and are proficient in state-of-the-art. These advisory services, which contribute to **enhancing information related to solutions needed for ecological flows**, are partly financially supported by the federal provinces.

Finally, **funding has been mobilised** made available for measures implementation including structural measures for ecological flow releases, but the availability of funding has not been continuous leading to delays in implementation. Implementation of e-flows overall is considered to have worked better in the 1st planning cycle, as funding was made available in a timely manner. Implementation worked well and the understanding among the affected water rights holders was generally high. In the 2nd national RBMP, there was a delay in the provision of funding, therefore implementation of measures was largely postponed to third cycle.

Inclusivity and reflexivity of the practice

In terms of **advancing transparent processes and collaboration with stakeholders**, Austria's strategy for implementing ecological flows places strong emphasis on intensive information and provision of advice to hydropower operators, given the central role of hydropower to the country's energy system. From the outset of river basin management planning, authorities fostered an early dialogue and cooperation with hydropower operators. Joint studies and research on the potential electricity production losses resulting from ecological flow measures built a basis for aligning environmental goals with hydropower operation.

At the regional level of federal provinces, it has been observed that placing emphasis on the voluntary cooperation of permit holders yielded positive results for gaining support to measures for ecological flow devices and fish passes. This is less the case when solely an official legal procedure for intervention in the water rights is used, based on the Water Act (WRG 1959) provisions for permit amendments. Overall, among the large hydropower operators, there is generally an awareness of the necessity for fish passage aids and ecological flows.

A particular challenge for implementation of e-flows is posed by the high number of small hydropower plants for own use (approximately 2,000). To address potential opposition, both funding sources and advisory services have been employed. Structural measures for ecological flow release can be partially funded by the Environmental Promotion Act and regional funding. Free advisory services have been offered to small hydropower plant owners to scope for efficiency improvements and to find solutions which increase technical efficiency and environmental performance, such as the installation of ecological flow turbines.

Finally in terms of **addressing trade-offs and potential conflicts with users**, if a permit holder considers to be treated unfairly when his water right needs to be modified as part of the national River Basin Management Plan measures, there is formal opportunity for operators to appeal. This legal safeguard is however not extensively used in Austria as effort is made to reinforce collaboration with hydropower operators via intensive information and advice services.

Replicability and generalizability of the practice

Austria's approach to the regulation and implementation of ecological flows can be replicable to other countries as a balanced model of ecological ambition and practical feasibility. It is particularly relevant to countries facing similar challenges, due to high density of hydropower infrastructure and numerous river obstacles. The prioritisation approach, which focuses restoration efforts on selected water stretches in each planning cycle combining ecological with administrative criteria (like number of

obstacles which have to be restored) is especially relevant where extensive interventions in the entire river network may not be immediately achievable.

One of the main enablers in the Austrian approach has been proactive outreach and engagement with the hydropower sector. By involving plant operators early—through dialogue, joint research, and advisory support—Austria has promoted voluntary implementation of e-flows measures, which has proven to be more effective and less contentious than purely regulatory approaches. At the same time, voluntary actions are supported by a formal planning framework embedded in the national River Basin Management Plan which has to be legally enforced in the federal provinces.

Also important has been the availability of financial support and advisory services with technological advice on state-of-the-art, especially to small hydropower operators. Targeted funding schemes and advisory services by nominated hydropower consultants have enabled the adoption of innovative win-win technical solutions, such as ecological flow turbines which increase energy production efficiency and ecological improvements at the same time.

To support replicability, further research may be carried out in different federal provinces to compare factors of success and barriers to e-flows implementation, e.g. using restoration ordinances for legal enforcement or more voluntary cooperation approaches with the hydropower sector. Also, further research may be carried out on the level of acceptance of e-flows measures in the large versus small hydropower sector.

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Federal Ministry Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management. https://www.bmluk.gv.at/

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3.2 Catchment abstraction management strategies and hands-off flows to support environmental flows (England)

General description

In England, Catchment Abstraction Management Strategies (CAMS) were introduced in 2001 as the key mechanism to assess water availability, manage the licensing process for water abstractions sustainably and at the catchment scale, and respond to the requirements of river basin management plans (RBMP) under the Water Framework Directive (WFD).

CAMS was designed to address the urgent problem of unsustainable abstraction by embedding environmental flows into water resource planning. The first step of the CAMS process is resource assessment and management, which is a critical step in determining if environmental flow requirements are being met. Ecological needs are assessed using local ecological data to determine the Environmental Flow Indicator. The resource assessment and management step also determine hands-off flows (HoF) for new licenses within the catchment, in order to preserve environmental flows. Hands-off flows (HoF) are license conditions that require abstraction to cease (or reduce) when the river flow falls below a certain amount. As more of the available water is allocated to abstraction, licences are issued with increasingly restrictive HoF conditions to make sure sufficient water continues to be available for the environment.

These thresholds and licensing conditions were further developed following the adoption of the Water Framework Directive in 2000 and the UK Water Act in 2003. Over the last two decades, the concept of

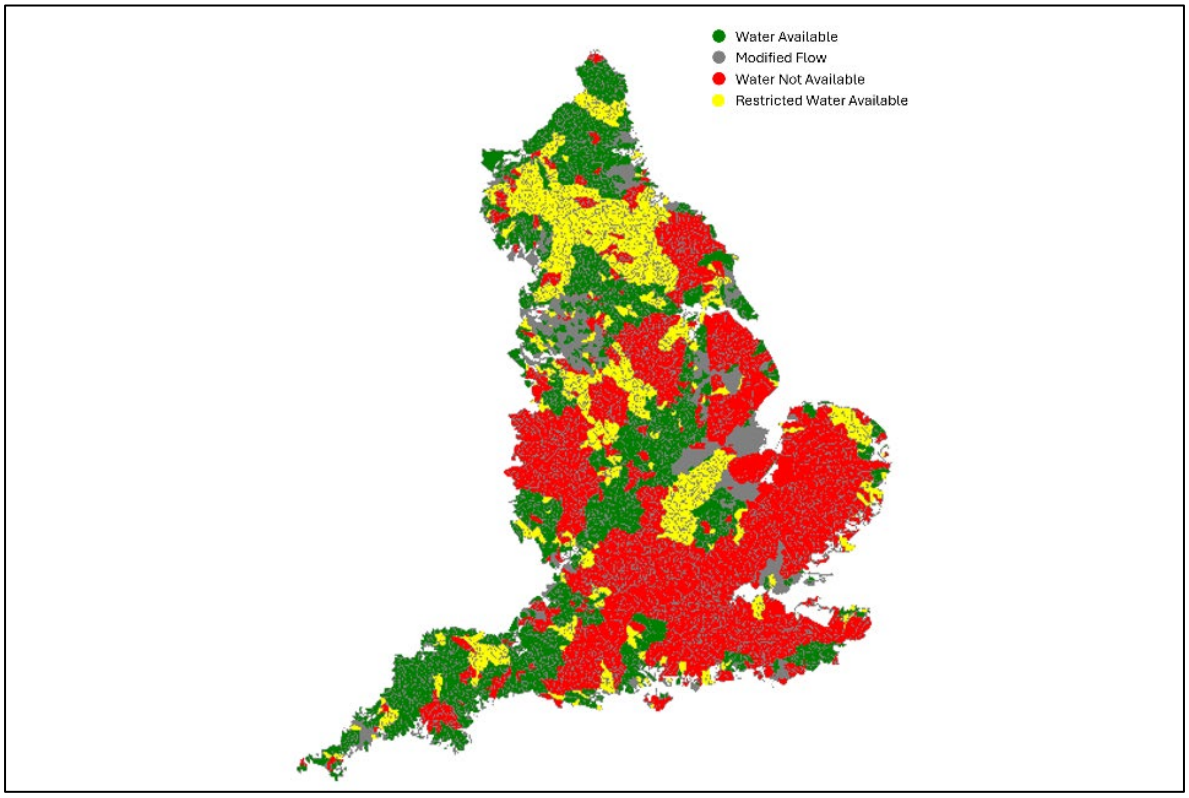

Figure 3. Current potential surface water availability under low flow conditions (Q95). Source: Environment Agency, 2025a

HoF conditions has been refined and is now standard practice in new abstraction licenses, overseen through the Catchment Abstraction Management Strategies. As such, HoF is implemented on a case-by-case basis in individual abstraction licenses. The Environment Agency uses the HoF conditions in combination with the Environmental Flow Indicator to support environmental flows and the agency is responsible for monitoring and ensuring compliance.

This case study illustrates the regulatory instruments of CAMS and HoF and how licensing constraints are implemented within catchments in England to support environmental flows.

Methodology

The assessment of the CAMS framework and HoF has involved the use of qualitative information, primarily from guidelines and documents from governmental agencies, but also peer-reviewed studies and book chapters. Some information has also been pulled from personal communications with authority experts as well as expert interviews carried out in the context of reviewing the policies of England on water allocation and e-flows in the GOVAQUA project (Rouillard et al., 2024; Kampa et al., 2024).

Table 3 Personal communications for the good practice 3.2

Informant code	Represented organisation types
A	Personal communications in written format with national authority on environmental issues. September 2025

Initiator

- Environment Agency

Category

- Regulatory

Water issues

- water quantity
- ecosystems

Geographical applicability of the documented practice

- National (England in the UK)

Level of water governance

- Regional (England in the UK)
- Catchment/Basin

Stakeholders

- Public authorities
    - Environment Agency
- Industry
    - farmers
    - companies (water companies, water infrastructure operators)
- Citizens
    - NGOs

    - local communities
- Academia
    - research institutes

Context

Catchment Abstraction Management Strategies (CAMS)

The policy framework on environmental flows in England has developed in parallel to global awareness of the issue, with the establishment of the Environment Agency in 1996 playing a key role in refining abstraction control. The origins of the UK abstraction licensing system dates to 1963, when existing abstractors were given "Licenses of Right" allowing them to abstract their requested volume of water in perpetuity. At the time, the system took a "first-in, last-out" approach, prioritizing existing abstractors over new entrants. By the 1990s, growing environmental concerns and abstraction pressures led to the introduction of time limited licenses, as well as other conditions. Partly in response to the drought of 1995-97, but also in light of recognized inflexibility and lack of transparency, the UK government began a review of the abstraction licensing system in 1998 (Warwick, 2012).

This review resulted in the publication of "Taking Water Responsibly" in 1999, which proposed various legislative and non-legislative changes to water management in England and Wales. Legislative changes were later introduced through the Water Act of 2003. A key non-legislative element was the proposal for the development of the Catchment Abstraction Management Strategies (CAMS) with three key aims: to understand the situation with regards to water resources in all catchments in England and Wales, to develop abstraction policy in an effective and flexible manner, and to provide a common and transparent framework for water planning. The introduction of CAMS also addressed other aspects of abstraction licensing reform which were later legislated through the Water Act, such as time-limited and license trading. A central goal of CAMS was to reach a "sustainable balance" between users and the environment (Warwick, 2012).

The CAMS were introduced in 2001 as the key mechanism and standard approach to assess water availability and manage the licensing process sustainably and at the catchment scale, as well as to respond to the requirements of river basin management plans (RBMPs) through the WFD. By 2008, the first CAMS were developed for all major catchments in England and Wales (Environment Agency, 2013). CAMS function is to assess water availability in catchments and identify where demand affects the water balance. Within each catchment, an Abstraction Licensing Strategy (ALS) is produced which sets out the abstraction licensing strategy for the catchment based on the CAMS assessment.

The CAMS approach ensures that there are sufficient water resources to support a healthy ecology and sustainable abstraction. There are three main stages to the CAMS process (Environment Agency, 2025b):

- Resource assessment and management (RAM)
- interpreting the results of RAM to achieve sustainable abstraction
- Abstraction licensing strategy (ALS)[10] for each catchment, which includes the use of revision dates for licenses (common end dates) and how abstraction restrictions on licenses (hands-off flows) are applied.

Key elements of the CAMS can be described as such (Holman & Trawick, 2011):

[10] https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

- The resource assessment, resource availability status and sustainability appraisal components are within a 6-yearly water resource planning cycle. By providing an indication of the availability of water resources within river catchments considering the environmental needs of rivers and wetlands (Dunbar et al., 2004), CAMS highlight where additional abstraction may take place – designated as “water available”. They also identify where current levels of licensed abstraction exceed the resources available- “over-licenced” or “over-abstracted”. Where this is the case, CAMS facilitate discussion of the mechanisms to regain a sustainable level of abstraction.
- Abstraction decisions take place at a local level – catchments are divided into water resource management units (WRMUs), which define the largest subdivision of the aquifer or catchment that can be managed in the same way.
- The CAMS process makes more information on water allocation publicly available and allows a balance to be struck between the needs of abstractors and those of the aquatic environment.
- Integration of surface and groundwater resources – a water balance is calculated for each WRMU based on river flows, groundwater recharge, abstractions, discharges, and a resource allocation for the environment and any other water uses or features that require protection.
- CAMS should facilitate more licence trades in the future to encourage a better utilisation of scarce resources.
- All new licences are issued on a time-limited basis, but with a presumption of renewal provided that the licensee continues to meet three renewal tests: continued environmental sustainability (as determined by the CAMS process), continued justification of need and efficient use of water.

The Catchment Abstraction Management Strategies (CAMS) process also embeds a feedback mechanism through its structured, iterative sustainability appraisal system, which operates in two tiers during each 6-year cycle. Tier 1 appraisal assesses whether current abstraction levels conflict with environmental needs and if changes are necessary to maintain or improve water availability status. If change is needed, a Tier 2 appraisal identifies and evaluates management options to achieve the desired status. Both tiers assess options across 21 impact categories covering environmental, economic, and social dimensions. Impacts are described qualitatively in terms of likelihood and consequence, with outcomes guiding the selection of preferred strategies. Crucially, each appraisal concludes with the identification of residual risks and indicators for monitoring and review, establishing a mechanism for ongoing evaluation and adjustment. By repeating this appraisal process in each CAMS cycle and incorporating monitoring indicators, CAMS enables adaptive management by responding to new data, outcomes, and stakeholder input over time (Warwick, 2012).

Hands-off flows conditions on licenses

Water resource availability is calculated at selected assessment points across the river network in England using the Resource assessment and management (RAM) in the CAMS process. RAM is also a critical step in determining if environmental flow requirements are being met. It begins by estimating natural flows based on data from river flows, groundwater levels, abstractions, and discharges. Ecological needs are then assessed using local ecological data to determine the Environmental Flow Indicator (EFI). Next, scenario flows are modelled using abstraction and discharge information to reflect actual water use, recognizing that many abstractors use less than their licensed volumes. These scenario flows are compared with the EFI to assign a color-coded water availability status, indicating how much water remains for additional abstraction (Environment Agency, 2025b).

Environmental Flow Indicator (EFI)

A nationally consistent method is used by the Environment Agency to analyse what abstraction recovery would be needed to meet environmental flows. The Environmental Flow Indicator (EFI) indicates the proportion of natural flows that are required to support the environment in any given water body and is used to make sure a water body meets good ecological status. Depending on the sensitivity of the water body it typically indicates that somewhere between 80% and 90% of natural low flows are protected. The EFI is used to indicate where abstraction pressures may start to cause undesirable effect on river habitats and species (Environment Agency, 2020).

The EFI is part of the procedure that informs decisions on abstraction licensing. Abstractions that would bring flows below the EFI are not allowed. The only exception is if the abstraction license applicant can prove there will be no deterioration or impact on ecological status. The EFI is not defined in national law but is part of the assessments carried out for the river basin management plans, that provide the framework for managing water bodies in the river basin districts in England.

The UK Technical Advisory Group (UKTAG) is responsible for developing environmental standards and conditions for achieving WFD requirements for rivers and lakes. The standards vary by river type and flow, with stricter standards at lower flows and for water body types considered more sensitive to abstraction. They identify percentage change from natural flow for differing river 'types' and at different flows. The UKTAG river flow standards have been translated into the EFI for use in England as part of RAM and the existing abstraction regulatory regime. The EFI is set at a level believed to support good ecological status (Environment Agency, 2025b).

The Resource assessment and management (RAM) also calculates the "hands-off flow" (HoF) that would be applied for new water resource licences issued within the catchment. Hands off flow conditions (HoFs) are license conditions that require abstraction to cease (or reduce) when river flows fall below a certain amount. When river flows are above this level, abstraction can take place but when flows are below this, no abstraction (or reduced abstraction) can occur. As more of the available water is allocated to abstraction, licences are issued with increasingly restrictive HoF conditions to make sure sufficient water continues to be available for the environment. The Abstraction Licencing Strategy of a catchment states the HoF conditions that will be applied to new abstraction licenses to make sure flows remain compliant with the EFI (Environment Agency, 2025b).

HoFs are set when a licence is granted, therefore new licences are likely to have HoF applied at a higher absolute flow rate (lower Q), depending on water availability in the catchment considering environmental needs and the rights of existing abstractors. The rights of existing abstractors are considered as existing licences cannot be derogated by new licences. HoF can be also applied to existing time-limited licences which would be reassessed at the common end date of the catchment to check if the licenses are unsustainable or causing environmental deterioration. This review of existing licenses can include changing the HoF criteria (pers.comm. A). Time-limited abstraction licenses are generally issued with a common end date in a catchment, so that many licenses in the catchment can be reviewed and updated at the same time.

Over the last two decades, the concept of HoF has been refined and is now standard practice in new abstraction licenses, overseen through Catchment Abstraction Management Strategies. As such, HoF is implemented on a case-by-case basis in individual abstraction licenses. The Environment Agency is responsible for monitoring and ensuring compliance.

In periods of prolonged dry weather and drought in England (as in summer 2025), the Environment Agency issues weekly drought briefings which provide information on how many hands-of flows (HoF)

restrictions are currently in force.[11] Among others, these weekly briefings include information on water availability pressures on the agriculture sector, challenges for the harvest season and the number of hands off flow restrictions in force on abstraction licenses.

For the day-to-day management of licenses with HoF conditions, the Environment Agency encourages abstractors to register with the agency's online system for e-alerts[12], which then sends an email directly to the abstractor when abstraction is to be stopped or restarted. If an abstractor is not registered for e-alerts, then the notification of changes takes place by letter. However, moving to e-alerts allows abstractors to restart abstraction sooner than waiting for a letter, which can motivate users to sign up for the e-alerts (pers.comm. A).

Effectiveness of the practice

CAMS was designed to **address a problem linked to sustainable and equitable water use**, namely the urgent problem of unsustainable abstraction by embedding environmental flows into water resource planning. Through the Resource Assessment Methodology (RAM), CAMS defines environmental flow objectives for each water resource management unit (WRMU), setting minimum flows and curtailing abstraction when thresholds are reached. In principle, this has been a significant step forward, as it **advanced the technical and institutional capacity in the water governance system** by creating a mechanism for protecting rivers and ecosystems and environmental flow management, and also **aligned national water allocation with EU Water Framework Directive goals** (Warwick, 2012).

Overall, national and catchment-level evidence shows mixed progress in tackling unsustainable water abstraction. Between 2017 and 2019, there were modest improvements: more surface waters met flow standards (82% rising to 84%), and the proportion of potentially unsustainably abstracted waters fell (from 10% to 7%). Further, the Restoring Sustainable Abstraction programme had amended or revoked 282 licences by 2019, returning 40 billion litres of water to the environment. At the catchment level, evidence emerges from certain priority catchments on some positive environmental trends. For instance, in the Cam and Ely Ouse priority catchment, significant savings were achieved (over 18 million m^3/year) due to actions to reduce water abstraction under the Restoring Sustainable Abstraction programme, and additional savings came from revoking unused and underused licences (Benson et al., 2022).

Despite these gains, the WFD river basin management planning assessment shows that surface water bodies meeting high or good ecological status has not been improving with just 16% of surface waters in England in good or high status in 2019, having remained stable since 2016 (Government UK, 2025). The picture in individual catchments is also concerning. Priority catchments are still experiencing unsustainable flows despite licence modifications or revocations, according to recent revisions of Abstraction Licensing Strategies. For example, the Cam and Ely Ouse – already under high abstraction pressures from agriculture – shows no water availability at Q70 flows and above; even at Q50 water availability is restricted or unavailable (Environment Agency, 2020b).

On the effectiveness of CAMS and HoF conditions in terms of securing environmental flows, targeted evidence is limited. So far, there is no specific national assessment available on the impacts of HoF conditions in highly irrigated areas during periods of prolonged dry weather and drought (pers.comm. A). Early reviews of CAMS showed that many over-licensed or over-abstracted catchments remained unchanged, with only a fraction (28 out of 66) targeted for improvement during the first river basin management cycle, and even then, most actions depended on voluntary

[11] https://www.gov.uk/government/publications/dry-weather-and-drought-in-england-summary-reports
[12] https://www.gov.uk/guidance/manage-your-water-abstraction-or-impoundment-licences-online

cooperation or further investigations rather than direct interventions (Warwick 2012). Although the Environment Agency had the authority to revoke or vary licenses where flows were threatened, financial and political barriers restricted use of these powers in earlier implementation. In particular compensation costs historically associated with revoking licenses acted as barrier until reforms under the 2014 Water Act reduced this burden (Benson et al., 2022). To support the government's priority of restoring sustainable abstraction, the 2014 Water Act removed the ability of water and sewerage undertakers to claim compensation for losses resulting from modification and revocations of their abstraction licences (which was previously in place based on the Water Resources Act 1963) (Government UK, 2014). Since 2014, no compensation is payable to water and sewerage undertakers if the regulator requires a variation or revocation of license in the public interest.

Efficiency of the practice

Regarding **the utilization, sharing and enhancement of adequate water-related data and information,** the CAMS process introduced important efficiencies in water abstraction management by standardising data collection and making water availability information publicly accessible at the catchment scale. CAMS draws on the Resource Assessment Methodology, which uses hydrological data and ecological sensitivity indicators to set environmental flow objectives consistently across England (Warwick 2012). This enhanced transparency and allowed regulators, water companies, and agricultural users to base decisions on shared datasets rather than fragmented local knowledge. Over time, the system has been supported by increasing digitisation, with the Environment Agency's online licensing platform enabling abstractors to access and submit data more efficiently, reducing administrative burden and improving compliance monitoring (Benson et al., 2022). The weekly drought briefings issued in periods of prolonged dry weather and drought provide information on the hands-off flows (HoF) restrictions currently in force. Further, the Environment Agency's online system for e-alerts enables fast communication to abstractors when abstractions are to be stopped or restarted. These tools **improved regulatory coherence**, ensuring that licensing decisions are linked to sound ecological and hydrological assessments.

In terms of **mobilising financing**, CAMS has not generated new funding streams but has supported efficiency gains by encouraging water trading and collaborative partnerships that pool resources and share information, particularly in priority catchments.

Inclusivity and reflexivity of the practice

CAMS introduced a **more transparent and accountable abstraction system** compared to the opaque licensing framework it replaced. Each CAMS sets out water availability in a catchment and makes licensing rules publicly accessible, helping abstractors understand whether new permits can be obtained and under what conditions (Warwick 2012). By standardising environmental flow requirements across catchments and embedding them in licensing strategies, CAMS also improved transparency and consistency in decision-making concerning environment flows.

When it comes to advancing **equal participation and collaboration between stakeholders,** stakeholder focus groups were established in each CAMS area, including representatives of farming, water companies, and environmental NGOs, to provide input into sustainability appraisals and voice concerns over local impacts. This consultation process was a key innovation, signalling a move away from technocratic, closed-door decision-making. However, the extent of inclusivity has been uneven. In earlier implementation, many crucial technical determinations (such as RAM flow thresholds) were not open to negotiation, limiting stakeholders' influence over outcomes. In practice, this meant that CAMS advanced procedural equity and transparency but fell short of resolving structural inequities in

historic water rights or balancing costs across different user groups (Warwick 2012). Later reforms have sought to deepen inclusivity by embedding CAMS within broader catchment-based partnerships, promoting collaborative governance and co-development of solutions in “priority catchments” such as the Cam and Ely Ouse (Benson et al., 2022). These initiatives have encouraged social learning, joint monitoring, and knowledge exchange between farmers, regulators, and conservation groups, with water abstractor groups playing an active role in lobbying and disseminating best practice (Holman and Trawick 2011).

Further, early evaluations noted that **benefits and costs of reductions in license volumes and environmental flow conditions to protect low flows may not be equally distributed**, with higher impacts on abstractors who require a reliable water supply or require water particularly during summer low flow periods such as irrigation water or public water supply in hot, dry summers (Warwick 2012).

In terms of **addressing trade-offs and potential conflicts between users**, licence holders have the right to appeal licence decisions, including conditions (Water Act 1991 section 43 (3)(b)). All abstraction licences applications are assessed with the environment at the core, and no distinction is made when applying HoF between abstractors. However, the Environment Agency has a duty to have regard for promoting economic growth (section 108(1) of the Deregulation Act 2015), but if a HoF is required to meet statutory environmental objectives, this will usually take precedence over other considerations. It is noted that the Environment Agency started a consultation in late 2025 on reserving future water abstraction rights which can include discussions on socio-economic criteria for abstraction licensing, for instance the importance of public water supply versus other sectors (pers. comm. A).

Replicability and generalizability of the practice

The Catchment Abstraction Management Strategies and hands-off flow licence conditions provide an operational approach to water allocation that integrates environmental flow requirements with abstraction licensing and review of abstraction licenses at the catchment scale. This approach can be transferable to other parts of Europe.

Key enablers for the replication of this approach elsewhere include a suitable legal and governance framework with jurisdiction for intervention on abstraction licenses, a scientifically based method for environmental flows and sufficient data. In particular, the innovative practice relies on a licensing regime which allows the regulator to issue new licenses within a scientifically-informed system on water availability and to modify existing license conditions in scheduled review periods. The application of hands-off flow (HoF) conditions on new and, in some cases, existing licenses requires clear legal authority for implementation (in the case of England, in the hands of a national public body, but in other countries, relevant authority may lie with river basin organisations at regional level). Second, a science- and data-based approach to calculate environmental flows needs to accompany such a catchment-based system for water allocation and restricting conditions on abstraction licenses. The design and implementation of the practice need to be supported by sufficient gauging stations on the river network to ensure flow metering and monitoring for long-term planning of water availability and environmental flows and day-to-day management of abstraction licenses.

Technical details

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Related websites

Water resources planning and abstraction licensing: National Framework for Water Resources 2025: https://www.gov.uk/government/publications/national-framework-for-water-resources-2025-water-for-growth-nature-and-a-resilient-future/10-water-resources-planning-and-abstraction-licensing-national-framework-for-water-resources-2025

Abstraction licensing strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

Related resources

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Warwick C. (2012). "Sustainable" water abstraction: catchment abstraction management strategies in England and Wales. Water Policy 14, pp 647-667

3.3 User based allocation in agriculture (France)

General description

France has long faced structural water deficits in many catchments and aquifers, particularly in agricultural regions with high irrigation demand. Earlier legislation already required authorisation and monitoring of abstractions and the designation of deficit areas, but persistent over-abstraction and fragmented permitting limited the effectiveness of these measures. The 2006 Water Law, embedded in the EU Water Framework Directive (WFD), marked a turning point by introducing volumetric management of abstractions and the transfer of allocation responsibilities for agricultural water to organised user groups called Organisme Unique de Gestion Collective (OUGC). The reform aimed to reconcile agricultural water needs with ecological requirements while improving compliance, transparency, and local ownership.

Members of OUGCs have considerable flexibility in designing their user association, including the choice of legal structure, decision-making processes, and internal allocation rules. This allows OUGCs to adapt governance arrangements and allocation methods to local hydrological, agricultural, and social contexts, resulting in a wide diversity of organisational models across France. At the same time, the French government validates key elements of each OUGC to ensure that proposed rules respect principles of fairness, legal consistency, and environmental effectiveness. This balance between local autonomy and state oversight has helped strengthen transparency, improve monitoring and reporting of abstractions, and enhance coordination among agricultural water users.

OUGCs primarily target irrigators in areas experiencing structural water deficits, who collectively manage their allocated volume under a single abstraction permit. However, depending on the basin, the system also involves a broad set of actors, including state services, river basin authorities, local authorities and, in some cases, citizen organisations and environmental NGOs, who may participate in planning, provide technical input, or contribute to oversight. This multi-actor involvement can support legitimacy, foster dialogue, and help align agricultural water use with wider environmental and territorial objectives.

The French experience demonstrates how a mixed model of self-governance, in which users are given substantial flexibility under broad supervision of national and river basin authorities, can support WFD implementation in basins facing significant pressures from irrigation. By combining clear environmental limits with user-led allocation and monitoring, the OUGC approach offers a pathway for managing scarce water resources more sustainably while maintaining stakeholder ownership and accountability.

Figure 4. Irrigated field, France @Josselin Rouillard.

Methodology

The good practice is based on two surveys involving analysis of PAR, interviews and attendance to workshops and OUGC meetings published in Rouillard and Rinaudo (2020) and Guerin (2023). Additional documentary analysis of national reviews of the reform has been carried out (e.g. Loubier and Polge, 2016; Cinotti et al. 2020).

Initiator

- French government
- Agricultural water user associations

Category

- Regulatory/legal
- Collaborative approach

Water issues

- Water quantity

Geographical applicability

- National (France)

Level of water governance

- Catchment / groundwater basin

Stakeholders

- Industry
    - Irrigators
    - Irrigation districts or associations
    - Chamber of Agriculture
- Public authorities
    - Ministry of Environment, through their services at departement level
- Citizens
    - NGOs; local communities

Context

Background

France's collective irrigation water allocation system represents an innovative governance instrument introduced under the 2006 Water Law. It was designed in response to the growing pressure on water resources, particularly from the agricultural sector, and the inadequacy of earlier regulatory measures to manage this pressure effectively and equitably. The need for reform emerged after decades of rising water demand, driven in part by the rapid expansion of irrigated agriculture since the late 1970s. Irrigated farmland in France now spans approximately 2 million hectares and can account, in some basins, for up to 80% of total water use during dry summer months. This peak demand coincides with low river flows and stressed aquifers, leading to significant ecological degradation and increasing competition between users.

In the late 1980s, French authorities attempted to address these issues by introducing minimum flows for rivers and minimum groundwater levels for aquifers. These measures restricted irrigation during periods of low availability, but they proved difficult to enforce and insufficient to prevent environmental degradation or reduce user conflicts (Loubier and Polge, 2016). The traditional, top-down regulatory model struggled to monitor thousands of individual extraction points or gain the support of local users. There was a clear need for a more effective and accepted system of water allocation.

In response, the 2006 Water Law introduced a shift towards volumetric water management (Erdlenbruch et al., 2013), and, crucially, required the setting up of associations of irrigators exploiting the same water resources to take over responsibility for distributing water allocations to individual irrigators. These user groups, called Organisme Unique de Gestion Collective (OUGCs), receive a single bulk abstraction permit and determine how water is shared among members based on locally defined rules (Lafitte et al., 2008).

This governance reform had several core objectives: to ensure compliance with environmental flow and resource protection requirements; to increase transparency and accountability in water allocation; to empower users to take responsibility for managing a common-pool resource collectively; and to enable local adaptation, by allowing user groups to design allocation rules suited to their specific hydrological, agricultural and social contexts (Lafitte et al., 2008).

Legal and policy basis for water allocation

The legal and regulatory basis for the OUGC is multi-layered. The 1992 Water Law had already consolidated a regime of authorisation, established the requirement to monitor all abstractions and

required the identification of catchments and aquifers in structural water deficit, i.e. Zone de Restriction des Eaux (ZRE) (Figureau et al., 2012). The 2006 Water Law requires that OUGC are established in all catchments and aquifers that have been categorised as ZRE. Farmers in other areas can also establish an OUGC on a voluntary basis, for instance to prevent further degradation and classification into a ZRE, as for the Crau aquifer in the Rhône Delta.

The 2006 law also sets the overarching framework for volumetric management of water abstraction, the definition of Sustainable Extraction Limits (SELs), and the transfer to user groups of powers to allocate water destined for irrigation purposes. The 2006 Law is embedded within the broader requirements of the EU Water Framework Directive, which mandates the achievement of good ecological status for water bodies.

Implementation is structured through a hierarchy of planning instruments (Cour des Comptes, 2023). At the river basin level, River Basin Management Plans co-designed by the national authorities, river basin authorities, municipalities, users, and NGOs, define overarching environmental objectives and flow targets. These are operationalised at local level through Local Water Management Plans (SAGEs), which determine SELs in volumetric terms for specific catchments and aquifers, broken down by wet and dry seasons. Allocations are further defined per sector, e.g. public water supply, industry, agriculture. In many cases, technical studies were conducted to set the SELs, drawing on hydrogeological modelling and long-term data collection. Local Water Commissions, responsible for Local Water Management Plans, usually served as platforms for negotiation and consensus-building over SEL.

Governance arrangements of OUGC

The establishment of an OUGC in each priority basin follows a preparatory phase that includes stakeholder mapping, legal entity selection, boundary delineation, and drafting of allocation and governance rules. While national authorities remain responsible for validating these elements, the actual design and operation of each OUGC are delegated to the users themselves. This allows for high levels of local adaptation. Most OUGCs are hosted by Chambers of Agriculture or irrigator associations, though, in some areas, they may be managed by joint boards involving irrigators and public administrations, or even public agencies, such as in the Marais Poitevin, to ensure broader legitimacy (Loubier and Polge, 2016; Rouillard and Rinaudo, 2020). Collaboration plays a central role throughout the process of establishing OUGC. The planning and approval of OUGCs required coordination between agricultural stakeholders, national authorities, river basin authorities, and, depending on the context and governance of the OUGC, local governments, research bodies, and environmental NGOs (Cinotti et al., 2020; Rouillard and Rinaudo, 2020).

Once operational, the OUGC receives a bulk abstraction permit from the national authorities, which replaces all previously granted individual permits. It then becomes the sole entity responsible for distributing the allocated water volume among its members. Each OUGC develops and applies its own internal allocation rules, which are formally outlined in a rulebook and must respect basic legal principles: fair and equal treatment of irrigators, transparent decision-making, and support to national authorities in enforcing compliance (Lafitte et al., 2008).

The allocation process by the OUGC generally follows a four-step cycle (see **Error! Reference source not found.**). First, Individual User Caps (IUCs) are established to each irrigator part of the OUGC, based on historical usage, planned cropping patterns, or other factors (Loubier and Polge, 2016; Rouillard and Rinaudo, 2020). These serve as reference volumes for each irrigator. Second, where the aggregate of IUCs exceeds the SEL, OUGCs implement a gradual reduction process over several years to bring usage in line with sustainable limits. Third, each year, farmers submit crop plans and water requests, which are reviewed for technical consistency by the OUGC. Approved demands form the basis of the

annual allocation plan, which is submitted to national authorities. Fourth, OUGCs monitor water use during the irrigation season and may reassign under-used volumes to other members. In some OUGC, they may pre-emptively impose voluntary temporary restrictions in the event of drought or other constraints (Rouillard and Rinaudo, 2020). However, the responsibility for enforcing any drought restrictions remain in the hand of national authorities.

To ensure transparency and accountability, all OUGCs are legally required to report each member's allocated and actual water use to the national authorities. While the enforcement of sanctions remains a responsibility of national authorities, some OUGCs are experimenting with their own internal penalties, such as reduced allocations in subsequent years for non-compliant users. Furthermore, feedback mechanisms are embedded into the system. Metering data, crop plans, and seasonal variations feed into ongoing adjustments (i.e. Rouillard and Rinaudo, 2020; Guerin, 2023). Some OUGCs use rolling averages and other adaptive rules such as "use-it-or-lose-it", whereby the allowance of a user may be reduced when underused over a pre-defined number of years, or proportional reduction rules to tailor allocations to changing hydrological realities. These elements allow the system to evolve over time, enhancing both its resilience and responsiveness, but entailing certain risks. For instance, the "use-it or loose-it" rule can encourage misused of water resources where users feel compelled to use all their allowance to retain their full right of use over time.

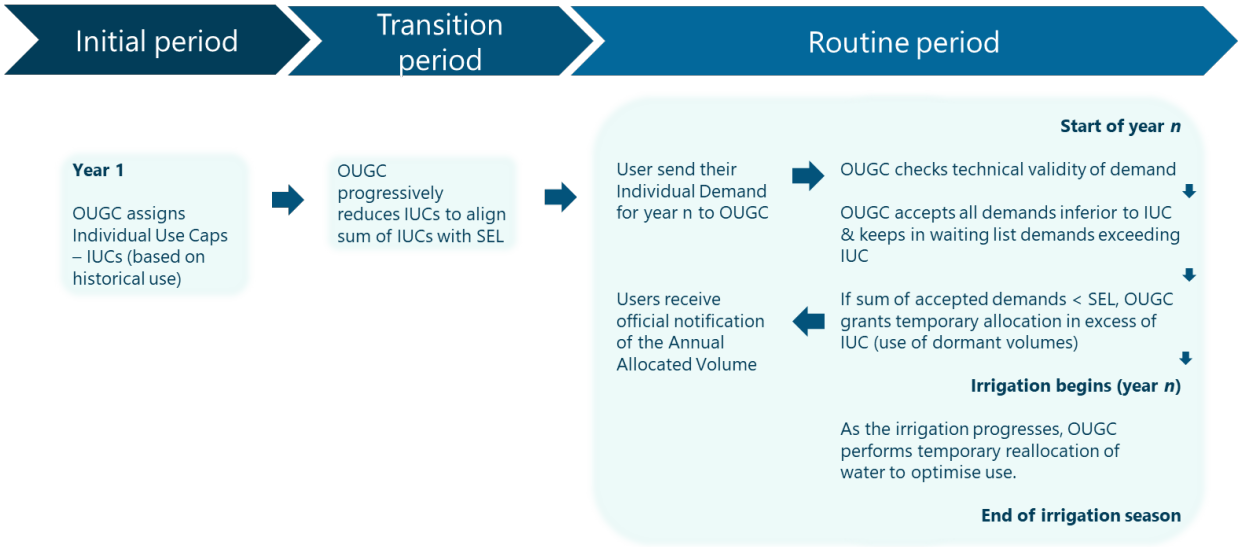

Figure 5. Main steps for allocation water within the OUGC (modified from Rouillard and Rinaudo, 2020)

Effectiveness of the practice

The OUGC model in France represents a meaningful step forward in the governance of agricultural water abstraction, aligning with the objectives set out in the 2006 Water Law. Despite delays and resistance from parts of the farming community, many of whom felt the reform was imposed rather than co-designed (Figureau et al., 2012), the institutional landscape has changed significantly over the past decade. The **implementation of 54 functioning OUGCs** now reflects a broad appropriation of the reform by irrigators. Over time, what began as a top-down regulatory shift has evolved into a more locally embedded process (Figureau et al., 2012; Cinotti et al., 2020; Rouillard and Rinaudo, 2020; Guerin, 2023). The freedom granted by law has enabled the emergence of a rich diversity of

institutional arrangements, reflecting variations in local hydrology, agricultural systems, and social norms (Rouillard and Rinaudo, 2020).

The OUGC model has enhanced environmental oversight of agricultural water use by translating basin-level SELs into enforceable individual caps managed by local user groups. This model supports more tailored allocation rules that reflect local hydrological conditions. It has also strengthened the role of national authorities in setting environmental boundaries, while allowing OUGCs to monitor, allocate, and coordinate water use at the appropriate hydrologic scale.

One of the most notable achievements has been the improvement in data quality and monitoring. OUGCs have built comprehensive inventories of extraction points, promoted regular metering, and introduced digital tools to collect and report seasonal and even weekly usage data (Cinotti et al., 2020; Rouillard and Rinaudo, 2020; Guerin, 2023). This detailed understanding has enabled OUGCs to relocate ecologically harmful extraction points, in sensitive areas, and coordinate withdrawals to reduce peak-season pressure on aquatic ecosystems (Guerin, 2023). Some have even implemented real-time reallocation mechanisms to optimise water use and prevent regulatory breaches during dry periods (Loubier and Polge, 2016; Rouillard and Rinaudo, 2020).

Despite these advances, environmental **goals and targets** are not reached. In some basins, SELs were overestimated due to political pressures or scientific uncertainty, limiting the effectiveness of the entire system (Cinotti et al., 2020; Rouillard and Rinaudo, 2020; Guerin, 2023). In other areas, irrigators negotiated delays in meeting SELs on the assumption that substitution infrastructures (e.g. reservoirs or transfers) would be built. However, many of these projects face delays due to financing issues and public opposition, allowing unsustainable abstraction to continue (Cour des Comptes, 2023; Guerin, 2023).

Only few OUGCs have use the full range of opportunities offered by this new self-governance model. For instance, only few have developed allocation rules to apply during droughts, as a pro-active approach to anticipate emergency drought orders and state-imposed temporary restrictions. Furthermore, the OUGC have pushed to compensate the reduction in volumetric allowances through the building of water storage schemes, instead of promoting a more fundamental change in irrigation practices.

Finally, the enforcement of rules remains a weak point. While OUGCs play a central role in planning and monitoring, most are reluctant to sanction non-compliant users due to legal ambiguity and internal resistance (Cinotti et al., 2020; Rouillard and Rinaudo, 2020; Guerin, 2023). As a result, national authorities must retain a strong compliance role, acting as a credible authority when collective management falls short (Rouillard et al., 2021). For the system to reach its full potential, clearer legal backing for user-enforced sanctions and greater institutional support will be essential (Loubier and Polge, 2016; Cinotti et al., 2020).

Efficiency of the practice

The implementation of OUGCs has introduced several mechanisms that have contributed to more efficient water governance, primarily by reducing the administrative and transaction costs for both national authorities and water users (Rouillard and Rinaudo, 2020). By consolidating individual permits into a single collective allocation managed by each OUGC, the reform significantly streamlined oversight responsibilities. Rather than monitoring thousands of individual abstraction points, national authorities now interact with a limited number of collective entities, which are responsible for preparing annual allocation plans, gathering metering data, and ensuring internal coordination. The involvement of existing agricultural institutions, especially Chambers of Agriculture, as hosts for many OUGCs further reduced the costs of establishing new administrative structures, **leveraging pre-existing networks, staff, and technical infrastructure**. Metering and digital reporting systems (Therond, 2014)

also enabled data-driven decision-making while improving transparency and accountability at relatively low cost.

For irrigators, allocation between irrigators became more flexible, requiring OUGC approval instead of approval from national authorities. Flexible allocation rules were set that responded to seasonal or hydrological conditions, allowing more efficient use of available water without requiring constant intervention from authorities.

However, the reform also faces limitations. Many OUGCs rely on negotiated, consensus-based processes that can be slow and resource-intensive, particularly in large or politically diverse areas. Additionally, its reliance on administrative rules for reallocating water may limit the speed and precision with which water can shift to its most productive uses. Furthermore, sanctions provided for in cases of exceedance or non-compliance with the rules are very rarely applied by OUGC, due to internal reluctance, legal uncertainty, and fear of conflicts among irrigators. As user associations, OUGC often lack both the willingness and the clear legal mandate to enforce sanctions effectively. Compared with similar collective water user organizations abroad such as in Spain, the French OUGCs appear to be missing stronger regulatory authority, including sanctioning capacity (Loubier and Polge, 2016; Rouillard and Rinaudo, 2020; Guerin, 2023). Alternatively, national authorities should be more pro-active in sanctioning and enforcement (Cinotti et al., 2020; Guerin, 2023). Finally, data is often dispersed, non-harmonised, which makes it difficult to obtain a clear overview of progress at national level (Cinotti et al., 2020).

Inclusivity and reflexivity of the practice

The creation of OUGCs has contributed to a more **transparent and coordinated approach** to water allocation. By consolidating individual permits into a single collective licence and making the OUGC the official point of contact, the reform has facilitated stronger monitoring, better reporting, and greater accountability (Cinotti et al., 2020; Rouillard and Rinaudo, 2020; Guerin, 2023). Perhaps more importantly, it has begun to foster a shift in mentality among water users (Cinotti et al., 2020). The language of “reference volumes” rather than “entitlements” is reflective of a collective understanding of resource stewardship (Guerin, 2023). This institutional interdependence, where irrigators are bound together by a shared permit and common rules, provides the foundation for more effective self-regulation and peer accountability.

The OUGC system in France demonstrates inclusive features that aim to ensure **fairness and representation** in the governance of irrigation water. By law, allocation rules must be transparent and equitable (Lafitte et al., 2008), and some OUGCs have gone further by establishing consultative committees that give voice to non-agricultural stakeholders, such as environmental NGOs and local authorities, particularly in ecologically sensitive areas (Rouillard and Rinaudo, 2020). Some OUGCs are managed not by farmers alone but by joint boards or public agencies, a deliberate choice to enhance broader social legitimacy and facilitate a more equitable and neutral governance of allocation decisions.

Additionally, allocation criteria in some OUGCs explicitly prioritise small-scale and young farmers, or projects with social and environmental co-benefits, such as those promoting employment or reducing water quality impacts (Loubier and Polge, 2016; Rouillard and Rinaudo, 2020).

However, important limitations remain. Despite the formal role of national authorities as guardian of the public interest, power asymmetries persist within OUGCs, and there is an ongoing risk of procedural capture by dominant farming interests (Rouillard and Rinaudo, 2020). In such cases, rules may favour established irrigators at the expense of new irrigators (Cinotti et al., 2020), limit reallocation flexibility, or create barriers for new entrants. These dynamics can undermine both

fairness and efficiency, suggesting a need for stronger internal checks and balances, clearer enforcement powers, and safeguards to prevent rent-seeking behaviour within collective governance.

Replicability and generalizability of the practice

The French experience with OUGCs offers valuable insights for other European countries aiming to strengthen the implementation of the Water Framework Directive, particularly in agricultural catchments where sustainable water use remains elusive. The OUGC model demonstrates how a shared governance arrangement, combining clear state oversight with strong user responsibility, can translate basin-wide SELs into workable and locally adapted rules. In doing so, it addresses a common limitation of "cap and allocate" systems, namely, the difficulty of enforcing individual abstraction limits at scale. France's success in devolving allocation responsibilities to user groups while retaining control of national authorities over overall abstraction volumes and legal compliance could inspire reforms in Member States where centralised systems have struggled with enforcement and social acceptance.

However, replicability across Europe will depend on several enabling conditions. First, adaptations to national legal and institutional frameworks may be needed to allow for collective permitting and user-led allocation planning, as these are not widely embedded in most current water laws. Second, strong political will is essential: France's reform was underpinned by a clear national commitment to volumetric management and significant investments in hydrological studies, which laid the foundation for credible SELs. Third, data availability, including historical abstraction volumes and hydrological modelling, is critical to define fair and defensible user caps. Fourth, meaningful stakeholder engagement is needed to foster local ownership, particularly where collective governance may challenge entrenched perceptions over water entitlements. Finally, implementing such a model requires financial and technical capacity, both for setting up user organisations and for maintaining transparent monitoring and allocation systems.

Overall, the OUGC model has laid the groundwork for more sustainable and inclusive water governance by establishing a framework that encourages user responsibility, legal clarity, and local adaptation. The challenge ahead lies in consolidating these gains and continuing to build trust and capacity among both users and public authorities. There is scope for further improvement of the model by strengthening the legal mandate of OUGCs to apply sanctions, enhancing safeguards against power imbalances and rent-seeking within their internal governance, increasing transparency of OUGC allocation decisions towards external actors, and mainstreaming the use of digital metering and reporting systems to improve oversight and reduce administrative burden. Further research may be carried out on OUGC performance by assessing long-term environmental, economic and social impacts, comparing alternative allocation rule designs, and analysing strategies for increased compliance.

Technical details

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Related websites:

https://www.eaufrance.fr/glossaire/organisme-unique-de-gestion-collective

Related resources

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3.4 Quantitative water management plans (France)

General description

France is increasingly confronted with growing pressures on water resources as climate change intensifies, bringing hotter summers, more frequent droughts, and heightened competition among water uses. In response, the French government introduced the projets de territoire pour la gestion de l'eau (PTGE) as a comprehensive framework to address structural water deficits, support long-term adaptation, and ensure a better balance between water availability and water needs at the territorial scale.

PTGEs are built around a shared diagnostic of water resources and pressures, followed by a participatory exploration of scenarios and an agreed, multi-annual action plan. This design encourages catchment territories to tailor measures, ranging from demand management and nature-based solutions to reuse or storage projects, to local hydrological realities and socio-economic priorities. At the same time, key elements of the PTGE framework, including governance arrangements, diagnostics, and action plans, are validated by national authorities to ensure consistency with WFD objectives. This combination of local co-construction and national oversight seeks to improve transparency, strengthen shared knowledge, and promote more coherent territorial strategies.

PTGEs primarily target territories where structural water deficits already exist or are expected under climate change. The approach should involve a broad community of actors: river basin authorities, regional water managers, local authorities, irrigators, drinking water operators, industries, environmental NGOs, citizen groups, and national authorities. Depending on the territory, PTGEs may be built on existing governance structures, such as catchment management committees, or may establish new inclusive bodies. This multi-actor engagement aims to reinforce legitimacy and encourage dialogue across sectors, so as to better align environmental, economic and social priorities.

The French experience illustrates how a territorial, participatory, and forward-looking planning model can complement existing WFD instruments in stressed basins. The PTGE approach has the potential to offer a pathway for anticipating scarcity and aligning water uses with long-term ecological and climatic constraints.

Figure 6. Sharing water, France @Josselin Rouillard.

Methodology

The good practice is based on an analysis of 1) regulations and guidance regarding the establishment of PTGE, 2) governmental and academic reports assessing the state of implementation, and 3) attendance and exchanges with facilitators of PTGE during a workshop held in October 2025. The workshop focuses on the results of a national survey on the experience and training needs of facilitators responsible for the development and implementation of PTGE. The workshop provided rich material on current progress, strength and weaknesses of the PTGE instrument. Notes were taken during the workshop and evidence was used from presentations and recordings of the event.

Initiator

- French government
- Catchment organisations

Category

- Regulatory/legal
- Collaborative approach

Water issues

- Water quantity

Geographical applicability of the documented practice

- National

Level of water governance

- Catchment

Stakeholders

- Public authorities
    - Ministry of Environment, through their services at departement level
    - Municipalities. regrouped as catchment authorities
    - River basin authorities
- Sectors
    - Chamber of Agriculture
    - Irrigation districts and associations
    - Industry
    - Drinking water utilities
    - Energy
    - Nature conservation
- Citizens
    - Citizen organisations
    - Local communities

Context

Background

In France, the accelerating impacts of climate change, including hotter summers, more frequent droughts and declining water resources, have brought water scarcity to the forefront of public debate. Confronted with recurrent crises, the French government has promoted a new political agenda (RF, 2023c) and a new generation of planning instruments that aim to balance water use and water availability. Among these instruments, the projets de territoire pour la gestion de l'eau (PTGE) have emerged as an important framework to organise collective responses to structural water deficits.

The PTGE is established under the ministerial instruction of 7 May 2019 (RF, 2019), later updated by an addendum in 2023 (RF, 2023a). However, the PTGE draws from a range of older experiences by French water agencies over the 2000s and 2010s which aim to address structure water imbalances

through a mix of water efficiency measures, water saving incentives, and water storage investments. The PTGE is defined as:

> *A PTGE is an approach based on a comprehensive and co-constructed approach to water resources within a coherent scope from a hydrological or hydrogeological perspective. It results in a commitment from all users in a territory (drinking water, agriculture, industry, navigation, energy, fishing, recreational uses, etc.) to achieve, over time, a balance between needs and available resources while respecting the proper functionality of aquatic environments, anticipating climate change, and adapting to it. The aim is to mobilize solutions at the territorial level that prioritize synergies between socioeconomic benefits and positive environmental externalities, with a view to sustainable development of the territory. The PTGE must integrate the issue of preserving water quality (reducing diffuse and point-source pollution) (RF, 2019).*

The PTGE operates within the broader legal framework of the Water Framework Directive (WFD), in particular the implementation of the RBMP, i.e. Schéma Directeur d'Aménagement et de Gestion des Eaux (SDAGE) and catchment management plans, i.e. Schéma d'Aménagement et de Gestion des Eaux (SAGE). Among its key objectives are to preserve the good ecological status of freshwater ecosystems while increasing social and economic resilience, promoting water use efficiency and water savings ("sobriété"), and supporting local transitions capable of withstanding future conditions under climate change. It is aligned with France's Plan national d'adaptation au changement climatique (PNACC-2) and the Plan Eau 2023/2025 on water resilience and sobriety.

The PTGE is essentially an operational and participatory approach that fits within the planning framework set by the SDAGE and, where applicable, the SAGE. While the SDAGE defines strategic objectives at river-basin level and the SAGE translates them into local rules and targets, the PTGE focuses on implementing concrete actions to address water-quantity issues (considering water quality and ecology issues) at territorial scale. It complements the SAGE by facilitating stakeholder dialogue and negotiated solutions, particularly in contexts of water scarcity and competing uses.

The instrument is primarily targeted at 'territorial' actors such as regional water managers, local authorities, water user associations, farmers, industrial actors, and civil society. In essence, PTGEs aim to serve as a platform for negotiation, integration, and action to reconcile water uses, notably irrigation, domestic consumption, ecosystem preservation, and economic activities, with resource availability over the long term. The approach seeks to move beyond ad-hoc crisis management and create a culture of anticipation, adaptability, and transparency. The PTGE encourages concerted planning, shared diagnostics, collective analysis of scenarios of future change, and multi-stakeholder decision-making.

Design and implementation arrangements

A PTGE is built around a phased, participatory process that should unfold over two to three years, and up to four-five years if studies are complex (RF, 2023b). PTGE guidance highlights four design and implementation phases (Figure 8, RF, 2023b), as described below.

Figure 7 Design and implementation phases of PTGE (RF, 2023b, page 7 [own translation])

Phase 1: The emergence phase

PTGE are usually developed in catchments already facing scarcity issues, where available renewable water resources are insufficient to meet ecological requirements and existing abstraction. The state representative at the local level (i.e. the Prefect) plays a decisive role in initiating the planning process by validating the governance framework for the PTGE (RF, 2019). A legal entity, usually already engaged in water management, is tasked with coordinating efforts. It is piloted by a steering committee, that should bring together representatives from all water uses: agriculture, drinking water, industry, energy, navigation, tourism, associations, and environmental NGOs (RF, 2023b). The process is explicitly designed to include both economic and non-economic actors. Where a catchment

management plan (SAGE) already exists, its stakeholder committee (i.e. Commission Locale de l'Eau – CLE) is extended to serve as the PTGE governance body. The COPIL defines a roadmap, validated by the Prefect, that sets objectives, milestones, governance rules, and a realistic timetable.

Phase 2: The diagnostic phase

The diagnostic phase is the foundation of the PTGE. It requires assembling knowledge of the resource and the pressures exerted upon it. Data are drawn from existing planning processes (e.g. RBMP, catchment management plans, national monitoring systems, agricultural surveys, and local inventories). Key elements include: 1) an assessment of available water resources (surface water, aquifers, and their ecological needs such as ecological flows and groundwater levels to sustain groundwater dependent ecosystems and linked surface waters); 2) Sustainable Extraction Limits (SELs), differentiated between low-flow and high-flow periods and between sectors; 3) existing abstraction (drinking water, agriculture, industry, energy), and 4) prospective factors (e.g. up to 2050), such as demographic trends, socio-economic change, and climate projections) (RF, 2023b).

The diagnostic must be shared and appropriated by all stakeholders. This transparency is essential to try to minimise disputes later in the process (RF, 2023b).

Phase 3: The co-construction phase

The PTGE must propose alternative scenarios and trajectories to restore equilibrium between resource availability and demand. At least one "no-project" scenario is required: it projects the situation if no adaptation measures are taken, serving as a baseline for comparison (RF, 2019; 2023b). Other scenarios may combine different levers:

- Demand management: water savings, reduction of leaks, quotas, more efficient irrigation, changes in cropping patterns.
- Nature-based solutions: wetland restoration, soil management, landscape structures to enhance natural water storage.
- Non-conventional resources: reuse of treated wastewater, desalination in coastal areas.
- Storage projects: instream and off-stream reservoirs, or "substitution" basins, filled in high-flow periods to avoid summer withdrawals.

Each scenario is subject to economic and financial analysis. Cost–benefit assessments should consider not only direct investment and operating costs but also indirect effects on ecosystems, local economies, and social dynamics. The Ministry of Ecology has provided methodological guides to support economic and financial analyses (Loubier et al., 2019). Importantly, PTGE scenarios should be evaluated during workshops, ensuring that trade-offs are openly debated (RF, 2023b).

The PTGE takes the form of a contractual, multi-annual action plan, whereby each stakeholder commits to implement and fund a series of coordinated actions (RF, 2019). The PTGE therefore has defined funding sources and implementation responsibilities. Actions typically combine obligatory measures (e.g. reducing leaks in potable water networks, mandatory quotas for irrigation, compliance with ecological flow standards) together with voluntary actions (e.g. adoption of agroecological practices, diversification of crops, investments in efficient equipment) and structural (investment) projects: storage infrastructure, transfer schemes, collective irrigation networks, often with public co-funding (RF, 2023a; 2023b).

Funding comes from a mix of national and EU sources, including Agences de l'eau, territorial public bodies (e.g. regions, *departement*s) and FEADER (EU rural fund). For agricultural reservoirs, subsidies are restricted to substitution storage (high-flow abstractions replacing summer abstractions). Projects are evaluated to ensure coherence with the RBMP and catchment management plans.

Phase 4: The implementation phase

Implementation involves adoption of relevant regulatory measures (e.g. planning rules, etc.) and contractualization of actions. PTGE include an internal evaluation and monitoring framework with indicators on e.g. water abstraction, ecological status and progress of obligatory and voluntary actions. Plans are updated periodically, ideally in alignment with the six-year cycle of the WFD river basin management plans.

Progress to date on initiating and implementing PTGEs

Effectiveness of the practice

As of 2025, **more than 137 PTGEs (**Error! Reference source not found.**) have been implemented** or are under development across France, particularly in Southern France, the Rhône valley, and parts of Western France.

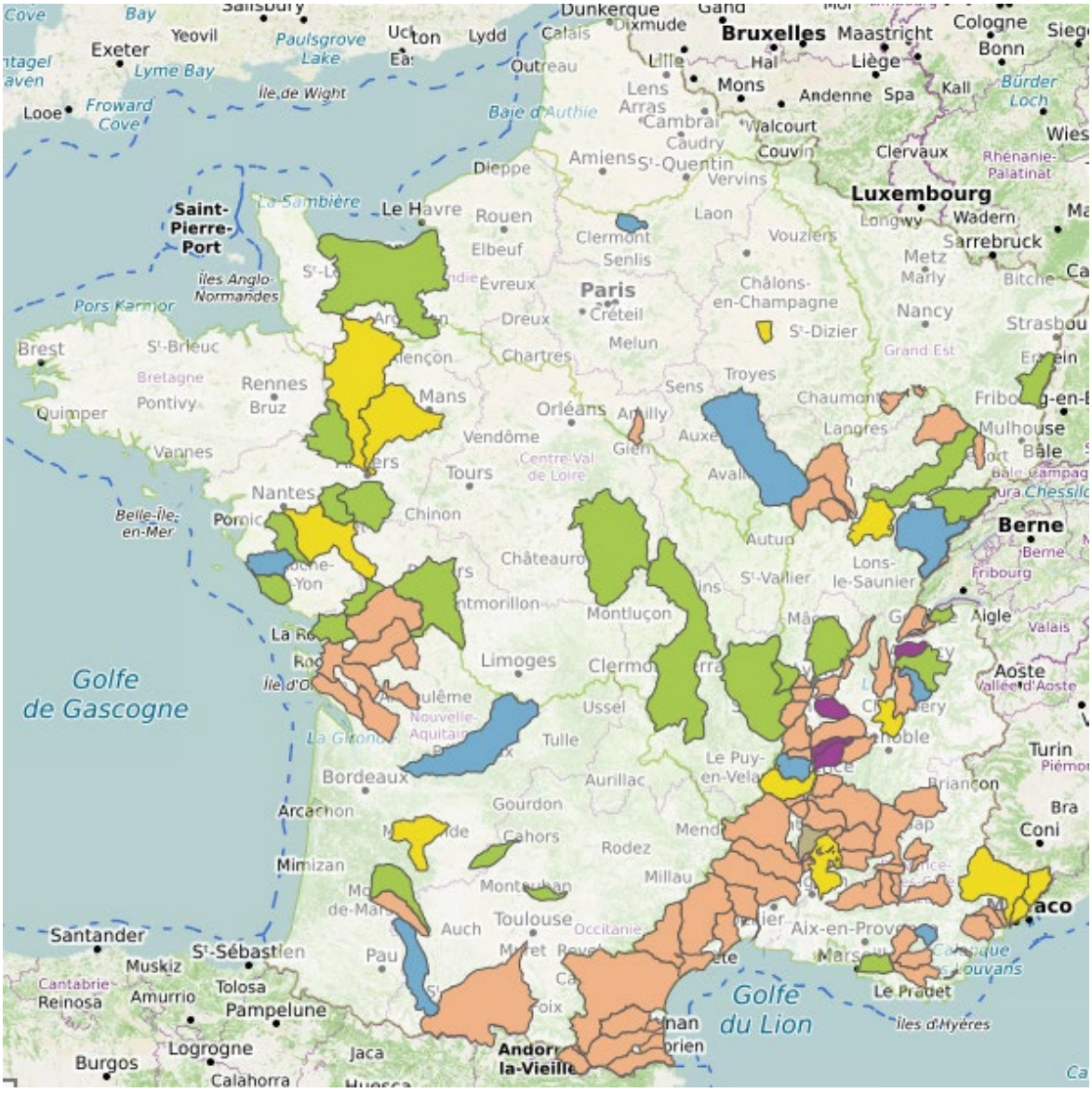

Figure 8. Map of PTGEs (Source: GESTEAU, 2025a). In yellow: emerging; in green: diagnostic phase; in blue: ongoing design of action programme; in orange: in implementation phase; violet: revision stage.

The PTGE **explicitly aim to balance structural water availability and demand**, in order to reduce water scarcity and reduce the vulnerability of territories to droughts. The PTGE diagnostic phase is deliberately multi-dimensional, combining environmental, social, and economic perspectives (RF, 2023b). It integrates hydrological and ecological assessments, accounts for agricultural, industrial, and domestic needs, and incorporates social drivers such as demography and tourism. This holistic approach allows stakeholders to jointly confront the interdependencies between human uses and ecological requirements, thereby creating a more comprehensive and realistic basis for decision-making.

The process of developing PTGE has led in most cases to more robust and detailed hydrological and socio-economic assessments (e.g. on water balances, ecological flows), supported the sharing of data and generally strengthened knowledge of local water availability and use (RF, 2023b). An important aspect has been the more systematic use of foresight to anticipate future risks over a 20–30-year horizon (result of the workshop, October 2025).

A key strength of PTGEs thus lies in their ability to consolidate knowledge and **strengthen the capacities of local actors to self-organise and oversee water quantity management**. By integrating datasets from water agencies, local authorities, and agricultural organisations, and organising new surveys, such as more exhaustive inventories of small reservoirs, the PTGE increases transparency and provides clearer insight into actual abstraction levels, crop water needs, network losses, and seasonal pressures. These efforts strengthen trust and legitimacy by grounding discussions in shared evidence.

Despite these strengths, the PTGE's effectiveness in shifting water use remains mixed and uncertain (Fallon et al., 2022). Progress toward restoring balance between water availability and use has been slow and inconsistent (Fallon et al., 2022). PTGEs can stall at the diagnostic and scenario phases, with limited success to secure consensus on long-term trajectories or reconcile deeply held differences in territorial visions. In several territories, stakeholders struggle to work with the significant uncertainties inherent in climate, hydrology, and future socio-economic trends. Methodologically, PTGEs often lack reliable baseline data, sufficient foresight analysis, and robust economic assessments (Fallon et al., 2022; Cour des comptes, 2023). At the same time, some actors find it difficult to understand or anticipate future challenges, particularly when information is highly technical (Workshop, October 2025).

Furthermore, the PTGE is non-binding and lacks regulatory power to enforce behavioural change. Consequently, key transformations, such as a reduction in abstraction for irrigation purposes, leakage control, or industrial reuse, depend on voluntary action or financial incentives. Deeply rooted practices and entrenched interests can slow progress, while unresolved conflicts around infrastructure schemes can paralyse discussions. Monitoring of water savings and ecological outcomes is incomplete, limiting the evaluation of PTGE performance (Fallon et al., 2022; Cour des Comptes, 2023).

Efficiency of the practice

Scenarios developed within a PTGE must be assessed not only for its technical feasibility but also for their **costs, benefits, and long-term financial sustainability** (Loubier et al., 2019). This requirement marks a shift from past approaches that often privileged engineering solutions without systematically weighing their efficiency or broader impacts. In practice, this should lead to more rational investment choices. For example, instead of defaulting to new storage projects, measures such as reducing leakage in drinking water networks or improving irrigation efficiency may be prioritised (RF, 2023b). As part of the PTGE implementation, **analytical tools and guidance were made available** to support the socio-economic assessments of alternative management scenarios.

However, evaluations underline that the economic analyses underpinning many projects are often incomplete (Fallon et al., 2022). They may focus for instance on short-term cost estimates that fail to

incorporate the expenses of long-term maintenance, or the risks posed by climate change to infrastructure performance. As a result, the financial credibility of certain scenarios is limited, and their resilience over decades remains uncertain.

The Cour des comptes (2023) has further highlighted how subsidy structures, particularly those directed toward agricultural water storage, can distort incentives. When public funding covers 70–80% of construction costs, projects that might be inefficient or maladaptive in the long run can still proceed, effectively locking territories into technological paths that may not withstand future hydrological conditions. These risks undermining both environmental goals and fiscal responsibility.

Finally, the PTGE themselves carry **high transaction costs** (Fallon et al., 2022; Cour des Comptes, 2023). The process of developing the PTGE can stretch over years, mobilising significant public resources. In addition, high turnover among technical teams and facilitators further undermines continuity and institutional memory, making sustained progress more difficult. Yet the returns on this investment are not guaranteed: in cases where action plans are contested or only partially implemented, the effort may yield limited outcomes compared to the resources expended.

Inclusivity and reflexivity of the practice

The PTGE allows to **structure and institutionalize more inclusive dialogue over the management of water scarcity** at the territorial level (Fallon et al., 2022). PTGEs bring together a wide range of stakeholders, so that decisions are debated within a shared arena. Recent PTGEs have tested innovative participatory methods, including citizens' panels, independent facilitators, and value-based "audit patrimonial" approaches that help clarify what different actors care about in water management (Fallon et al., 2022). PTGE can thus create **new spaces for mediation, reflexivity and dialogue** where none previously existed. These initiatives have helped reopen dialogue in polarised contexts and enhanced the social legitimacy of collective planning.

Despite this inclusive ambition, several constraints have limited effective participation. Stakeholders do not enter the process on an equal footing: differences in capacity, expertise, and influence shape whose voices carry weight. Agricultural groups or dominant economic actors, for instance, may have greater representation or resources to engage consistently, while small municipalities, environmental associations, or citizens may lack the capacity to fully participate or influence outcomes. The highly technical nature of PTGEs can marginalise less specialised actors. The process can also place heavy demands on participants, with stakeholders often expressing fatigue due to frequent meetings and the time required to sustain engagement (Workshop, October 2025). **This over-solicitation can lead to weakening participation and narrowing representation over time**.

In addition, plans have been contested (Fallon et al., 2022; Cour des comptes, 2023). In the Charente basin, revised water allocations provoked strong opposition from irrigators; in Sainte-Soline, mediation failed to prevent escalating conflict over large storage reservoirs ("méga-bassines"). Political cycles, local tensions, and emotionally charged debates can strongly affect the PTGE process (Workshop, October 2025).

Replicability and generalizability of the practice

The replicability of the PTGE model in other national or regional contexts depends on the presence of several **enabling pre-conditions** that are deeply embedded in the French institutional and policy landscape. First, France benefits from a robust regulatory framework for water management, grounded in the EU Water Framework Directive and implemented through SDAGEs and SAGEs, which provide a clear legal and planning backbone that supports integrated territorial water governance. Second, the PTGE has been made possible by strong political commitment at national and local levels. Third, its success relies on solid hydrological data, modelling tools, and climate projections, made

available through national agencies, which underpin evidence-based diagnostics and scenario planning.

Replicating the PTGE approach would require **equivalent institutional capacity** for stakeholder engagement, including for deliberation and conflict mediation. Lastly, the **availability of dedicated financial resources and technical support**, mostly provided in France by Agences de l'eau, has been critical to operationalizing the PTGE. Overall, these enabling conditions are not unique to France, as most other EU Member States have plans and strategies to manage water scarcity and drought risks. For instance, Spain has long established their Drought Management Plans (Planes Especiales de Sequía) and Portugal Drought & Scarcity Management Plans (*Planos de Gestão de Seca e Escassez*). These initiatives are nevertheless focused on drought planning or do not focus on the very local planning and implementation.

Overall, the PTGE's main strength lies in its ability to structure and institutionalise joint assessment and dialogue among diverse water users. These processes provide a structured approach to debate decisions on how to meet SELs and prioritising actions. At the same time, the PTGE process may benefit from mechanisms that actively empower underrepresented groups, foster a more balanced negotiation dynamic, and introduce the issues in more exploratory, pedagogical work before more technical, quantitative modelling and indicator-based evaluation are applied (Workshop, October 2025). Further work may be carried out to deepen empirical and action research on PTGE participatory and mediation processes and supporting instruments. Further attention can also be given to assess outcomes, particularly the effectiveness of PTGE in implementing nature-based solutions, supporting reallocation of water use rights, and driving behavioural change over the use of water resources.

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Related websites:

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3.5 The Corporate Duty of Vigilance Law and the role of courts in advancing value chain water governance (France)

General description

The French Corporate Duty of Vigilance Law (*Law number 2017-399 of March 27th, 2017 on the duty of vigilance for parent and instructing companies*[13]*; "Loi [sur le devoir] de vigilance"*) is often described as a landmark law in obligating large companies to carry our human rights and environmental due diligence and publish the results of the due diligence (see, e.g., European Commission, 2020; Eller, 2025). The law introduced new obligations in the French Commercial Code (Code de Commerce); more specifically, it inserted new articles (L.225-102-4 and L.225-102-5) in the Commercial Code, requiring that companies falling within the scope of the regulation establish and effectively implement a vigilance plan to the activities of the company and all the subsidiaries or companies it controls, under threat that breach of the obligations can establish liability for damages.

The law applies to enterprises headquartered on French territory, which fulfil the criterion of employing at least five thousand employees within the company and its direct and indirect subsidiaries, alternatively ten thousand employees in its service or its direct or indirect subsidiaries, for two consecutive financial years. These companies are obliged to publish and implement a vigilance plan, which shall include reasonable vigilance measures to adequately identify risks and prevent severe violations of human rights and fundamental freedoms, serious bodily injury or environmental damage or health risks, resulting from the activities of the company and of those companies it controls, directly or indirectly, as well as the activities of subcontractors or suppliers with whom they have an established commercial relationship[14], where these activities are linked to this relationship.

The vigilance plan should be drawn up in association with the company's stakeholders, where appropriate as part of multi-stakeholder initiatives that exist in the subsidiaries or at territorial level. The plan should include the following measures:

1. A risk mapping designed to identify, analyse and prioritise risks,
2. Procedures for regularly assessing the situation of subsidiaries, or subcontractors or suppliers with whom there is an established commercial relationship, with regard to the risk mapping,
3. Appropriate actions to mitigate risks or prevent serious harm,
4. A mechanism for alerting and collecting reports relating to the existence or occurrence of risks, established in consultation with the representative trade union organisations in the company; and,
5. A system for monitoring the implemented measures and for evaluating their effectiveness.

When it comes to enforcement and access to justice, the law establishes a mechanism by which anyone with a legitimate interest can serve a formal notice to a company that defaults on its obligations. If the company does not comply within three months of the formal notice, the competent

[13] In French, *LOI no 2017-399 du 27 mars 2017 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre*, published in Journal Official de la République Française n° 0074 from March 28, 2017, text n° 1.

[14] Sandra Cossart et al. describe *established commercial relationship* under French law as follows: "a stable, regular commercial relationship, taking place with or without a contract, with a certain volume of business, and under a reasonable expectation that the relationship will last." (Cossart, Chaplier and Lomenie, 2017, p. 320).

court may, at the request of any person with a legitimate interest to act, order the company to respect their obligations, where applicable subject to periodic penalty payments. In addition, the law stipulates that companies who fail to comply with these duties can be liable to compensate injured parties for harm caused, if such harm could have been avoided had the obligations been fulfilled.

Since the adoption of the Law, the formal notices and court filings – often submitted by NGOs – is slowly increasing. Thus, this case study also sheds light on the role of courts in advancing sustainable and equitable water use in company value chains.

Methodology

The analysis of the best practice case relies on primary legal sources (i.e. French legislation, French court cases) and secondary sources, including legal literature and other material (news, opinions and reports published by, e.g., NGOs and law firms). To identify relevant legal cases and material related to them (e.g., news, expert opinions) for the assessment against the good practice criteria, a number of collections of legal cases have been used: the Business & Human Rights Resources Centre (Business & Human Rights Resource Centre, 2025), the Climate Court Litigation Tracker (Climate Court, 2025), the Duty of Vigilance radar (Sherpa, Terre Solidaire, and Business & Human Rights Resource Centre, no date), and the French Duty of Vigilance Litigation tracker by Simmons & Simmons LLP (Simmons & Simmons LLP, 2025). The analysis focused on examining how water-related issues are addressed in the Duty of Vigilance law and how French courts have interpreted and applied the Duty of Vigilance Law in cases involving water-related rights and harms.

Table 4 provides and overview of the court cases under the French Duty of Vigilance law that were found to involve water-related issues.

Table 4 Overview of court cases under the French Duty of Vigilance Law relating to water

Case (and abbreviation)	Current status	Date of decision, court and decision number / Date of submission to court	Circumstances and issues
BLOOM & Foodwatch v. Carrefour (*Carrefour*)	Pending	Legal proceedings initiated in March 2025	Sourcing tuna from fishing methods that are environmentally harmful (including marine pollution)
ClientEarth, Surfrider Foundation Europe, and Zero Waste France v. Danone (*Danone*)	Agreement reached in mediation procedure	Agreement reached in February 2025	The use of plastic packaging poses risk of pollution to water
Observatorio Ciudadano & Others v. Suez (*Suez*)	Inadmissible for procedural reasons	18 June 2024, Cour d'appel de Paris, RG n° 23/10583	Citizens deprived of water due to contamination of drinking-water, allegedly caused by malfunction at a treatment plant operated by subsidiary of Suez
Friends of the Earth and others v. Total (*Total Uganda*)	Inadmissible for procedural reasons	28 February 2023, Tribunal Judiciaire de Paris, RG n° 22/53942 and RG n° 22/53943	Failure to take into account social and environmental impacts of oil project located on the shores of lake Albert and risks of water contamination related to the East African Crude Oil Pipeline

Initiator

- French government

Category

- Regulatory

Water issues

- Water quality
- Ecosystems
- Safe access to water supply and sanitation

Geographical applicability of the documented practice

- National (France) (and international (all jurisdictions where the companies to whom the legislation applies operate))

Level of water governance

- National
- Value chains

Stakeholders

- Public authorities
    - National ministries
    - Courts
- Industry
    - Companies
- Citizens
    - NGOs
    - local communities
- Academia
    - research institutions

Context

The Duty of Vigilance Law has been used to challenge corporations in several legal cases. Some of the first to be submitted to court are still pending, while other court decisions have so far only dealt with procedural matters, not the merits of the case. It must be noted here that the Duty of Vigilance Law does not make an explicit reference to water-related issue. That said, some of the cases that have been decided or are pending in court include water-related issues, such as the right to water, pollution of water or the impact of corporate activities on water and livelihood of populations. Table 4 provides an overview of water-related court cases and their outcomes (where applicable). Notably, there are also cases that only indirectly relate to water, e.g., CO2 emissions that contribute to climate change (which can affect water cycles and water quality) or deforestation (with its potential effects on, e.g., watersheds), but these cases are not further examined in this report.

In the *Total Uganda* case, the multinational oil company Total was given formal notice for failing to fulfil its vigilance obligations to prevent human rights abuses and environmental damage in the context of the Tilenga oil project in Uganda, located at the shores of Lake Albert, and the East African Crude Oil Pipeline (EACOP), that would pose a risk of pollution of water along its route. After some initial confusion about the competence of the court (civil or commercial court), and further

declarations of incompetence after the enactment of Law 2021-1729 of December 22,2021 (which granted Tribunal Judiciaire de Paris the exclusive jurisdiction concerning actions under the Duty of Vigilance Law), the case was declared inadmissible on 28 February 2023, due to substantially different accounts from what was presented in the formal notice to Total in 2019.

The *Suez* dispute originated in an alleged operational failure event (oil spill) at the Essal water treatment plant in Osorno, Chile on 10 July 2019, which contaminated the water intake at one location where the Essal company operated a drinking water treatment plant. Also, the supply networks and waterways of the municipality of another location were contaminated. The event caused a disruption in residents' access to drinking water, lasting 10 days. The Essal company was, at the time of the event, through several tiers of ownership part of the SAS Suez Groupe (later (after July 28, 2022) SAS Vigie Groupe), which in turn was a subsidiary of SA Suez (which was acquired by the Veolia group on October 31, 2022, and became SA Vigie until absorption by SA Véolia Environnement)). On the 18 June 2024, the Paris Court of Appeal found the case inadmissible, since the designation of the formal notice, i.e. 'Groupe Suez' was too vague and confusing, considering that the designation was the CEO of SAS Group Suez, while the content of the requests induced a reference to the parent company. Thus, the court found that the formal notice was not designated to any legal entity, and the case inadmissible. Notably, the court established that a subsidiary that meets the threshold conditions can be obliged with the burden of the obligations to publish and implement a vigilance plan in case the parent company fails to do so. In the Suez case however, in the absence of evidence of proof of a plurality of vigilance plans, SA Suez was deemed the author of the 2018 to 2020 versions of the vigilance plan for the group as a whole.

In the *Danone* case, ClientEarth, Surfrider Foundation Europe and Zero Waste France initiated proceedings against Danone in January 2023, after finding the company's response to the formal notice inadequate. The parties reached an agreement in a mediation procedure in February 2025. The agreement included four commitments from Danone, including an update of the various risks related to the use of plastic in its vigilance plan since the use of plastic is likely to generate a salient risk "for water, air, soil, climate, human rights and health" and "sets out in detail all the actions that Danone is implementing in this respect (such as reducing, reusing, recycling, and recovering plastic packaging)". (ClientEarth, 2025; Danone, 2025)

In the *Carrefour* case, formal notices were sent in November 2023 and April 2024 by BLOOM and Foodwatch to Carrefour regarding the company's tuna supply chain. After two years of discussions, the NGOs launched legal proceedings against Carrefour in March 2025, claiming that the company continues to source tuna from fishing methods that are environmentally harmful, including over-exploitation of tuna populations, harming non-targeted marine animals such as sharks and turtles, and considerable plastic and electronic pollution (Bloom Association, 2025; Simmons & Simmons LLP, 2025). Leading up to the filing of the claims, Carrefour had, reportedly, in February 2024 proposed five measures in response to BLOOM's formal notice, namely: updating the Group's risk map; stakeholder consultation; improved transparency on tuna sourcing policy; improving sustainability of supplies according to species; fishing areas and techniques; and changes to the Group's ethics charter – but the NGO was not satisfied with these measures (Peters & Peters, 2025).

Effectiveness of the practice

The French Corporate Duty of Vigilance Law is a pioneer legislation to impose environmental and social due diligence obligations upon corporate actors and improve access to remedy. Despite considered groundbreaking, the Duty of Vigilance Law has received its share of criticism, and there is room for improvement. To start with, the Corporate Duty of Vigilance Law does not explicitly **address a problem or a need related to sustainable and equitable water** use, **nor does it explicitly connect and**

contribute to water-related policy goals and targets. While the reasonable vigilance measures to adequately identify risks and prevent severe violations of human rights and fundamental freedoms, serious bodily injury or environmental damage or health risks can encompass water-related issues, the law does not specify the human rights and environmental aspects it is to protect, nor does it provide references to legal sources where these rights would be specified. There is no explicit reference in the legal text to the EU Water Framework Directive (WFD), the European Green Deal (EGD) or the Sustainable Development Goals (SDGs). The Law is also **not explicitly linked to any scale within basin or water governance systems**. The precise meaning of the legal provisions, therefore, needs to be interpreted by the Court. It can be noted that the legislator has not yet taken steps to further develop or expand the obligations; while the Law enables further measures to be added to the list of measures included in the vigilance plan by a Council of State decree (Art. 1), no such decree has yet been adopted.

In addition to not specifying the rights to be protected by the Law, the **design, implementation** and **enforcement** of the Law have been described as a disappointment. To start with, the broad reference to violations of human rights and fundamental freedoms contributed – together with other vague and ambiguous expressions and terms – to the provision on civil fines in case of non-compliance (originally included in the law text) being ruled non-constitutional by the French Constitutional Council (*Conseil Constitutionnel*) (*Decision no 2017- 750 DC du 23 mars 2017*). This decision has been argued to have led to the law losing some of its teeth (Cossart, Chaplier and Lomenie, 2017, pp. 321–322). Kilimcioğlu systematically assesses the initial case law on the Duty of Vigilance Law and concludes that these first decisions show formalistic and restrictive interpretations at courts, which can potentially undermine the intended impact on enhancing corporate accountability and put the essence of the law at risk (Kilimcioğlu, 2025). As a further point regarding the effectiveness of the Law, claims brought under the Duty of Vigilance Law can only affect the vigilance plan itself, not the underlying project. This was the Paris Court of Appeal conclusion in the *Electricité de France* (EDF) case (*Cour d'appel de Paris, RG n° 21/22319, 18 June 2024*), where the applicants had requested the court to impose an interim injunction on the operation of a wind park. Such requests for interim measures are out of scope of the Law.

When it comes to **defining and following clear roles and responsibilities for different stakeholders,** the law is clear in its scope and the roles that stakeholders can play, i.e. in serving a formal notice to companies, and submit the cases to the court. When it comes to the role of courts, the decisions in the cases submitted to court so far have centred on procedural issues of court competence and admissibility (Kilimcioğlu, 2025; Simmons & Simmons LLP, 2025). On the other hand, the first cases have now settled some of the procedural issues related to the law, e.g., competence of the court and admissibility requirements (Kilimcioğlu, 2025). In late 2021, the Paris Judicial Court was granted exclusive jurisdiction (by Law 2021-1729 of December 22, 2021) to hear actions based on Articles L 225-102-4 and L 225-102-5 of the Commercial Code, thus clarifying the issue of court competence.

Efficiency of the practice

When it comes to the **utilization, sharing and enhancement of adequate water-related data and informatio**n, there is no official database providing information on the companies that are subject to the duty of vigilance, nor containing their vigilance plans. While the law stipulates that anyone with a legitimate interest can submit a formal notice to the company to comply and to submit the case to the court, the lack of centralized gathering and sharing of company information and vigilance plans makes it more challenging to assess whether a certain company 1) is subject to the duty of vigilance, and 2) has fulfilled its obligations. Consequently, a person perceiving that he or she has a legitimate interest to act must first assess whether the law applies to the company and, secondly, find and/or gain access

to the vigilance plan(s). To overcome these obstacles, a number of NGOs have compiled a list of companies – the Duty of vigilance radar project – on the basis of information of several public and financial databases, but the list is not exhaustive (Sherpa, Terre Solidaire, and Business & Human Rights Resource Centre, no date). To conclude, the Law and the resources relating to it do not efficiently share and enhance water-related data and information.

Inclusivity and reflexivity of the practice

In principle, the Duty of Vigilance Law **advances transparent and accountable processes and outcomes**, since it provides that companies within the scope of the regulation should not only publish their vigilance plan but also develop it in association with the company's stakeholders, where appropriate as part of multi-stakeholder initiatives that exist in the subsidiaries or at territorial level. Notably, however, the involvement of stakeholders is not obligatory, nor are "stakeholders" clearly defined (see also (Rouas, 2022, p. 303)).

On equal distribution of benefits, harms and costs among different stakeholder and addressing and resolving trade-offs and conflicts, companies may be held liable for failure to comply with their obligations under the Duty of Vigilance Law, but the burden of proof lies with the injured party (i.e. to show that failure to comply with the obligations under the Law caused the harm suffered). Initially, the bill proposal contained a reversed burden of proof, to lie with the companies instead of with the victims (Cossart, Chaplier and Lomenie, 2017). Having the burden of proof lying with the claimants is described as "a real uphill battle" and "a major obstacle" (Les Amis de la Terre France, 2025a). In a court ruling (N° RG 23/09018, N° Portalis 352J-W-B7H-C2F4J) on 18 September 2025, however, the Paris Judicial Tribunal (Tribunal Judiciaire de Paris) ordered the company Total to disclose documents deemed essential evidence by the plaintiffs. This interim decision is described as "an important step toward rebalancing [the] inequality" caused by the "profound information asymmetry between transnational corporations, often the sole holders of crucial evidence, and the affected individuals, who nevertheless bear the burden of proof" (Les Amis de la Terre France, 2025b).

The procedural issues present in the early cases call into question whether the law has enabled effective remedy for injured parties, but the Court decisions and legislative reforms have solved some issues of admissibility and submission requirements (as described above). Regarding the involvement of different **stakeholders and integrating their different types of knowledge into the decision-making process**, the mediation agreement in the Danone case is interesting from an inclusivity assessment point-of-view: one of the four commitments made by Danone in the agreement is to hold an annual meeting (between 2025 and 2027) between Danone and ClientEarth and its partners (Danone, 2025). The mediation, ordered by the Paris Judicial Tribunal, therefore establishes a process that involves stakeholders with a legitimate interest for evaluating the measures taken by the company.

Replicability and generalizability of the practice

France was one of the first countries in obligating large companies to carry out human rights and environmental due diligence and publish the results of the due diligence. The French Duty of Vigilance Law is a short and concise law that can serve as a model for other jurisdictions aiming to facilitate corporate accountability by imposing vigilance duties on companies regarding their own activities as well as the activities of their subsidies and supply chains. That said, the French law suffers from its vagueness and ambiguity, not specifying, for instance, the specific rights it protects or the engagement of stakeholders required in the drafting of the vigilance plan and thereafter.

To be effective, due diligence and reporting obligations should be accompanied by avenues to hold companies accountable before courts. The French experience in implementing and enforcing the Duty

of Vigilance Law, showcasing the procedural barriers that plaintiffs may encounter when submitting the case to the court, provides lessons for other legislators. More specifically, the outcomes in the initial cases in French courts can function as guidance for avoiding issues around court competence and admissibility, to better assure that a clear pathway for remedy is evident already in the wording of the law. France will also, among other EU Member States, need to transpose the simplified EU CSDDD, and it remains to be seen how the Duty of Vigilance Law changes.

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Related websites:

Business & Human Rights Resource Centre: https://www.business-humanrights.org/en/

Climate Court Litigation Updates: https://www.climate-court.com/climate-litigation-updates

Duty of vigilance radar: Cases https://vigilance-plan.org/court-cases-under-the-duty-of-vigilance-law

Simmons & Simmons LLP : French Duty of Vigilance Litigation Tracker: https://www.simmons-simmons.com/en/publications/clomu1rfn01pmu6x4dz5enms5/french-duty-of-vigilance-litigation-tracker

Related resources:

Court cases

ÉLECTRICITÉ DE FRANCE case: Cour d'Appel de Paris, Pôle 5 - Chambre 12, RG n° 21/22319, N° Portalis 35L7-V-B7F-CE37P, 18 June 2024, available at https://www.courdecassation.fr/decision/6672747c36f1fc00083aac3d?search_api_fulltext=EDF&op=To%20research&date_du=&date_au=&judilibre_juridiction=all&page=9&previousdecisionpage=9&previousdecisionindex=1&nextdecisionpage=9&nextdecisionindex=3 (accessed 28 September 2025).

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3.6 The Supply Chain Act (LkSG) and due diligence obligations with specific reference to water-related issues (Germany)

General description

The German Act on Corporate Due Diligence Obligations for the Prevention of Human Rights Violations in Supply Chains (German Supply Chain Act; Lieferkettensorgfaltspflichtengesetz or LkSG) came into effect on 1 January 2023. The Act applies to enterprises (regardless of legal form) with central administration, principal place of business, administrative headquarters, statutory seat or a domestic branch office in Germany, with (as of 1 January 2024)[15] at least 1,000 employees in Germany (Sect. 1). These enterprises are obliged to exercise due regard for the human rights and environment-related due diligence obligations in their supply chains with the aim of preventing or minimizing any risks to human rights or environment-related risks or of ending the violation of human rights-related or environment-related obligations. These due diligence obligations include 1) establishing a risk management system, 2) designating a responsible person or persons within the enterprise, 3) performing regular risk analyses, 4) issuing a policy statement, 5) laying down preventive measures in its own area of business and vis-à-vis direct supplier, 6) taking remedial action, 7) establishing a complaints procedure, 8) implementing due diligence obligations with regard to risks at indirect suppliers, and 9) document and reporting. (Sect. 3, para. 1). The Act also further defines the determination of appropriate manner of acting in accordance with these due diligence obligations (Sect. 3, para. 2). These obligations are regulated further in Sections 4 to 10 in the Act.

When it comes to the Act's remedial actions and enforcement regime, and the administrative fines that can be imposed on enterprises, the Act establishes the remedial actions in Section 7, including the termination of business relationship if the violation is assessed as very serious, if other measures have not yielded results and if there are no less severe means available to the enterprise than termination (Sect. 7, para. 3). The Act also specifies that a violation of the obligations does not give rise to any liability under civil law (Sect. 3, para. 3). The competent authority can make orders and take measures to detect, end and prevent violations of the obligations, including summoning people, order the enterprise to submit a corrective action plan (within three months) and require the enterprise to take specific action (Section 15). The enterprise may also be required to provide access rights to the competent authority (Section 16) or provide information and surrender documents, including on direct and indirect suppliers (Section 17). Importantly, the Act establishes a financial penalty in administrative enforcement proceedings of up to 50,000 euros (Section 23) and administrative fines in the case of a regulatory offence, committed intentionally or by negligence (Section 24). For a legal person, the administrative fine can amount of up to 2% of the average annual turnover (Sect. 24, para. 3).

Methodology

This case study analysis focuses on the pioneering German national legislation on supply chain and the conditions under which it could be a successful tool to govern water issues in value chains in cases where the domestic legislation directly refers to water issues. The case analysis relies on primary legal sources (i.e. the text of the German Supply Chain Act and its amendment (notably, relying on the

[15] The implementation of the Act was laddered, so in the first year applicable to enterprises with normally at least 3,000 employees in Germany or posted abroad.

translations of these)) and secondary legal sources, including legal literature, and other material (reports published by, e.g., ministries and law firms). More specifically, the analysis examined how water-related issues are addressed in the German Supply Chain Act, and what the main critiques raised by scholars and practitioners are regarding the law.

Initiator

- German government

Category

- Regulatory

Water issues

- water quantity
- water quality
- ecosystems
- safe access to water and sanitation

Geographical applicability of the documented practice

- National (Germany)

Level of water governance

- National
- Value chain

Stakeholders

- Public authorities
  - National ministries
  - Courts
- Industry
  - Companies
- Citizens
  - NGOs
  - local communities
- Academia
  - research institutions

Context

The German Act on Corporate Due Diligence Obligations for the Prevention of Human Rights Violations in Supply Chains (Gesetz über die unternehmerischen Sorgfaltspflichten in Lieferketten, or Lieferkettensorgfaltspflichtengesetz (LkSG)[16]), entered into force on 1 January 2023. The foundation for the Act had been laid already a few years earlier (in 2016), when the German Federal Government launched the National Action Plan for Business and Human Rights (NAP), based on the UN Guiding Principles on Business and Human Rights. However, a NAP monitoring survey conducted by the Federal Government showed that only about one fifth of German-based enterprises with more than 500

[16] Gesetz über die unternehmerischen Sorgfaltspflichten in Lieferketten, 16.07.2021 – BGBl. I 2021, Nr. 46, 22.07.2021, p. 2959. The analysis for this report has made use of the English translation, provided by the Federal Ministry of Labour and Social Affairs (2021).

employees were sufficiently meeting their human rights-related due diligence obligations along their supply chains, indicating that voluntary commitments are insufficient. (Federal Ministry of Labour and Social Affairs, 2025a).

The "supply chain" is defined in Section 2 of the Act; it refers to all products and services of an enterprise and includes all steps in Germany and abroad that are necessary to produce the products and provide the service, starting from the extraction of the raw materials to the delivery to the end consumer; it includes the actions of an enterprise in its *own business area*, the actions of direct suppliers and the actions of indirect suppliers (para. 5). A group company can be included in the parent company's own business area if the parent company exercises a decisive influence on the group company (para. 6). A *direct supplier* is a partner to a contract for the supply of goods or the provision of services whose supplies are necessary for the production of the enterprise's product or for the provision and use of the relevant service (para. 7). An *indirect supplier* is any enterprise which is not a direct supplier and whose supplies are necessary for the production of the enterprise's product or for the provision and use of the relevant service (para. 8).

The Act promotes both human rights due diligence and environmental due diligence. For the environmental adverse impacts, the law combines a free-standing environmental due diligence, or referencing approach, with an approach where environmental impact is integrated with human rights (Eller, 2025). The free-standing approach is evident in Sect. 2 para. 2, since this outlines a number of prohibitions according to environmental treaties, specifically the Minamata Convention on Mercury of 10 October 2013 (p. 1–3), the Stockholm Convention of 23 May 2001 on Persistent Organic Pollutants (p. 4–5) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal of 22 March 1989 (p. 6–8)[17].The integrated approach means that the environment is considered in relation to human rights risks. The explicit mentioning of water is under this type of provisions: according to the definitions used in the Act (Sect. 2, para. 2) "[a] human rights risk within the meaning of this Act is a condition in which, on the basis of factual circumstances, there is a sufficient probability that a violation of one of the following prohibitions is imminent:

[…] 9. the prohibition of causing any harmful soil change, water pollution, air pollution, harmful noise emission or excessive water consumption that

- *a. significantly impairs the natural bases for the prevention and production of food,*
- *b. denies a person access to safe and clean drinking water,*
- *c. makes it difficult for a person to access sanitary facilities or destroys them or*
- *d. harms the health of a person;*

10. the prohibition of unlawful eviction and the prohibition of unlawful taking of land, forests and waters in the acquisition, development or other use of land, forests and waters, the use of which secures the livelihood of a person"

[emphasisez text highlights the part of the Section that is particularly mentioning water-related issues]. Notably, it is only in these provisions on violations of specific human rights that water is explicitly mentioned in the Act. That said, the three Conventions mentioned in the Act (Minamata, Stockholm and Basel) are also relevant from a right to water point-of-view since the presence of the

[17] More specifically, the list covers manufacture of mercury-added products (p. 1), the use of mercury and mercury compounds in manufacturing processes (p. 2), the treatment of mercury waste (p. 3), the production and use of certain chemicals (p. 4), the handling, collection, storage and disposal of waste in a matter that is not environmentally sound (p. 5), exports of hazardous waste (p. 6 and 7) and import of hazardous waste (p. 8).

substances covered by these conventions can challenge peoples' access to clean water (Holbach, 2023, p. 249).

The German Supply Chain Act is currently subject to revision. The coalition agreement of CDU, CSU and SPD from May 2025 included an "Immediate Action Program for Bureaucracy Reduction", according to which the Supply Chain Act was to be abolished and replaced with a new law that would implement the EU Corporate Sustainability Due Diligence Directive (CSDDD) "in a way that is less bureaucratic and easy to enforce" (*own* translation, CDU-Bundesgeschäftsstelle, 2025 p. 45). The Act has not yet been abolished; on 3 September 2025, the German Federal Cabinet approved a Government Draft for a Law amending the Supply Chain Due Diligence Act. This proposal aims at limiting the administrative burden (stemming from duplicate reporting requirements) on companies, easing the application and enforcement of the law, and ultimately strengthening the German economy. The amendments to the Supply Chain Act, if adopted, will eliminate the reporting obligations on compliance with due diligence obligations – also retroactively – and remove the sanctioning of failures to fulfil due diligence obligations, except in cases of serious violations. Further, the Supply Chain Act will continue to apply until it is replaced by a law that transposes the European Corporate Sustainability Due Diligence Directive (Bundesministerium für Arbeit und Soziales, 2025a, 2025b).

Effectiveness of the practice

Regarding the criteria on **addressing a problem or a need related to sustainable and equitable water use and connection** and **contribution to water-related policy goals and targets**, the German Supply Chain Act does not define any new human rights or environmental standards but relies on existing international agreements. The list of eleven internationally recognised human rights conventions is exhaustive, and the legal interests protected in the listed conventions are used to derive behavioural requirements or prohibitions for corporate action in order to prevent a violation of protected legal positions (Federal Ministry of Labour and Social Affairs, 2025b). There is no explicit reference in the legal text to the EU Water Framework Directive (WFD), the European Green Deal (EGD), nor the Sustainable Development Goals (SDGs). The Act has been criticized for being too weak on environmental protection: reportedly, the Green Party had submitted a request to amend the law to enable comprehensive protection of the environment, in the sense of the precautionary principle, but this request was rejected in a parliamentary vote (Schilling-Vacaflor, 2021 p.8).

The Act refers explicitly to water (Sect. 2, para. 2), but not all types of water-related issues, and the prohibitions concerning the causing of harmful water pollution or excessive water consumption in point 9 are only to be considered in case the activities have any of the effects described in a)–d) (i.e. significantly impairs the natural bases for the prevention and production of food; denies a person access to safe and clean drinking water; makes it difficult for a person to access sanitary facilities or destroys them or; harms the health of a person). Reportedly, in its justification of the LkSG, the legislator emphasized that these effects relate to the human rights mentioned in the Convent on Civil and Social Rights (i.e. the right to an adequate standard of living; the right to adequate food; the right to water; the right to enjoyment of the highest attainable standard of health) (Wehrmann 2022, para. 348, referring to BT-Drs. 19/28649, 38). As an example, in areas with year-round or seasonal water scarcity, the extraction of large quantities of water as part of a business project can threaten the population's water supply, while both excessive water consumption and water contamination can jeopardize access to sanitation (Wehrmann, 2022, para. 351, referring to BT-Drs. 19/28649, 38). Babette Wehrmann (2022, para. 354) further highlights that the LkSG requires the negative environmental impacts to be reduced to such an extent that the consequences do not occur, irrespective of national legislation and the associated minimum requirements for protection against

harmful soil changes, water and air pollution, noise emissions and excessive water consumption. There is also a need to account for diverse interconnections of the ecosystem, since harmful pollution of natural resources in supposedly remote, unpopulated areas can also lead to human rights violations elsewhere (Wehrmann, 2022, para. 354).

When it comes to the prohibition of unlawful seizure of water Sect. 2, para 2, point. no. 10), the LkSG only prohibits forced eviction and the seizure of land, forests and bodies of water if they are unlawful and if the persons concerned need the land, forest or body of water to secure their livelihood (Wehrmann, 2022, para. 360). However, Babette Wehrmann points out the meaning of "unlawful" varies and can be contested, thus, suggests that enterprises make use of available guidelines in their assessments (Wehrmann, 2022, para. 359-367).

On the general **effectiveness** and **enforcement** of the law, Weihrauch, Carodenuto and Leipold (2023, p. 922) argued that the behaviour of the BAFA, which is the supervising authority, will be a decisive factor for the effectiveness of the law. These authors found it problematic that the supervising authority is subordinate to the German Ministry of Economics, since the latter was the key governmental actor opposing a strong design. They do note, however, that the change in government in 2021, with a green minister of economics, provides ground for optimism that the law is applied in a more stringent manner. Recently, the conditions for the effective implementation of the Law may have swung in the other direction: The Government Draft for a law amending the Supply Chain Act significantly reduced the regulatory offences, so that only those violations that have been deemed particularly serious will be fined – these (administrative) offences constitute violations of the obligations to take preventive measures (Sect, 6, para. 1), the obligation to take remedial measures (Sect. 7, para. 1 (1st sentences) and para. 2 (1st sentence), and Sect. 9, para. 1) or the obligation to establish a complaints procedure (Sect. 8, para. 1 (1st sentence) and Sect. 9, para. 1) (Bundesministerium für Arbeit und Soziales, 2025a, p. 8–9). Still however, the Draft does not remove monitoring and enforcement; the Federal Office for Economic Affairs and export Control (BAFA) will, according to the proposal, continue monitoring potential human rights and environmental risks and violations ex officio.

Efficiency of the practice

Some of the criticism of the German Supply Chain Act in its current form relates specifically to the **efficiency** in terms of the **data collected** for the purpose of risk analysis; the focus of the regular risk analysis approach on first-tier suppliers is argued to incentivize large-scale but superficial box-ticking practices (i.e. one-size fits all questionnaires, being sent to too many direct suppliers, collecting too superficial information), instead of an efficient implementation approach focused on the highest risks. Such template-based practices with first-tier suppliers arguably fail to create deep understanding of and address potential problems, especially since these problems typically occur further up in the supply chains (Schönfelder, 2025, p. 2–3). Further, and relating also to the **effectiveness** of the instrument, the preventive measures required according to Section 6 of the Act are mandatory in relation to *indirect* suppliers only in cases when the enterprise has actual indications that a violation of a human rights-related or an environment-related obligation at the indirect supplier may be possible (Sect. 9, para. 3) – this has been argued to incentivize a behaviour of enterprises avoiding the proactive gathering of information about possible violations further upstream the supply chain, since such "substantiated knowledge" requires action (see Sect. 9, para. 3, and criticism by Schönfelder, 2025).

Regarding the **cost-effectiveness**, the 2025 Government Draft for amending the Supply Chain Act is estimated to reduce the annual compliance costs for companies by approximately €4,138,000 (Bundesministerium für Arbeit und Soziales, 2025a, p. 6). It is stated, among the sustainability aspects, that the proposed amendments are 'intended to increase the use-friendliness of the LkSG'

(Bundesministerium für Arbeit und Soziales, 2025a, p. 6). The objective of the Supply Chain Act is stated to remain intact, i.e. "by fulfilling corporate due diligence obligations, companies should fulfil their responsibility in the supply chain with regard to respect for human rights and, in particular, support the achievement of the goals in the area of global supply chains as defined by Indicator 8.6 of the German Sustainability Strategy" (Bundesministerium für Arbeit und Soziales, 2025a, p. 6). This indicator (8.6) emphasizes voluntary sustainability reporting by companies in accordance with the German Sustainability Code (Deutschen Nachhaltigkeitskodex, DNK), with the goal to significantly increase the number of voluntary sustainability reports by 2030 (Die Bundesregierung, 2025, p. 164).

Inclusivity and reflexivity of the practice

Regarding the **equal participation and collaboration between stakeholders**, and specifically **the recognition of different type of stakeholders and their needs**, the Act establishes that an enterprise must give due consideration to the interest of its employees, employees within its supply chain and those who may otherwise be directly affected in a protected legal position by the economic activities of the enterprise or by the economic activities of an enterprise in its supply chains (Sect. 5, para. 4). Notably, however, the protected legal positions within the meaning of the Act are only those rising from the conventions on the protection of human rights and environmental aspects listed in the Annex (notes 1 to 11) (Sect. 2, para. 1), thus, a limited range of water-related issues.

When it comes to **transparent and accountable processes and outcomes**, the Act requires enterprises to ensure that there is an appropriate (and transparent and impartial) internal complaints procedure in place, to enable persons to report human rights and environment-related risks as well as violations of human rights-related or environment-related obligations (Section 8 and 9). Section 11 of the Act defines special capacity for domestic trade unions to bring proceedings to enforce the rights of a person, while Division 4 of the Act outlines the monitoring and enforcement by authorities.

Notably, the amendment (Government Draft) to the Supply Chain Act removes the obligation to prepare an annual report on fulfilment of the due diligence obligations. If the law is passed, this means that enterprises will no longer have to prepare a report, nor make it publicly available free of charge on the enterprise's website within the time limit of four months after the end of the fiscal year (Supply Chain Act, Sec. 10, Para. 2). Thus, there is a risk that transparency decreases if the law is adopted, as stakeholders may no longer have as easy access to the documentation of fulfilment of the obligations – the publication of the documentation could in the future be a decision taken by each and every enterprise to which the Supply Chain Act applies.

Replicability and generalizability of the practice

The German Supply Chain Act has been a pioneer legislation in terms of regulating companies and their value chains, also regarding some water-related issues. In this respect, it can serve as a model for other national legislators. That said, the critique it has received from scholars, practitioners and NGOs should be taken into consideration when other countries pursue their efforts to regulate value chains - which will need to be done by EU Member States the latest when implementing the CSDDD. In their blogpost on the European Parliament's approval of the Omnibus I package (on 16 December 2025), Daniel Schönfelder and Michaela Streibelt (2025) highlight the effects that the expected changes will have on the LkSG and company practice. Further, Schönfelder and Streibelt (2025) note that human rights and environmental due diligence obligations remain strong in CSDDD, and the directive will therefore push for a reform in favour of a risk-based tier-n approach, instead of the current tier-1

approach of the LkSG. What is more, the CSDDD still requires companies to analyse impact in their value chain, but they can do so by deploying measures reasonably available to the companies – and leverage, currently emphazised by the LkSG, may be a useful ground for excluding peripheral issues with minimal relevance to the business model (Schönfelder and Streibelt, 2025). Further, the CSDDD will require companies to first collect and analyse information available to them before asking supplier to submit information, which in the case of Germany could mean that suppliers will be less burdened by information requests than under the current LkSG compliance practices that buying companies apply (i.e. superficial, automatised, one-size-fits-all questionnaires) (Schönfelder and Streibelt, 2025; see also Schönfelder (2025)).

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Related websites:

Business and Human Rights, Federal Ministry of Labour and Social Affairs: https://www.csr-in-deutschland.de/EN/Business-Human-Rights/Supply-Chain-Act/supply-chain-act.html

Related resources

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3.7 The role of soft law in governing sustainable and equitable water use in organisations' value chains: the AWS Standard

General description

The number of public regulation instruments that target corporate sustainability and the impact of enterprises on human rights and the environment, in their own activities and in their value chains, has increased in past years, also within the EU, especially with the update of reporting requirements (EU Corporate Sustainability Reporting Directive (CSRD)) and the introduction of due diligence obligations (EU Corporate Sustainability Due Diligence Directive (CSDDD). When it comes to water and marine sources and impact and dependencies on water in international value chains, the EU CSRD framework encompasses water-related issues (EFRS E3), while the CSDDD refers to international agreements and European law in its objectives regarding the protection of water. That said, the due diligence and reporting of water-related risks and impacts is still in its infancy.

In a 2025 report on the first wave of EU CSRD reporting, Datamaran concludes that Water and Marine Resources (E3) were frequently overlooked outside of water-intensive industries (2025, p. 21). It is among the least reported topics (by 37 % of companies)[18], potentially due to it (and other least reported topics) being perceived as less material; due to lack of data to report effectively; or, due to lack of capacity to engage with these complex, emerging ESG issues (2025, pp. 5, 19). Water may be perceived as a mere input rather than a shared resource. At the same time, Datamaran reports that environmental topics, including water (E3), account for a large share of negative impacts, thus indicating the opportunity for companies to re-evaluate their operations and value chains to address such impacts (2025, p. 8).

The Alliance for Water Stewardship (AWS) is both a global membership organisation for water stewardship (consisting of businesses, civil society organizations (CSOs) and public sector organizations) and the custodian of the International Water Stewardship Standard ("AWS Standard"). The AWS Standard is a voluntary, globally applicable framework for sustainable water use in the normal activities of organizations (Alliance for Water Stewardship, 2019). The AWS Standard includes criteria and indicators that relate to the site's supply chain, especially on the more advanced levels of the certification scheme.

This good practice description focuses on the role private governance initiatives, as a form of soft law, have in governing water in international value chains. Among different water initiatives that appeared in the 2000s and onwards, the AWS International Water Stewardship Standard (the "AWS Standard") has been described as "the most comprehensive framework with validation and external audits" (Sojamo and Rudebeck, 2024, p. 308), and is often cited by NGOs and other actors (e.g. WWF, in Dobson, Watt and Morgan, 2023).This good practice case study thus focuses on the AWS Standard system and examines how such a private transnational self-regulation standard may be used to support the implementation of EU directives on water and companies' value chains.

[18] As comparison, almost all companies included in the survey reported on Climate Change (E1 – 99%), Own Workforce (S1 – 98%), and Business Conduct (G1 – 92%) (Datamaran, 2025, p. 5). Notably, there is variety within each ESRS areas regarding the reporting of the subtopics (Datamaran, 2025, p. 19)

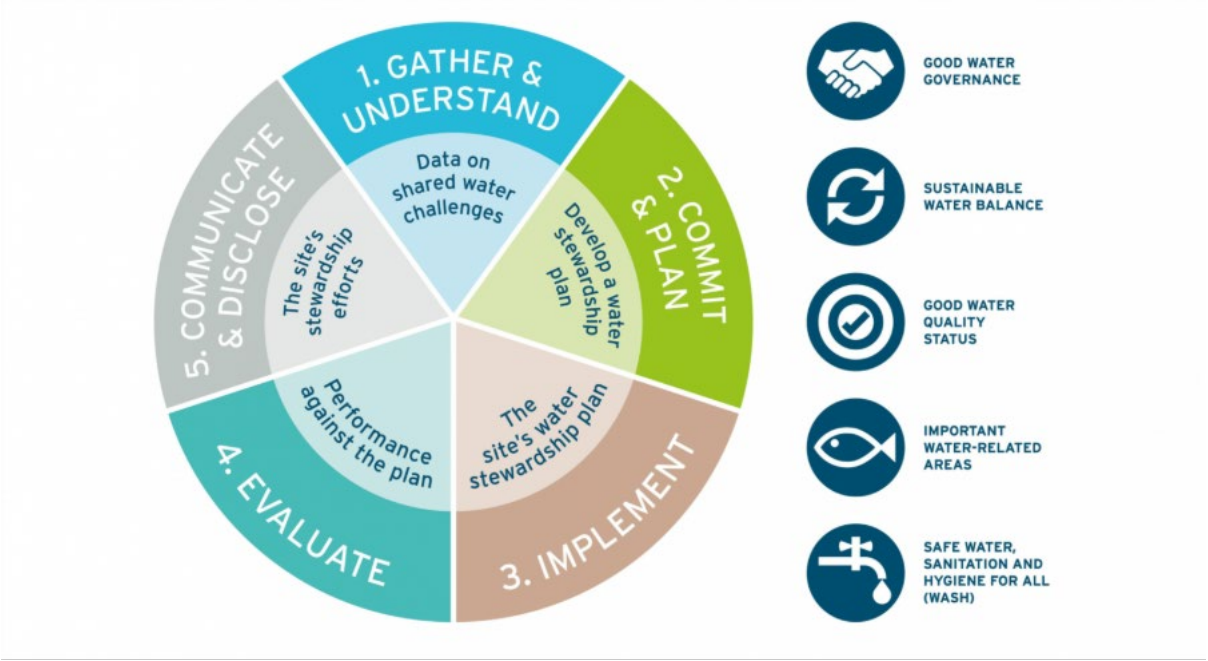

Figure 9 The five steps and five outcome areas of the AWS Standard (©AWS 2019).

Methodology

This case study analysis focuses on the role private governance initiatives, as a form of soft law[19], has in governing water in companies' value chains. The data collection and analysis focused on examining the extent to which the AWS Standard regulate the value chain of organisations, how the AWS Standard supports the implementation and achievement of objectives of the Water Framework Directive (WFD), European Green Deal (EGD) and Sustainable Development Goals (SDGs) and how the AWS Standard can support the alignment of organisations practices with the new EU sustainable finance and responsible business legislation (CSRD, CSDDD, and the Taxonomy).

The case study analysis relies mainly on publicly available data, specifically information available on the AWS website, including the Standard and its complementary Guidance material, certification reports, documents and recordings. In addition, one semi-structured interview was conducted, in collaboration with GOVAQUA WP3. GOVAQUA WP3 provides a good practice description of the Standard regarding its functioning as an instrument supporting private sector participation and multi-stakeholder collaboration in water governance.

Table 5 Interviews carried out for the good practice 3.7

Interview code	Represented organisation types
A	Policy expert/advisor on sustainability policies and certification schemes. 8 September 2025.

[19] E.g., guidelines, recommendations, codes of conducts, standards, policy guidance, and technical notices that complement or substitute binding legislation ("hard law").

At the time of carrying out the analysis and writing up the good practice assessment findings, the Alliance for Water Stewardship was revising the Standard to arrive at a new version (V3.0). The revision aimed to increase the Standard's practicality, utility and value, by streamlining the Standard for companies to implement cost-effectively at scale (*practicality*), by supporting alignment with wider sustainability agendas and priorities *(utility*) and by strengthening integration with corporate-level reporting (*value*). The final draft of the V3.0 Standard was prepared in the fall 2025, with the member voting ending on 15 December 2025 – with the conclusion that the final draft was approved (by 95% of respondents) (Alliance for Water Stewardship, 2025h). Notably, the material included the Standard revision change log spreadsheet up until the second draft of the V3.0 Standard document. Such a detailed tracing of changes made to the final draft was not available for the good practice assessment, mainly due to the final stages of the Standard revision process spanning beyond the time period of Task 2.2. Scientific and grey literature was also used to support the analysis.

Almost at the same time as the voting on the final AWS Standard V3.0 ended, the European Parliament approved, on 16 December 2025, a provisional agreement on updated sustainability reporting and due diligence rules for companies. The changes include reduced scopes of the sustainability reporting regulation (CSRD) and the due diligence directive (CSDDD), reduced obligations for firms, and delayed application of the CSDDD (from 26 July 2029) (European Parliament, 2025). EFRAG had then, already on 3 December 2025, announced its submission of technical advice on the draft simplified European Sustainability Reporting Standards (ESRS), with the mandatory datapoints reduced by 61% (EFRAG, 2025). Initially, the technical committee of AWS had intended to align the revised standard with the CSRD ESRS E3 to increase the value of the Standard (i.e. align the requirements with datapoints in the ESRS E3). These alignment efforts were explicitly highlighted in the beginning of the revision process (i.e. in the Standard revision change log spreadsheet). In the final covering note for the Standard 3.0 Member Vote, the interoperability with the EU CSRD ESRS E3 is described to be high (Alliance for Water Stewarship, 2025g).

Initiator

- AWS was established by leading water organisations, including the United Nations, international NGOs and research institutes; the AWS Standard versions (1.0; 2.0; 3.0) has been developed with the involvement of the AWS members (representing private sector, public sector, non-profit organisations and academic institutes)

Category

- Regulatory

Water issues

- Water quantity
- Water quality
- Ecopsystems
- Safe access to water and sanitation

Geographical applicability of the documented practice

- Local, EU, Global

Level of water governance

- Catchment
- Value chains

Stakeholders

- Industry
    - Companies

- Public authorities
    - Catchment management agencies
- Citizens
    - NGOs
    - local communities
- Academia
    - research institutions

Context

Water is essential for many companies, if not in their direct operations, then at least through their value chain dependencies. Water has, however, often been overlooked compared to energy or raw materials – but risks such as water stress or droughts are highly relevant to many operators, and events that disrupt the water supply or quality may have severe consequences for companies further downstream the supply chain (The Responsible Business Alliance (RBA) and Alliance for Water Stewardship, 2025).

The main objective of the Alliance for Water Stewardship Standard is to drive good water stewardship, defined as "the use of water that is socially and culturally equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site- and catchment [[20]]-based actions" (Alliance for Water Stewardship, 2019, p. 4). Implementation of the Standard is intended to achieve five main outcomes for the site (and its defined physical scope), which represent fundamental "pillars" of water stewardship, namely:

- Good Water Governance, relating to how humans are responsible and accountable for water,
- Sustainable Water Balance, relating to the quantities and timing of water,
- Good Water Quality Status, relating to the properties of water,
- Important Water-Related Areas, relating to the spatial aspects of areas that may or may not contain water at a given time, but that are critical to maintaining the human-derived benefits of water including the ecosystem services from Important Water-Related Areas (IWRAs), and
- Safe Water, Sanitation and Hygiene for all (WASH). (Alliance for Water Stewardship, 2019, p. 6, 2020, p. 4)

The Standard is built around five main steps: (1) Gather and Understand data on water challenges, (2) Commit and Plan how to steward water, (3) Implement the plan made for the site, (4) Evaluate how

[20] The Standard defines "catchment" as "[t]he geographical zone in which water is captured, flows through and eventually discharges at one or more points. The concept includes both surface water catchment and groundwater catchment. A surface water catchment is defined by the area of land from which all precipitation received flows through a sequence of streams and rivers towards a single river mouth, as a tributary to a larger river, or to the sea. A groundwater catchment is defined by geological structure of an aquifer and groundwater flow paths. It is replenished by water that infiltrates from the surface. It has vertical thickness (from a few metres to 100s of metres) as well as area. Depending on local conditions, surface and groundwater catchments may be physically separate or interconnected. "Catchment of origin" refers to a catchment, distinct from the site's catchment(s), where a product or service is manufactured or sourced. It may be anywhere from an adjacent catchment to the other side of the world. Alternative terms are watershed, basin and river basin." (Alliance for Water Stewardship, 2019, p. 22)

the site performs against the plan and (5) Communicate and Disclose the site's stewardship efforts. This plan-do-check-act framework is intended to help "businesses understand their water use and impacts and develop and implement water strategies that can be audited and certified by an independent third party" (Alliance for Water Stewardship, 2024c, p. 3).

The first version (1.0) was launched in 2014, and a revised and improved version (2.0) in 2019. The Standard is currently (2023–2025) undergoing a revision to arrive at Version 3.0 (Alliance for Water Stewardship, 2024c, 2025e). Sites that implement the AWS Standard can get certified, and also group level certification is possible (Alliance for Water Stewardship, 2023b). The AWS Standard has three levels of certification: Core, Gold and Platinum. The Core level entails that Core requirements have been met, while the higher certification levels require that Advanced Indicators have been met (Alliance for Water Stewardship, 2023b). The Alliance for Water Stewardship offers courses as preparation for implementing the Standard and Certification and provides contact information to consultancies that can support organisations in their water stewardship efforts. The audit is carried out by Water Stewardship Assurance Services (WSAS) (Alliance for Water Stewardship, 2023b).

Value chains in the AWS Standard

The AWS Standard is applicable globally to all organizations and industrial sectors, independent of their size and operational complexity (Alliance for Water Stewardship, 2019, p. 5). The target group is major water users. Notably, five business sectors have been identified as priority sectors: Agricultural supply chains; Food and beverage manufacturing; Pharmaceuticals, chemicals and personal care; ICT and microelectronics, and Textiles and apparel. These sectors have a big impact on global water resources through their operations and supply chains. They also have significant influence and have been willing to use their leadership to support AWS and its water stewardship goals. (Alliance for Water Stewardship, 2025d)

The AWS Standard focuses primarily on the operational *site* and its *local water catchment*. However, the Standard is also stated to have a broader goal, i.e. to include indirect water use in the site's supply chain. The Standard defines *indirect water* as the "[w]ater used in a site's supply chain representing that used in the manufacturing and provision of all products and services, excluding water used on site. In effect, it is the sum of 'embedded water' of all products and services" (Alliance for Water Stewardship, 2019, p. 23). *Embedded water* is, in turn, defined as "[w]ater that was used in the production or creation of an item, but not contained within it" (Alliance for Water Stewardship, 2019, p. 22). The Standard exemplifies embedded water as the water used in a crop to grow, wash, process and transport it, or the water used for creating raw materials and manufacturing an item. Alternative terms given are "virtual water" and "water footprint" (Alliance for Water Stewardship, 2019, p. 22). The *supply chain* is defined as "[t]he network of all suppliers and their activities that contribute to providing all materials, ingredients and services to the site to support its normal production and operational activities. The chain starts from the provider of raw materials (eg. mines) or ingredients (eg. farms), through every intermediate supplier to delivery at the site (from its direct suppliers). It includes intermediate processing and production of goods, packaging and transportation" (Alliance for Water Stewardship, 2019, p. 23). The Standard also makes a difference between the *site's catchment* and *catchment of origin,* the latter referring to "a catchment, distinct from the site's catchment(s), where a product or service is manufactured or sourced. It may be anywhere from an adjacent catchment to the other side of the world" (Alliance for Water Stewardship, 2019, p. 22). These definitions focus on the *upstream* part of the supply chain, meaning the activities and actors in the chain of activities that precedes the operations (production and operational activities) at the site. Thus, these definitions do not include the *downstream* part of the supply chain, such as distribution and consumption, nor do they explicitly include value chain activities such as design and marketing.

The AWS Standard Version 2.0 (which is the currently valid version of the Standard) contains several indicators that relate to value chains. These are presented in Table 6.

Table 6 Value chain-related criteria in the AWS Standard V2.0

Step	Criteria	Indicators
1.4	Gather data on the site's indirect water use, including: its primary inputs; the water use embedded in the production of those primary inputs the status of the waters at the origin of the inputs (where they can be *identified*); and water used in out-sourced water-related services.	1.4.1 The embedded water use of primary inputs, including quantity, quality and level of water risk within the site's catchment, shall be *identified*. 1.4.2 The embedded water use of outsourced services shall be *identified*, and where those services originate within the site's catchment, *quantified*. 1.4.3 Advanced Indicator: The embedded water use of primary inputs in catchment(s) of origin shall be *quantified*.
3.7	Implement plan to maintain or improve indirect water use within the catchment.	3.7.1 Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be *quantified*. 3.7.2 Evidence of engagement with suppliers and service providers, as well as, when applicable, actions they have taken in the catchment as a result of the site's engagement related to indirect water use, shall be *identified*. 3.7.3 Advanced Indicator: Actions taken to address water related risks and challenges related to indirect water use outside the catchment shall be documented and evaluated.

The AWS gives two main reasons for assessing the indirect water use: to help the organization to understand risks to its own business or activities, and to provide opportunity for the organisation to influence the water stewardship approach of (more important) suppliers. AWS recognises the complexity involved in mapping supply chains, and the cost and time required for the exercise, and does not expect a mapping of the complete supply chain. It is also acknowledged that many sites may have limited ability to influence suppliers. Further, AWS does not specify methods for evaluating embedded water but recognizes that multiple methods and approaches exist. (Alliance for Water Stewardship, 2020, pp. 13–14)

A review survey[21] run by AWS between July and August 2023 laid out the starting point for the AWS Standard revision process, to arrive at Version 3.0. Stakeholder perceptions of the AWS Standard and its implementation revealed dissatisfaction with the value chain aspects of the Standard: *indirect water use* was the fifth in order on the list of top themes that were found to be particularly difficult to understand or implement (60,23% of respondents found that there are aspects of the Standard that are difficult to understand or implement) (Alliance for Water Stewardship, 2023a, p. 6). *Indirect water use* was also identified by respondents as a priority area for improvement (31.58%; fourth highest topic) (Alliance for Water Stewardship, 2023a, p. 8). The additional suggestions provided by respondents include *simplification, streamlining and clarity of language* and *integration/recognition of existing frameworks and reporting* (Alliance for Water Stewardship, 2023a, p. 8).

[21] The survey was completed by 235 participants, mainly from the private sector (73%) but also Civil Society Organisations (21%) and the Public Sector (6%). Over 40 % of the respondents were involved in implementation of the Standard. (Alliance for Water Stewardship, 2023a, pp. 2–3)

The revision of the Standard aims to increase practicality, utility and value, by streamlining the Standard for companies to implement cost-effectively at scale (*practicality*), by supporting alignment with wider sustainability agendas and priorities *(utility*), and by strengthening integration with corporate-level reporting (*value*). Multiple changes were made to the Standard in the first draft of V3.0. First, requirements related to indirect water use were removed from the draft (to increase practicality), because of the perceived complexity and difficulty in understanding and improving indirect water use, and the site-based approach of the Standard. Secondly, the AWS wanted to increase the value of the standard, by increasing its interoperability with corporate level disclosure frameworks, specifically the EU CSRD European Sustainability Reporting Standard (ESRS) E3[22], which is focused on water and marine sources. The aim was stated to be to align the AWS Standard with CSRD and develop guidance to help companies aggregate data from sites for the organisational level reporting. (Alliance for Water Stewardship, 2024b)

The first global public consultation on the first draft text of the AWS Standard V3.0 was held between 14 October and 20 December 2024 and included both an online survey as well as in person activities at multiple events. Reportedly, many comments expressed dissatisfaction with the removal of indirect water use requirements in the first draft of the AWS Standard V3.0, arguably because these requirements are useful for understanding water risks in the supply chain, and since the removal of these requirements would leave a significant gap in the Standard (Alliance for Water Stewardship, 2025a). Consequently, indirect water use was reintroduced in the second draft of the V3.0 standard, with modifications. Specifically, the water use requirements were reframed to focus on the identification and understanding of water-related impacts and dependencies within the value chain (Alliance for Water Stewardship, 2025a). Notably, several respondents expressed that the first draft did not adequately incorporate the concept of *double materiality*, which is mandatory under the EU CSRD (Alliance for Water Stewardship, 2025a). The value chain-related requirements re-introduced in the second draft of Standard V3 are summarised in Table 7.

[22] See Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards, OJ L, 2023/2772, 22.12.2023, http://data.europa.eu/eli/reg_del/2023/2772/oj.

Table 7 Proposed changes to the AWS Standard (second draft of V3.0)

Step	Second draft AWS Standard V3.0 Criterion	Requirement	Changes made
1	1.5: Understand water-related impacts and dependencies, water risks faced by the site, shared water challenges in the catchment, and opportunities for collective action.	1.5.5 (Gold): The site shall identify and document water use impacts and dependencies in its value chain, including: • The country and catchment of origin and level of water risk for primary inputs. • A measure or estimate of the volume of water use associated with the production of primary inputs. • A description of the water use impacts and dependencies associated with the production of primary inputs. • A description of the water use impacts and dependencies associated with consumer product use.	Criterion: Revised to include water-related impacts and dependencies. Requirement: Requirement 1.4.1 from AWS Standard V2.0 reintroduced at the Gold level and revised to focus on the identification of water use impacts and dependencies in the value chain.

The feedback on the first draft, incorporated in the second draft of the Standard text, showed that stakeholders find it important to include water-related impacts and dependencies at the site, catchment and in the value chain. The proposed criterion and requirements in the second draft were intended to better align with common business terminology (*value chain* instead of *indirect* or *embedded water use*). The value chain-related requirements are set for the higher-level certification, which could reflect the complexity in the task to assess the risks and impact.

The second draft was subject of public consultation between June and July 2025, Reportedly, stakeholders were broadly supportive of the addition of impacts and dependencies, but some comments indicated that these requirements were confusing and required further elaboration and clarification (Alliance for Water Stewardship, 2025f). Table 8 outlines the final criterion, requirements, and observations of changes made between the second and third draft.

Table 8 Criteria and requirements related to the organisation's value chain in the final Standard V3.0 draft

Step	Final (third) draft AWS Standard V3.0 Criterion	Requirement	Changes made
1	1.5: Understand water-related impacts and dependencies in the catchment and value chain.	1.5.1 The site shall identify and document its water-related impacts and dependencies based on an understanding of the site (1.3) and catchment context (1.4). This shall include: • Identification of at least one impact and one dependency for water balance, water quality and freshwater ecosystems and biodiversity. • Documentation of data sources, assumptions and gaps. • A description of seasonal or long-term trends, where sufficient data is available. 1.5.2 (Gold): The site shall identify and document water use impacts and dependencies in its value chain, including: • The country and catchment of origin and level of water risk for primary inputs. • A measure or estimate of the volume of water use associated with the production of primary inputs. • A description of the water use impacts and dependencies associated with the production of primary inputs. • A description of the water use impacts and dependencies associated with consumer product use.	"Site" and "catchment" moved from criterion to requirement; "value chain" introduced at criterion level. The requirement was revised to focus on impacts and dependencies in relation to water balance, water quality and freshwater ecosystems and biodiversity, and to set minimum expectations for conformance.

Effectiveness of the practice

The AWS Standard focuses primarily on the operational *site* and its local *water catchment*, which is **an appropriate scale within water governance system**. The AWS Standard has also had a broader objective to govern indirect water use in the supply chain. The changes to the value chain-related requirements in the AWS Standard revision process indicate that there are challenges and differing views in how to address the value chain scale of water governance, and at what organisational level.

For instance, Lucas et al. 2024 (p. 33) acknowledge a need for water stewardship at the enterprise-level in order to create a stronger incentive for companies to engage in water stewardship. Another challenge relates to the catchment level and the demonstration of impact of the Standard: due to the lack of internationally agreed conventions for naming catchments, it can be difficult to determine when sites are located in the same catchment (Alliance for Water Stewardship, 2024a, p. 7).

When it comes to **addressing a problem or a need related to sustainable and equitable water use**, the objective of the AWS Standard is to drive water stewardship (defined as "the use of water that is socially and culturally equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site-and catchment-based actions" (Alliance for Water Stewardship, 2019, p. 4)) and the Standard is intended to achieve five main outcomes for the site and its defined physical scope (see above). As part of the (at the time of writing this case study) ongoing impact evaluation project, a first phase ("Phase One") analysis of data extracted from AWS Certification Reports[23] indicates that certification to the AWS Standard is yielding the desired outcomes, albeit "with varying degrees of impact from site to site, influenced by the unique context of the catchment within which the site is situated (among other factors)" (Alliance for Water Stewardship, 2024c, p. 2). More specifically, the Phase One review, reportedly, "strongly suggests that the AWS Outcome that sites are making the most significant impact on is the Good Water Governance Outcome" (Alliance for Water Stewardship, 2024c, p. 2). The report further highlights "notable reporting on collective action between sites and different stakeholders that advocate training to increase water stewardship awareness, water projects and water stewardship platforms" (Alliance for Water Stewardship, 2024c, p. 2). On the other hand, the Phase One review report also identifies some weaknesses with the current Standard and Certification system. Among other things, the report calls for definitions of the AWS Outcomes "Important Water-related Areas" and "Safe Water, Sanitation and Hygiene for all" as well as indicators for all outcomes and intended economic, environmental and social impacts (Alliance for Water Stewardship, 2024c, p. 2).

Regarding the **connection and contribution to water-related policy goals and targets**, the AWS Standard is not explicitly intended to implement the WFD. This can be compared with the objectives of the European Water Stewardship Standard, which was designed for the EU regulatory context and explicitly referred to implementation of the WFD by the private sector (European Water Partnership, 2011). The two standards were aligned in the late 2010s (AWS & EWS, 2017), after with the European Water Stewardship Standard was discontinued. Despite not being explicitly geared towards any specific region or river basin, the Standard 2.0 Guidance gives the EU Water Framework Directive as one example of existing water governance institutions, policies and frameworks that an entity implementing the Standard should be familiar and work with. Further, the Guidance highlights the EU WFD as a "more advanced governance program [that] already include[s] a component of stakeholder engagement" (Alliance for Water Stewardship, 2020, p. 17).

When it comes to the European Green Deal (EGD) the AWS Standard 2.0 does not explicitly aim to implement this policy framework, a main reason probably being the fact that the two were launched in the same year, in 2019. That said, the revision of the Standard is intended to align the indicators and requirements with corporate sustainability reporting standards, including the CSRD ESRS, which in turn were updating and developing the EU corporate reporting frameworks in support of the EGD objectives. In the EGD, the Commission committed itself to support businesses and other stakeholders in developing standardised natural capital accounting practices within the Union and internationally, with the aim of ensuring appropriate management of environmental risks and mitigation

[23] Phase One of the impact evaluation project ran from September 2023 to March 2024 (Alliance for Water Stewardship, 2024c, p. 5).

opportunities, and reduce related transaction costs (Recital 44, EU CSRD). Thus, the EU CSRD is aimed at ensuring investors' access to sustainability information provided by undertakings, and the ability of NGOs, social partners, communities affected by undertakings' activities and other stakeholders to hold undertakings accountable for impacts on people and planet (recital 14, EU CSRD). Notably, the AWS is specifically referred to as a provider of useful guidance for identifying actions, or action plans, contributing to address the material impacts, risks and opportunities under the ESRS-E3 Disclosure Requirements on actions and resources related to water and marine resources in the Delegated regulation as regards sustainability reporting standards[24]. The alignment between the Standard's requirements and the CSRD ESRS E3 were carefully analysed in the first draft of V3.0. In the final covering note for the Standard 3.0 Member Vote, the interoperability with the EU CSRD ESRS E3 is described to be high, and stand-alone guidance will be provided to support sites using the AWS Standard to aggregate and report data for CSRD reporting (2025g).

When it comes to the SDGs, the Alliance for Water Stewardship is found among the United Nations SDG partnership action networks, related to SDG 6 ("Ensure availability and sustainable management of water and sanitation for all") and its eight targets, and SDG 12 ("Ensure sustainable consumption and production patterns"). The 2030 goal is to have scaled adoption of the AWS Standard – upwards of ten thousand sites. Regarding resources mobilization, the AWS has stated that its members should promote, use and demonstrate the value of the AWS System against SDG 6 targets. (Alliance for Water Stewardship, 2025i)

In general, it can be noted that the uptake of the AWS Standard by industry has been relatively slow. The number of certified sites within the EU was only 48 in August 2025, with some EU Member States not having even a single certified site within its borders[25]. One explanation for this can be found in the implementation of the EU legislative framework on water. First, the existence of regulations, and authorities and advisory bodies to govern, e.g., river basins, and the intense monitoring on the balance and the quality of the supply, create a feeling of security for business operations. Second, the formal, WFD mandated structures for stakeholder engagement diminish the need for private governance initiatives (Interview A). Whether those formal structures succeed in private sector engagement, is another matter, however.[26] Furthermore, even if *water stewardship* as a term is not used by the current EU Commission (Interview A), industrial water efficiency and water risk management are explicit objectives in EU policies (e.g., the Water Resilience Strategy[27]) and there are multi-sector

[24] Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards, C/2023/5303, OJ L, 2023/2772

[25] To compare, the number of producers audited under the Global G.A.P Sustainable Program for Irrigation and Groundwater Use (SPRING) add-on amounted to 17 247 in January 2026 (Agraya GmbH 2025). However, the SPRING standard is targeted to primary production and water management practices at farm level, while the AWS Standard is applicable to all sectors, and not suitable for smallholder farms that dominate the agricultural sector. Furthermore, the SPRING standard covers fewer critical and key aspects of water and agriculture than the AWS Standard according to a benchmarking survey (GSI 2024). According to AWS, some adaptations of the Standard to raise awareness on agricultural supply chains may be developed soon. This would not come with an indicator as clear as the number of certified sites, which should be considered when measuring scalability of water stewardship (vs. certified water stewardship).

[26] As was emphasised in the AWS Impact Evaluation, the certified sites have found added value from the Standard implementation in their engagement in water governance (Alliance for Water Stewardship, 2024c, p. 2). For further analysis backing up this finding, see GOVAQUA Deliverable 3.2 (forthcoming).

[27] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS European Water Resilience Strategy, Brussels, 4.6.2025, COM(2025) 280 final, European Commission, DG Environment, https://environment.ec.europa.eu/publications/european-water-resilience-strategy_en

platforms for promoting sustainable water management (e.g. Water Europe). Hence, the currently modest uptake is also a question of framing. The CSRD obligations as described above show the relevance of the Standard for new cohorts of European companies.

Efficiency of the practice

Regarding **the utilization, sharing and enhancement of adequate water-related data and information**, standards, audits and certifications can, in general, be part of and support the operationalization of legal requirements, such as fulfilling due diligence obligations. They can increase efficiency, if the data collection can serve multiple purposes and the company and/or its suppliers can gain additional value from the financial and human resources spent on a standard system (Federal Office for Economic Affairs and Export Control (BAFA), 2024). An Impact Evaluation of the AWS Standard system provides some general observations and recommendations regarding the Standard's ability to ensure the utilization, sharing and enhancement of adequate water-related data and information. On the one hand, the certification reports are publicly available, which enhances water-related data and information. On the other hand, the Impact Evaluation report highlights, as an initial observation, a lack of consistency in both quantitative and qualitative data in the certification reports that were reviewed for the evaluation. While the reasons for this would need further exploration, the report suggests that this weakness (i.e. inconsistency in data) could stem from a lack of clarity on data expectations for specific Standard Indicators, inconsistent use and/or interpretation of the AWS Guidelines for Indicators by sites, or inconsistent application of Standard Indicators and/or Guidance by auditors. To help overcome the variation in quality of data provided in AWS Certification Reports across the different outcomes, the report recommends an update of the AWS Standard Guidance. Since the launch of the report, Water Stewardship Assurance Services has also been established as the single Conformity Assessment Body for the AWS System, to replace the 10 previously accredited assurance providers, further supporting in auditing consistency issues. (Alliance for Water Stewardship, 2024c, pp. 2–8)

Regarding **cost-effectiveness** of the Standard, one of the reasons for initiating the revision of the Standard was its heavy administrative load on the implementing sites (see also GOVAQUA Deliverable 3.2, forthcoming). Whether the revision succeeds in streamlining the Standard and easing the auditing and reporting procedures remains to be seen.

Inclusivity and reflexivity of the practice

Regarding the **inclusivity and reflexivity** of the practice, the AWS Standard system emerged from **dialogues between public, private and civil society organisations, and the Alliance members include actors from all these sectors**. The standard is built on inclusivity and reflexivity, for instance understanding the local context for water stewardship, including the relevant stakeholders and water governance initiatives, and committing to and planning of processes to achieve and maintain legal and regulatory compliance. However, in practice, **the implementation of the Standard may require expert input, thus making the Standard more exclusive** (Interview A). Regarding the revision of the AWS Standard, as can be seen from the analysis above, AWS has engaged the membership base and stakeholder community, also in terms of commenting on the value chain objectives of the practice and alignment with policy objectives.

Replicability and generalizability of the practice

The AWS Standard is intended to be **globally applicable to all organizations and industrial sector**s, independent of the organization's size and operational complexity (Alliance for Water Stewardship,

2019, p. 5). That said, the target group is major water users, while the focus is on the operational site and its local water catchment. The AWS Standard is described as "the most comprehensive framework with validation and external audits" (Sojamo and Rudebeck, 2024, p. 308) and is often mentioned as a good practice of water stewardship. Despite this recognition, and the fact that the first version was launched already in 2015, the uptake of the Standard by the industry has been moderate; the reported number of Certified Sites was 355 as of 30 July 2025, with some European Union countries not having a single registered site, while the number of members in the organisation amounted to 221 (Alliance for Water Stewardship, 2025b, 2025c)[28]. Based on the relatively low number of certified sites, there are seemingly **barriers for a broader uptake** of the AWS Standard by the industry. Having one Standard that is applicable to all sectors and all geographies is both a strength and limitation. In general, there are varying views on what water stewardship should encompass operationally and at different sites, depending on the local circumstances, the industry in question, and the perceptions of water risks (Lucas et al. 2024). Existing water stewardship initiatives have been found to be too resource-intensive especially for SMEs, while there is a lack of enterprise-level standards (Lucas et al. 2024). Competition and lack of coordination among water stewardship promoters have also led to proliferation and fragmentation of initiatives and terminology (Sojamo and Rudebeck 2024). "Competing" public regulation may also play a role, as some countries may already have a regulatory and institutional framework and structures that support objectives that are similar to those of the AWS Standard (Interview A). In such settings, the cost of implementing the AWS Standard may potentially outweigh the benefits. Lucas et al. (2024, p. 8) suggest that expanding the focus of water stewardship from basin-level to how water moves globally, and aligning better with the goals of climate resilience and adaptation, could produce greater visibility for water stewardship and more impactful activity on water, notions which have been brought to the fore in the AWS Standard revision process as well. A site-based standard with third party assurance does not work for everybody, but there is potential for AWS to serve other users by further developing their standards offering.

It remains to be seen how the updated AWS Standard (with a reduced number of requirements) is perceived by users compared to previous versions. In terms of the broader replicability and generalizability of the practice, the AWS Standard – or specifically its broader goal to extend to the impact and dependencies in supply chains – has potential to function as a benchmark for developing water standards, for instance within the remit of the European Water Resilience Strategy. It remains to be seen how the CEN/TC 478 'Water resilience and sustainable use' European Technical Committee established by CEN/CLC (European Committee for Standardization) refers to the AWS Standard in their task to develop standards supporting the EU Water Resilience Strategy (Water Europe, 2025).

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- Date of case description: 23 December 2025

Related websites:

Alliance for Water Stewardship (AWS): https://a4ws.org/

Water Stewardship Assurance Services (WSAS): https://watersas.org/

Water Europe: https://watereurope.eu/

[28] For comparison, in 2023, the number of AWS members amounted to 172, while the number of AWS certified sites amounted to 274, distributed across 62 countries (Alliance for Water Stewardship, 2024a).

EU Corporate sustainability reporting: https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

Related resources

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4 Conclusions

The legal and regulatory instruments presented in the seven good practices in this report translate high-level policy goals for sustainable and equitable water use in Europe to more specific enforceable rules namely to implement e-flows to satisfy ecosystem needs for water, to allocate water to different water uses sustainably in water scarcity situations, and to regulate water use in international value chains.

The implementation of e-flows and water allocation systems contribute to the good status objectives of the EU Water Framework Directive (WFD) for both surface waters and groundwaters. The enforcement of adequate e-flows via permitting systems and river basin management plans is essential for dealing efficiently with water scarcity and drought issues and for achieving good status. Also, water allocation systems and planning frameworks are key pillars for drought management which is interlinked with river basin management processes under the WFD. The strengthening of the implementation of e-flows and improvement of water allocation systems are also key elements of the EU Water Resilience Strategy which aims to restore and protect the water cycle and enhance resilience against droughts, water scarcity and competition between economic sectors and environmental needs for water resources.

The e-flows case studies in this report present good practices for the regulatory design and implementation of e-flows via definition of prioritised restoration areas and specific restoration ordinances to implement measures of the river basin management plans, abstraction management strategies, permits reviews and implementation of limiting license conditions in case of reduced river flows. The good practices stem from Austria and England, which both have an advanced policy framework in place for defining e-flows either in national legislation (Austria) or in the river basin management planning framework (England).

Opposition to e-flows from water users that are affected most is often a key challenge and the Austrian case shows how proactive outreach and engagement with key economic sectors (in this case hydropower) supports e-flows implementation. Early dialogue and advisory support can promote voluntary implementation of measures although measures should still be embedded in a formal planning and legal framework. Further, Austria's approach to restore e-flows in phases in prioritised areas offers a structured model that aims to balance environmental needs and energy production considerations.

The English case on Catchment Abstractions Management Strategies and hands-off flows conditions on licenses shows the importance of considering declining water availability in the regulation and implementation of e-flows. It provides good practice for a water allocation system that integrates environmental flow requirements with abstraction licensing and review of licenses at the catchment scale. In both cases of Austria and England, having authority jurisdiction to intervene in abstraction licenses and impose flow restrictions (in case of low flows and failure to achieve good status) is a key enabling condition for e-flows implementation.

Finally, neither of the two good practice cases on e-flows include compensation options for water users who are affected by license changes to implement e-flows. However, the Austrian case highlights the importance of financial support and advisory services to water uses to enable the adoption of innovative win-win technical solutions. Overall, there is scope for further improvement in the implementation of e-flows in particular for water users with older and unlimited licenses, for which the regulatory system may still not be prescriptive enough to take e-flows measures in the short-term. Broader implications for EU policy on achieving good status under WFD and increasing water resilience is that eflows requirements must be matched with technical advice, financial support and regulatory

instruments allowing regular review and flexible modifications to water use and abstraction licenses, and, where needed, legal reforms to tackle older licenses.

For Member States seeking to promoted water resilience, the good practices on "reconciliating water uses" and water allocation assessed in this report illustrate how collective allocation systems such as OUGCs and territorial planning frameworks such as PTGEs in France can better address structural water scarcity under climate change. They exemplify ways to strengthen quantitative water management under the Water Framework Directive and contribute to several objectives of the EU Water Resilience Strategy, in particular by promoting more efficient water use (e.g. through improved water allocation in agriculture), strengthening the enforcement of water regulations (e.g. through increased collective supervision of users of abstracted volumes), and multi-annual planning of natural and grey infrastructure investments for water retention and storage, and more operational and local planning of measures.

The good practices rely heavily on improved monitoring, shared knowledge, and dialogue. They show the importance of combining clear environmental limits defined by public authorities with governance arrangements that operate at the scale of the resource and involve water users directly in allocation and planning processes. At the same time, the cases highlight that participatory and collective governance alone is not sufficient. If commitments are weakly binding, progress toward restoring balance between water availability and use remains slow due to the difficulty to address trade-offs and opposition of sectors.

Overall, the cases suggest that locally adapted, collaborative approaches are most effective when they are embedded in a robust legal framework, supported by credible public oversight, and combined with clear mechanisms to ensure monitoring, implementation, compliance and long-term behavioural change. For Member States, uptake of these good practices would potentially require modification of legal and regulatory arrangements for river basin and local water planning under the EU WFD, as well of licensing conditions and associated enforcement arrangements.

Concerning the regulation of international value chains, the role of enterprises in assessing dependencies of and impact on value chains within a country as well as further upstream the supply chain is becoming more established within the EU, although the European public regulation of international value chains is still evolving to align with, intern alia, the European Green Deal (EGD) objectives, while simultaneously promoting competitiveness and security. While the French Duty of Vigilance Law and the German Supply Chain Act were groundbreaking in establishing obligations for (large) companies to evaluate risks of violations of human rights and of adverse impacts on the environment, in their own activities and in their supply chains, these national public regulations have also received their shares of criticism – considered not effective enough by some, and to create too burdensome obligations on companies by others. However, water-related issues are either not explicitly included (in the French case) or only to a limited extent (in the German case). The case law relating to water under the French Duty of Vigilance Law is still scarce. In both cases, there is still room for improvement regarding the explicit coverage of impacts on water and water-related issues, and regarding the transparency and access to justice. Furthermore, the future development of these laws will be affected by the EU legislation in the areas of sustainable finance and corporate responsibility, recently amended by the European Parliament (Omnibus I package). Since the CSDDD and amendments to other laws will need to be transposed into Member States' national law within the upcoming years (including in France and Germany), there is opportunity to benchmark against the French and German laws and administrative and court practice, and take a sustainable, equitable and resilient water use lens when preparing the new laws or amendments to existing legislation.

Regarding the role of soft law in governing water in companies' value chains, the 2024-2025 revision of the AWS Standard has engaged many stakeholders, both companies, civil society organisations and

public sector organisations, with the result that the indicators relating to the organisation's value chain changed substantially throughout the revision process, finally landing in being a requirement at the Gold (i.e. advanced) level in the certification scheme. With the remaining uncertainty in the public regulatory landscape of how CSDDD and Omnibus I amendments will be implemented throughout Europe, the AWS Standard offers a comprehensive, tested, user- and stakeholder-driven framework that does, historically and in its requirements, link water impact and dependencies at sites and in organisations' value chains with European and international water-related policy goals, even if the links are implicit in the Standard and their concretization depends on the site certification process and assessment. That said, there is still room for improvements in effectiveness and efficiency, and it remains to be seen if the revised Standard provides an appealing voluntary option for organisations for governing water at their operational sites and in their value chains.

In the next phase of GOVAQUA, the good practice descriptions will be moved to an online repository, with the intention to make them available for various water decision makers, managers and users across Europe. Further, the lessons learned from the legal and regulatory good practices will be used in the next steps, which focuses on formulating recommendations on transitioning to sustainable and equitable water use in Europe.

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Annexes

Annex I: GOVAQUA Good practice template for innovative water governance instruments, approaches and arrangements for reaching WFD, EGD and SDG aims

Good practice definition

A good water governance practice in the GOVAQUA project is defined as follows:

A good water governance practice exemplifies an innovative instrument, approach or arrangement that contributes to achieving water-related policy goals and targets in a sustainable and equitable manner. It has been tested in practice, assessed and validated by stakeholders and independent evaluators in a specific context against specific principles and criteria.

Water governance good practices originate from certain contexts and are tied to the water issues of that context. Therefore, they entail certain prerequisites from their implementation environment. Thus, broadly applicable "best practices" for water governance cannot be discern[29]. However, within good practices implementation different performance levels can be achieved, typically requiring different levels of effort and resources, building on a continuous improvement.

The good practices documented with this template are all examples of emerging water governance innovations that are not yet broadly applied but hold promise for replicability and up-scaling in the EU context. The difference of this good practice documentation to water governance assessments, initiated e.g., by the OECD and the self-assessment tool developed in the GOVAQUA project, is that the focus of the good practice is on an instrument, approach or arrangement, rather than the broader water governance context such as a nation or a basin.

Purpose and target audience

The documented good practices are primarily intended to validate existing niche practices and to provide innovative ideas for national and basin level water managers and other decision makers in water governance. The practices are also relevant to other water governance actors, such as NGOs, companies and research institutes that initiate or participate in water governance processes.

Good practice criteria

Water governance instruments, approaches and arrangements advance sustainable and equitable water use when they:

Are effective, i.e., they

[29] Note: For example, the recent OECD *Handbook of What Works Solutions for the Local Implementation of the OECD Principles on Water Governance* (OECD 2024) only refers to "evolving water governance practices" that "respond to the challenges underlying each of the 12 (OECD Water Governance) Principles", drawing lesson from "successful" and "challenging" implementation examples. Nevertheless, OECD generally advances identification of "good water governance" practices.

1. Address a problem or a need related to sustainable and equitable water use
2. Connect and contribute to water-related policy goals and targets
3. Define and follow clear roles and responsibilities for different stakeholders
4. Are linked to appropriate scales within basin or other water governance systems
5. Match or advance the level of technical, financial and institutional capacity in the given water governance system

Are efficient, i.e., they

1. Utilize, share and enhance adequate water-related data and information
2. Are cost-effective and/or help mobilizing financing for associated water solutions
3. Connect to and advance sound regulatory frameworks

Are built on or advance inclusivity and are reflexive, i.e., they

1. Are built on or advance transparent and accountable processes and outcomes
2. Are built on or advance equal participation and collaboration between stakeholders and water justice, and are gender-sensitive
    a. Recognise the different types of stakeholders and their different needs
    b. Equally distribute the benefits, harms and costs that result from the practice among different stakeholders, and address and resolve trade-offs and potential conflicts between users
    c. Involve different stakeholders and integrate their different types of knowledge into the decision-making process,
3. Include and advance regular monitoring and evaluation mechanisms
4. Promote social learning, innovative ways to cooperate and science-policy interface

Template

General information

Title

The name of the practice

General description

Initiator

Category

Water issue

Geographical applicability

Level of water governance

Stakeholders

Good practice description/assessment and validation

Methodology for the assessment and validation

Effectiveness of the practice

Reporting by criteria as listed in the previous section, including documented successes and challenges.

Efficiency of the practice

Reporting by criteria as listed in the previous section, including documented successes and challenges.

Inclusivity and reflexivity of the practice

Reporting by criteria as listed in the previous section, including documented successes and challenges.

Replicability and generalizability of the practice

Reflection on the necessary conditions.

Technical details

- Author/contact person
- Related websites
- Related resources

Annex 2: Interview guides

Interview guide for interview A, good practice 3.1

Implementation of priorisation approach for eflows

- Is the priorisation approach developed jointly by the national Ministry and federal provinces (Länder) to define priority restoration areas?
- At Länder level, how does the regional government select hydropower permit holders for eflows implementation in each planning period? What criteria and information are used to prioritise specific hydropower plants for taking measures? Is the importance of each hydropower plant for national electricity production considered? Are small obstacles treated similar to larger ones?
- What are the main instruments for the Länder to ensure implementation of eflows?
- What has worked well with the priorisation approach for restoring eflows? What not so well?

Specific instruments for eflows implementation

Revision of hydropower permits

- Can permits of older hydropower plants which are permanent or not expired, be changed to time-limited permits and be subject to revision of conditions?
- In case of permit renewal introducing new conditions to implement eflows, are hydropower plant owners eligible to compensation for lost revenue?
- Can hydropower permit holders make a legal appeal to a permit renewal, if they think that they are not treated fairly? Can such appeal lead to avoiding the eflows measures?
- What are the main barriers to implementation of eflows for older hydropower permits?

Cooperation with hydropower sector & advisory services

- Were specific actions taken by Länder authorities to raise acceptance of eflows measures with the hydropower sector?
- What factors have contributed to voluntary action by hydropower owners for measures on flow improvements and river continuity?
- Are advisory services which have been offered to small hydropower plants to find win-win solutions organised and funded by regional governments?
- Are consultants or technology advisors involved for the promotion of best practice technologies?

Funding sources

- What are the main funding sources for eflows measures, in particular for small hydropower which lacks financing?
- Was funding made available for replacing turbines in small hydropower plants?
- Does funding also cover dam removal of older small hydropower which agree to stop energy production but have no funds for the removal?

Interview guide for interview A, good practice 3.7

Position of the AWS Standard and water stewardship collective action in the EU water governance context

- What is the current position of the AWS Standard in the EU policy landscape, i.e.in supporting EU water policy implementation, including Water Framework Directive and the Water Resilience Strategy? What role do you see for it?
- What role do you see for water stewardship collective action in Europe, in supporting private sector engagement in water policy and governance?
- What other areas of EU's policy do you see critical for advancing systemic approach to water stewardship, including in global value chains? How coherent are water policy objectives with other policy areas in different sectors, and could/should policy coherence be improved (for all/some sectors)?

Effectiveness of the AWS Standard and water stewardship collective action in advancing sustainable and equitable water use in Europe

- Is the AWS Standard aligned with or does it contribute to EU's water-related policy goals and targets?
- Does the AWS Standard support private sector engagement in EU water policy and governance?
- Is the AWS Standard well known in Europe?
- What is the effectiveness of water stewardship collective action initiatives you may be aware of, i.e. their policy alignment and support for private sector water governance engagement?
- **If the effectiveness has not been optimal, what could be done to improve it?**

Efficiency of the AWS Standard and water stewardship collective action in advancing sustainable and equitable water use

- Is the AWS Standard cost-effective?
- Are the water stewardship collective action initiatives you are aware of cost-effective?
- **If the efficiency has not been optimal, what could be done to improve it?**

Inclusivity and reflexivity of the AWS Standard and water stewardship collective action in Europe

- Does the AWS Standard help in recognising different types of water-related stakeholders and their different needs?
- Does the AWS Standard support equal participation in water governance and collaboration between stakeholders?
- Does the AWS Standard help in equally distributing the benefits, harms and costs among different stakeholders, and address and resolve trade-offs and potential conflicts between water users?
- Does the AWS Standard promote social learning and innovative ways to cooperate?
- What is the level of inclusivity and reflexivity of the water stewardship collective action initiatives you may be aware of?
- **If the inclusivity and reflexivity has not been optimal, what could be done to improve it?**

Main challenges, opportunities and development needs–scaling up and replicability

- What are the main challenges faced when implementing the AWS Standard in the Europe?

- What are the key factors for the AWS Standard to succeed as water governance practice in Europe?
- What are the main challenges faced when implementing water stewardship collective action in Europe?
- What are the key factors for water stewardship collective action to succeed as water governance practice in Europe?