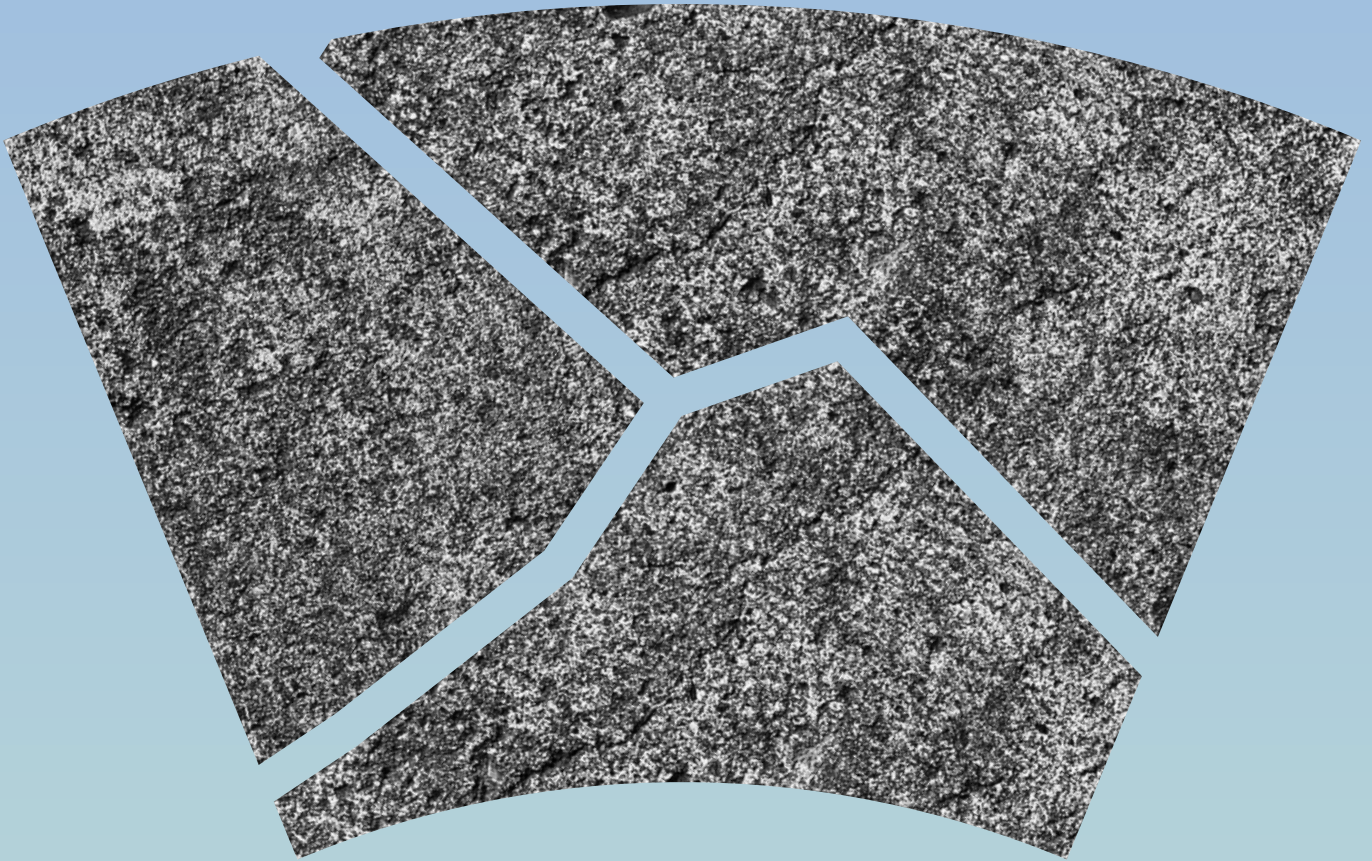




Past the expiration date

How Europe extends the life of ageing dams
without environmental assessments

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Warsaw, July 2026

ClientEarth 

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1 Introduction

Many large dams currently operating in Europe were designed and constructed several decades ago, under different climatic conditions, with a different state of scientific knowledge, and in response to different economic and political priorities. Since then, both the environmental policy objectives of the European Union and its Member States and scientific understanding of the impacts of dams on river ecosystems have changed significantly. At the same time, challenges related to climate change, biodiversity loss and water security have become increasingly important. Nevertheless, large dams continue to operate on the basis of decisions issued decades ago, in most cases before the implementation of the Environmental Impact Assessment Directive (Directive 2011/92/EU, the "EIA Directive").

This raises the question of whether decisions allowing the continued operation of such infrastructure should themselves be subject to environmental impact assessment. In practice, in many Member States, the operational lifetime of large dams is extended through renewed concessions, permits or other administrative decisions that are not treated as projects requiring an environmental impact assessment or the associated public participation procedures.

This report examines that question using large dams as a case study. Large dams are a particularly relevant example of infrastructure with an exceptionally long operational lifetime, whose environmental impacts evolve over time. Ageing structures, reservoir sedimentation, climate change and biodiversity loss - all contribute to changing, and in some cases increasing, the environmental impacts associated with dam operation. At the same time, administrative decisions authorising the continued operation of dams may remain in force for several more decades.

The need to take these changing circumstances into account has been recognised by the European Commission. In its 2013 guidance on integrating climate change into environmental impact assessment, the Commission emphasised that infrastructure should be assessed against the climatic conditions expected throughout its operational lifetime, since design parameters adopted at the planning stage may become outdated over time.¹

This report is divided into three parts. The first examines the legal concept of a "project" in the context of extending the operational lifetime of infrastructure, with



Photo: Solina, Jacek Kusz

particular reference to the case law of the Court of Justice of the European Union and the practice of the Aarhus Convention Compliance Committee and the Espoo Convention Implementation Committee. The second explains why, from both an environmental and climate perspective, time is not a neutral factor in the operation of large dams, and how their environmental impacts and associated risks evolve over time. The third presents case studies from Poland, Italy, Bulgaria and Romania, analysing the national legal frameworks governing the extension of dam operation and their practical consequences.

The analysis is intended to support lawyers, policymakers, practitioners and civil society actors working on EIA, water governance, climate adaptation and biodiversity protection. It identifies the legal gap surrounding lifetime extensions of ageing infrastructure, shows why large dams illustrate this problem particularly clearly, and highlights the implications of current permitting practice for environmental protection, legal coherence, river governance and climate adaptation in the European Union.

What is a dam?

A dam is a type of hydrotechnical structure – a horizontal barrier built across a river valley to hold back water. But this is not a legal definition. EU law does not define the term “dam” and instead uses different terms to describe such structures or their operation.

The Environmental Impact Assessment Directive (Directive 2011/92/EU) refers to “dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres” in point 15 of Annex I, which lists projects for which an EIA is always required. It also refers to dams in Annex II, point 10(g), which covers projects that may require an EIA following a screening procedure.

The Water Framework Directive (Directive 2000/60/EC) classifies the impoundment and storage of water as “water services” (Article 2(38)(a)). It also recognises river continuity, which dams disrupt, as a key quality element for assessing the ecological status of rivers (Annex V, point 1.1.1).

The Nature Restoration Regulation (Regulation (EU) 2024/1991) uses the concept of “artificial barriers.” This is a broader term that includes dams, but also covers other structures that hinder the longitudinal, lateral, and vertical connectivity of rivers.

For large dams, the International Commission on Large Dams (“ICOLD”), an international non-governmental organisation that shares knowledge on dams, provides a commonly used definition. A dam is considered large if it is at least 15 metres high (from the lowest foundation to the crest), or between 5 and 15 metres high and impounds more than 3 million cubic metres of water. This threshold is widely used, including in Member State legislation, due to ICOLD’s importance and extensive data. However, it does not correspond to EU legal provisions. As a result, it may be confusing when compared to thresholds in EU law, such as those in Annex I of the EIA Directive.



Photo: Porąbka, Jacek Kusz

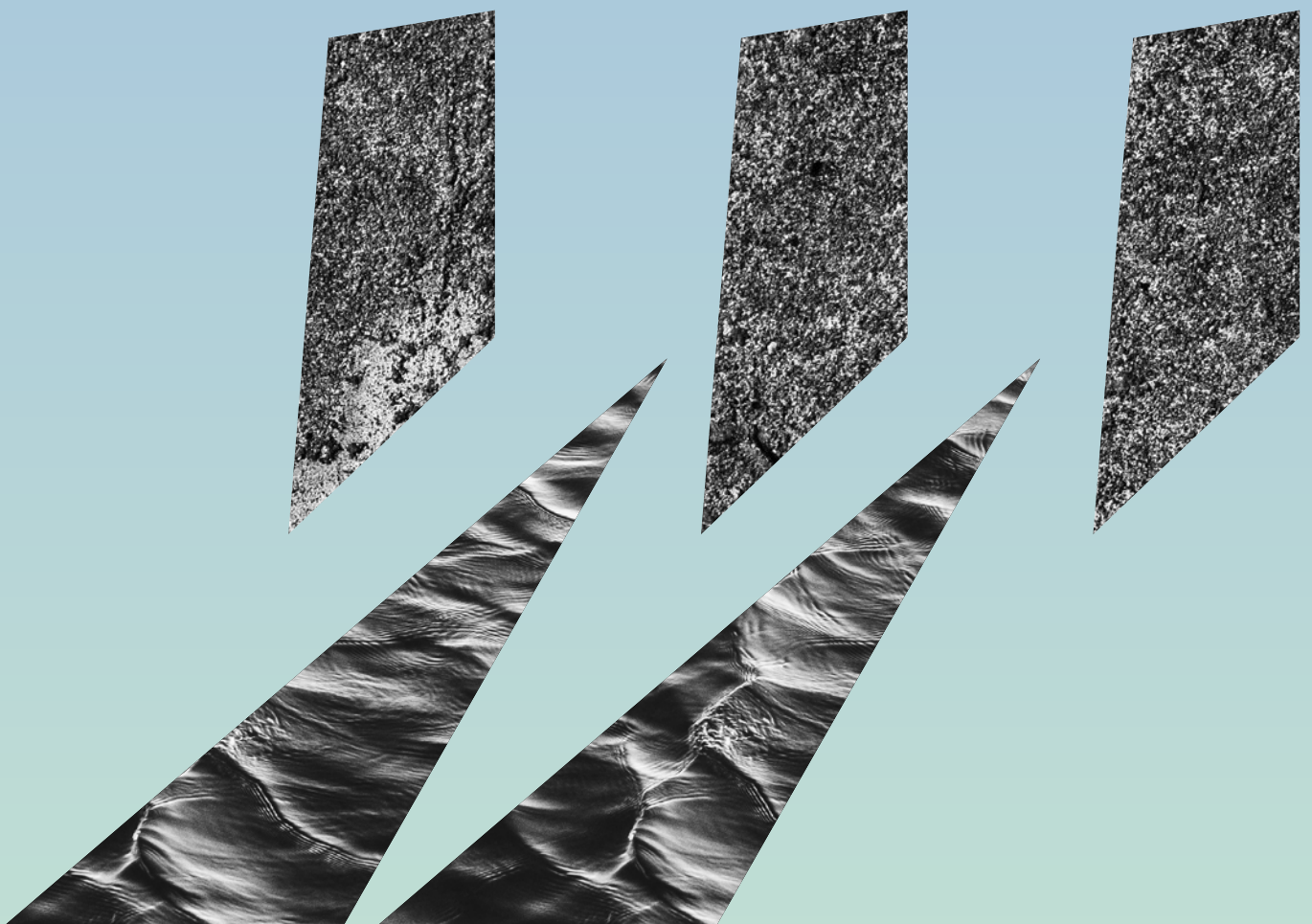


Photo: Czorsztyn, Jacek Kusz

In summary, the broadest term, focused on ecological impacts, is “artificial barriers,” which include, but are not limited to, dams. Dams may be classified as small or large, and the thresholds for this classification can vary even within a single Member State, depending on the type of legislation (e.g. safety-related or environment-related).

This report focuses on the EIA Directive and the obligations related to lifetime extensions, using dams as a case study. It therefore mainly refers to the thresholds set out in the EIA Directive, while occasionally drawing on broader scientific data, as scientific and technical studies do not follow EIA thresholds.

2 Environmental Impact Assessment of lifetime extensions



2.1 Environmental Impact Assessment and its role

Environmental Impact Assessment ("EIA") is one of the key preventive tools of EU environmental law. Its purpose is straightforward: before a project is authorised, its likely environmental effects must be identified and assessed, and the public must have an opportunity to participate in the decision-making process.

Complications arise, however, when we move beyond the initial authorisation of a project. Many large industrial and energy installations operate for decades. Over time, their environmental impacts change, legal and technical standards evolve, and scientific knowledge develops. In addition, the effects of climate change already alter environmental baselines and increase the vulnerability of both the infrastructure and the surrounding areas. In this context, it becomes necessary to determine when EU law requires the environmental impacts of existing projects to be reassessed. In particular, the question arises whether the extension or renewal of an existing consent triggers an obligation to carry out an environmental impact assessment.

Under the EIA Directive, an assessment is required for projects likely to have significant effects on the environment², a concept primarily linked to works or physical interventions. However, considering the existence of old and ageing infrastructure projects, such as dams, the question arises of whether extending a project's operational period can, in itself, also qualify as a "project" under the Directive. More fundamentally, should environmental impacts be assessed solely at the time of construction, or also when ageing installations are allowed to operate for many additional years despite changing environmental and climate conditions? The section below examines these questions by analysing the EIA Directive, the relevant case law of the Court of Justice of the European Union ("CJEU"), the practice of the Aarhus Convention Compliance Committee ("ACCC") and the Espoo Convention Implementation Committee ("ECIC").

Why can other environmental assessments not replace EIA for lifetime extensions?

The EIA is the only environmental assessment procedure under EU law with a comprehensive and integrated scope.

In comparison, the assessment under Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC) applies to plans or projects likely to have a significant effect on a Natura 2000 site. Its scope is both broader and narrower than that of the EIA. It is broader because there is no predefined list of projects that must undergo this assessment. At the same time, it is narrower because it focuses only on impacts on Natura 2000 sites, assessed in light of their conservation objectives, and does not cover wider environmental, health, or safety impacts addressed under the EIA.

The outcomes of the appropriate assessment under the Habitats Directive are binding. The competent authority may approve a plan or project only after having ascertained that it will not adversely affect the integrity of the Natura 2000 site, unless a derogation under Article 6(4) is applied. By contrast, the EIA informs the development consent procedure but does not in itself determine the outcome. Development consent may still be granted even where negative environmental impacts are identified, without the need to apply derogations.

The Water Framework Directive (Directive 2000/60/EC, "WFD") establishes a separate assessment obligation focused on impacts on water bodies. Under the WFD, when deciding whether to authorise an individual project, the competent authority must assess whether the project may cause deterioration in the status of a body of surface water or jeopardise the attainment of good surface water status or good ecological potential and good chemical status. If it does, authorisation must be refused unless the conditions for a derogation under Article 4(7) WFD are met³.

Although the outcomes of the EIA are not binding in the same way, it remains the only assessment under EU law with such a comprehensive scope. Under Article 3 of the EIA Directive, the EIA must identify, describe, and assess the direct and indirect significant effects of a project on a wide range of factors, including biodiversity, water, soil, land, air, and climate, as well as population, human health, material assets, cultural heritage, landscape, and the interactions between these elements. It must also consider the vulnerability of projects to major accidents or disasters.

In addition, the EIA procedure addresses transboundary impacts where relevant (Article 7) and ensures public participation (Article 11). This makes it the most comprehensive assessment tool in EU law. The assessment of disaster risks and impacts on populations is particularly important in the context of dams. While some Member States carry out separate safety permitting for dams (for example, Romania, as explained in the case study), there is no harmonised EU-wide procedure in this area.

Finally, the EIA is also a procedural tool recognised in international law and has been part of the EU acquis for several decades. Its role is therefore well established, which is particularly relevant in the context of the current rollback of environmental legislation at both the EU and Member State levels.

This is why the existence of sector-specific permitting or assessment procedures does not remove the need for an EIA, and why it is important to carry out an EIA before decisions extending operation or granting operational permits. Procedures under the Habitats Directive, the WFD, or other sectoral regimes address only selected aspects of a project within the limits of their respective legal frameworks. They do not provide the comprehensive assessment required under the EIA Directive.

2.2 Definition of a project under the EIA Directive

Under the EIA Directive, an environmental impact assessment must be carried out before consent is granted for projects that are likely to have significant effects on the environment. According to Article 2(1) of the Directive, this obligation applies to projects within the meaning of Article 1(2)(a) where such effects may arise by virtue of the project's nature, size or location.

Article 1(2)(a) of the EIA Directive defines a "project" as:

- ~ "the execution of construction works or of other installations or schemes" (first indent), and
- ~ "other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources" (second indent).

This definition focuses on works and interventions affecting the physical environment.

Projects listed in Annex I to the EIA Directive are considered, by their nature, always likely to have significant effects on the environment. They must therefore be subject to a mandatory environmental impact assessment, in line with Article 4(1).

Annex I contains 23 categories of projects presumed to have significant environmental effects. These include, among others, dams, nuclear power plants, motorways, installations for the intensive rearing of poultry, quarries and open-cast mining, and certain chemical installations. Some categories apply irrespective of size, while others are subject to specific thresholds. For dams, which are the focus of this report, point 15 of Annex I indicates only the dams where the storage capacity exceeds 10 million cubic metres. This means that an artificial reservoir created by a dam must hold at least 4,000 Olympic-sized swimming pools to be subject to a mandatory EIA.

It is noteworthy that certain Annex I categories are expressly limited to "construction". For example, point 7(a) of Annex I covers "construction of lines for long-distance railway traffic and of airports with a basic runway length of 2 100 m or more". Other categories, including point 15 on dams, are not explicitly confined to construction activities. This distinction is relevant when assessing whether subsequent authorisations fall within the scope of the EIA Directive.

Annex I, point 24, further provides that "any change to or extension of projects listed in this Annex where such a change or extension in itself meets the thresholds, if any, set out in this Annex" must also be subject to an EIA. This provision makes clear that the Directive does not apply only to the initial execution of works, but may also cover later changes or extensions of existing projects.

Projects listed in Annex II are subject to a screening procedure. Under Article 4(2), Member States must determine, based on the set criteria, whether such projects should be made subject to an EIA depending on their nature, size and location. This determination is carried out either on a case-by-case basis or on the basis of thresholds or criteria established by Member States. As a result, some Annex II projects may ultimately not require an EIA if they are unlikely to have significant environmental effects. However, the screening step itself must always take place. Point 10(g) of Annex II includes “dams and other installations designed to hold water or store it on a long-term basis (projects not included in Annex I)”. Accordingly, dams exceeding a storage capacity of 10 million cubic metres require a mandatory EIA under Annex I, while smaller dams must at least undergo screening.

Moreover, point 13(a) of Annex II requires screening for “any change or extension of projects listed in Annex I or this Annex, already authorised, executed or in the process of being executed, which may have significant adverse effects on the environment (change or extension not included in Annex I)”. This provision ensures that modifications of existing projects may also trigger environmental assessment where their potential environmental impacts justify such review.

The key question, therefore, is whether the renewal or prolongation of an existing permit may itself constitute a project within the meaning of Article 1(2)(a) of the EIA Directive or an extension of such project. The answer to this question determines whether a renewed authorisation for an existing installation may give rise to a new obligation to carry out an EIA or, at least, a screening procedure.

2.3 Definition of a project in CJEU case law

The CJEU has addressed the concept of a “project” in several cases. However, the factual situations underlying those cases differ, and the Court’s reasoning does not always point in the same direction. Moreover, the Court’s approach does not coincide with that of the Aarhus Convention Compliance Committee and the Espoo Convention Implementation Committee.

2.3.1 The Brussels airport case (C-275/09)

In 2011, in Case C-275/09 *Brussels Hoofdstedelijk Gewest and Others*, the Court examined whether the renewal of an existing permit to operate Brussels National Airport constituted a “project” under the EIA Directive.

The Court held that the concept of “project” requires works or interventions that alter the physical aspect of a site. Since the renewal of the airport’s operating permit did not involve any physical modifications, it could not be classified as a “project” within the meaning of Article 1(2)(a) of the Directive or as “construction” according to point 7 of Annex I. As a result, the renewal did not trigger the obligation to carry out an EIA. This judgment therefore supports a restrictive interpretation: in the absence of physical alterations, the mere extension or renewal of an operating permit does not constitute a project.

It should nevertheless be noted that the relevant Annex I category refers expressly to the *construction* of airports. Other Annex I categories, such as dams or groundwater abstraction, are not framed in purely construction-based terms. Whether the restrictive approach adopted in *Brussels Airport* can be transposed to those categories remains contestable.

2.3.2 The Doel case (C-411/17)

Case C-411/17 concerned a Belgian law extending the operational lifetime of the nuclear power plants *Doel 1* and *Doel 2* by ten years. In its request for a preliminary ruling, the Belgian Constitutional Court asked, inter alia, whether such an extension required an environmental impact assessment under the EIA Directive. In its judgment of 2019, the Court revisited its earlier interpretation of the concept of a “project”, adopting a broader approach than in *Brussels Hoofdstedelijk Gewest*, although one that is still limited in practice.

The Court held that the decision to extend the operating period could not be artificially separated from the renovation or upgrade works that made that extension possible. Where a lifetime extension is inextricably linked to major modernisation or upgrade works, both elements together constitute a single project within the meaning of Article 1(2)(a) of the EIA Directive (para. 71). In the case at hand, such works were indispensable

in order to bring the installations into line with current safety standards and were capable of altering the physical aspects of the site (para. 66). The Court emphasised a tangible link between the extension in time and the investments in modernisation and renovation: taken together, they formed one project. Importantly, the Court considered the works closely linked to the extension decision, even though they were not explicitly mentioned in the contested decision (para. 67).

As regards the obligation to carry out an EIA for such a project, the Court relied on Annex I, point 24, which applies to “any change to or extension of projects listed in this Annex where such a change or extension in itself meets the thresholds”. The Court held that this provision covers changes or extensions which, by virtue of their nature or scale, give rise to environmental risks comparable to those that existed when the installation was first put into service (para. 78). In this case, the ten-year extension, combined with the necessary modernisation works, was capable of producing effects of comparable magnitude.

Two cumulative elements can therefore be derived from the judgment:

1. Definition of a project: the lifetime extension must be inextricably linked to works affecting the physical aspects of the site, so that both together constitute a single project.
2. EIA obligation: the extension or change must entail environmental risks comparable to those that would have required an EIA if the installation had been authorised as a new project.

So, the Court maintained some structural link between the concept of a “project” and the existence of physical works. It did not expressly recognise that a simple extension of operation, even for a long period, may in itself constitute a project where significant environmental effects arise.

From an implementation perspective, this approach raises practical difficulties. The Court refers to a “significant” period of extension, “major” works, “substantial” investments, and “similar” or “comparable” risks. These concepts require a case-by-case assessment, yet the judgment provides limited guidance as to who should carry out that assessment and at what stage. Unlike Annex II projects, Annex I projects are not subject to screening. It therefore remains unclear how, in practice, authorities should determine whether renovation works are “major”, whether risks are “comparable”, or whether the extension period is “significant”.

Currently, the *Doel* case itself constitutes the main interpretative reference point. However, given the diversity of Annex I project types and the variability of environmental effects depending on factors such as location and technology, applying this interpretation consistently in national EIA practice is challenging.

By contrast, the approach adopted by the Espoo Convention Implementation Committee and the Aarhus Convention Compliance Committee is more straightforward and easier to apply, as it accepts that simple permit renewals may trigger assessment obligations even in the absence of physical modifications.

2.4 Lifetime extensions under the Aarhus and Espoo Conventions

The issue of lifetime extensions has been examined by the Aarhus Convention Compliance Committee, established under the 1998 UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters ("Aarhus Convention"), and by the 1991 Implementation Committee of the Espoo Convention on Environmental Impact Assessment in a Transboundary Context ("Espoo Convention"). Both Conventions are international law instruments that create binding obligations for the European Union, which has ratified them, as well as for the EU Member States, which are parties in their own right. The EU has primarily implemented the relevant obligations arising from these conventions through the EIA Directive⁴. The Directive should therefore be interpreted consistently with those instruments.

Under the Aarhus Convention, activities likely to have a significant effect on the environment must be subject to public participation under Article 6. Similarly, the Espoo Convention requires environmental assessment (Article 2) and transboundary consultation (Article 5) for certain activities likely to cause significant adverse transboundary effects, including large dams and reservoirs listed in Appendix I.

The findings of the ACCC⁵ and the ECIC⁶ are endorsed by the Meeting of the Parties, which gives them interpretative authority beyond the individual cases concerned. In light of Article 216(2) of the Treaty on the Functioning of the European Union, under which international agreements concluded by the EU are binding on the EU institutions and the Member States, such findings are relevant for determining the scope of EU law obligations.

In its findings concerning the lifetime extension of a nuclear power plant in the Netherlands, the ACCC considered that, except in cases where a change to the permitted duration is minimal and clearly has insignificant or no environmental effects, extensions of operational duration should be subject to public participation under Article 6 of the Aarhus Convention. The Committee stated that it was *inconceivable* that the operation of a nuclear power plant could be extended from 40 to 60 years without the potential for significant environmental effects (ACCC/C/2014/104, para. 71)⁷.

Similarly, in a 2014 case concerning the lifetime extension of a nuclear power plant in Ukraine, the Espoo Convention Implementation Committee found that where an activity is authorised only for a limited period, any subsequent decision to extend that period – whether by issuing a new licence or by amending or renewing an existing one – constitutes a new decision to authorise a proposed activity under the Convention (EIA/IC/CI/4, Annex, para. 45).

4 With regard to the Espoo Convention, see: Declaration by the European Community concerning its competence under Article 17(5) of the *Convention on Environmental Impact Assessment in a Transboundary Context* and recital 15 of the EIA Directive. With regard to the Aarhus Convention, see Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 and recitals 18 to 21 of the EIA Directive.

5 Website of the Aarhus Convention Compliance Committee: <https://unece.org/env/pp/cc>

6 Website of the Espoo Convention Implementation Committee: <https://unece.org/environmental-policy/espoo-convention-sea-protocol/implementation-committee>

7 See also ACCC/C/2013/107 concerning the extension of a mining permit in Ireland. In this case, the extension period was only five years.

The interpretation of the ACCC and ECIC reflects a coherent logic. Projects such as nuclear power plants are, by law, considered likely to have significant environmental effects. It is therefore difficult to assume that extending the operation of such installations for additional decades would be environmentally insignificant. Even in the absence of physical modifications, prolonged operation may result in significant effects due to cumulative impacts, ageing infrastructure and changing environmental conditions.

Moreover, the ACCC has recently addressed an issue explicitly related to the subject of this report, namely the operation of dams (ACCC/C/2017/146). In its findings, the ACCC clarified the scope of activities covered by paragraphs 10, 11 and 13 of Annex I to the Aarhus Convention. Paragraph 13 covers: "Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres", corresponding to point 15 of Annex I to the EIA Directive.

In its findings, the ACCC stated:

"77. (...) It is common ground that the decision permitting the construction of a dam of more than 10 million cubic metres is a decision to permit an activity within the scope of paragraph 13 of annex I to the Convention, and therefore also article 6 (1) (a). The question before the Committee is whether the water use permit permitting the operation of the facility once it has been constructed is also a decision subject to the requirements of article 6 (1) (a) of the Convention.

(...)

*80. (...) the Committee considers that, if in addition to the construction permit, a further permit is required to use and operate the dam, the construction permit itself by no means covers all the basic parameters and environmental implications of the dam. **It is clear that a permit authorizing the filling and operation of a dam of 10 million cubic metres is an environment-related permitting decision with significant environmental implications.** In line with the findings on communication ACCC/C/2005/17 (European Community), a water use permit for a dam of 10 million cubic metres is therefore a permitting decision within the meaning of article 6 (1) (a) of the Convention. The Party concerned is therefore required to carry out public participation meeting the requirements of article 6 prior to granting water use permits for dams of 10 million cubic metres and above".*

In these findings, the ACCC did not treat the operational permit for a dam merely as an "extension" of an Annex I activity, but rather as a permitting decision for an activity in its own right. The underlying logic is clear: the construction of a facility does not exhaust its environmental implications. Where continued operation requires a further authorisation, and where that operation may have significant environmental effects, public participation under Article 6 remains mandatory.

The findings of the ACCC do not necessarily mean that every lifetime extension of an Annex I activity must be preceded by an EIA. However, whether or not an EIA is required under EU law, Member States remain bound by their obligations under Article 6 of the Convention. This approach is also reflected in Advocate General Juliane Kokott's Opinion in Case C-411/17⁸, where she stressed that EU law must, as far as possible, be interpreted consistently with international law (para. 105).

Since the EIA Directive implements key elements of the Aarhus and Espoo Conventions, its definition of "project" should be interpreted in a manner capable of encompassing lifetime extensions and operational permits where significant environmental effects cannot be excluded. Such an interpretation would not only ensure consistency with the Aarhus and Espoo Conventions, but would also be more consistent with the objective of the EIA Directive itself, namely to ensure the assessment of projects likely to have significant effects on the environment by reason of their nature, size or location. An extension of operation may have such effects not only because of the continuation of the activity itself, but also because environmental conditions, scientific knowledge and the understanding of environmental risks may have changed since the original authorisation.

2.5 Why is a broader interpretation of “project” needed?

The current interpretation of a “project” under the EIA Directive still allows ageing and environmentally harmful installations, such as dams, to continue operating for decades without being subject to an EIA. Although Case C-411/17 slightly broadened the earlier case law by recognising that lifetime extensions may fall within the scope of the Directive where they are linked to works affecting the physical aspects of the site, the practical effect of that judgment remains limited. The judgment effectively requires a case-by-case assessment in situations where projects should, in fact, fall within the scope of mandatory EIA obligations.

This is particularly relevant for installations that continue operating in the EU without proper environmental scrutiny. In many cases, they were either never subject to an EIA or were authorised under significantly different environmental, scientific and regulatory conditions. Their permits are subsequently renewed or extended without any reassessment of environmental impacts, despite the fact that prolonged operation itself may have significant environmental consequences. This creates a paradoxical situation in which some of the oldest and most environmentally harmful installations escape both environmental assessment and public participation, despite continuing to cause significant environmental harm.

Such an interpretation is difficult to reconcile with the objective of the EIA Directive, namely to ensure the assessment of projects likely to have significant effects on the environment by virtue of their nature, size or location. It is also difficult to reconcile with the approach adopted under the Aarhus and Espoo Conventions.

As shown in the following chapters, extending the operational lifetime of large and ageing infrastructure, including dams, often produces environmental effects comparable to, or even greater than, those associated with the initial authorisation of the project. This is evident in the case of dams, where environmental permits commonly regulate both construction and operation. Many environmental impacts of dams arise only during operation, and may continue for decades. Conditions attached to operational permits therefore cannot be assumed to remain appropriate indefinitely and may require reassessment as environmental conditions, scientific knowledge and regulatory standards evolve.

Article 1(2)(a) of the EIA Directive nevertheless leaves room for a broader interpretation consistent with these objectives and international obligations. A lifetime extension may itself be understood as “other intervention in the natural surroundings and landscape” capable of producing significant environmental effects, and therefore as a “project” within the meaning of the Directive.

2.6 Ensuring the continued validity of environmental assessments

Article 8a(6) of the EIA Directive was introduced by Directive 2014/52/EU, which entered into force on 16 May 2014. It provides that, when taking a decision to grant development consent, the competent authority shall be satisfied that the reasoned conclusion on the significant effects of the project on the environment remains up to date. The reasoned conclusion must take into account the EIA report, additional information submitted during the procedure, the results of consultations and, where relevant, transboundary environmental impact assessment (Article 1(2)(g)(iv)).

The provision therefore creates an obligation for national competent authorities to revisit the reasoned conclusion and verify whether it remains valid at the time development consent is granted. Before granting development consent, the authority must be satisfied that the findings of the environmental assessment still reflect current environmental conditions and available knowledge.

Article 8a(6) further encourages Member States to establish time limits for the validity of reasoned conclusions. Although such time limits are not mandatory, their introduction could provide greater legal certainty by identifying when an assessment of validity should take place, and reducing the authority's discretion.

An important question is whether a decision renewing or extending the operation of an installation can constitute a development consent. According to Article 1(2)(c), development consent means "the decision of the competent authority or authorities which entitles the developer to proceed with the *project*". This immediately brings the analysis back to the definition of "project". If, for example, an additional 20 years of operation of a large dam or a nuclear power plant is not considered a project, then a decision authorising such continued operation would, in principle, also fall outside the concept of development consent.

However, such an interpretation would significantly limit the practical relevance of Article 8a(6), linking it merely to relatively rare situations where a reasoned conclusion had already been issued but, due to financial, administrative or other delays, development consent was to be granted many years later. Since the provision is formulated in general terms and does not refer to a specific period of delay, nor does it require that many years have elapsed, it is doubtful that the EU legislature introduced Article 8a(6) for such a limited purpose.

The amendments introduced by Directive 2014/52/EU were intended to strengthen the quality of the environmental impact assessment⁹ and enhance consideration of climate change, biodiversity and accident risks¹⁰. The logic of Article 8a(6) reflects the recognition that environmental conditions and scientific knowledge evolve over time.

⁹ Recital 3 of the Directive 2014/52/EU amending Directive 2011/92/EU.

¹⁰ Recital 7 of the Directive 2014/52/EU amending Directive 2011/92/EU.

According to the Commission¹¹: “where the state of the environment has changed between the time the reasoned conclusion or decision on the significant effects of the project is taken and the time a development consent is to be granted, the assessment may need to be updated accordingly, taking into account the legitimate expectations of the public, and the principle of good administration”. The Commission further notes that information concerning likely significant environmental effects of a project must be considered throughout the entire development consent procedure.

This is especially relevant for ageing infrastructure. Where an EIA was carried out decades earlier, environmental conditions, scientific knowledge and regulatory requirements often have changed significantly. Climate change, biodiversity loss and the continuing degradation of ecosystems may render earlier conclusions outdated and less reliable as a basis for decision-making. In addition, the 2014 amendments introduced, inter alia, new elements to be included in the EIA reports (e.g. on climate change, energy efficiency, biodiversity and accidents and risks assessment).

Article 8a(6) therefore requires more than a formal confirmation that a previous assessment exists. It requires a substantive review of whether the environmental assessment remains capable of supporting the decision being taken.

While Article 8a(6) does not directly resolve the question whether lifetime extensions constitute projects under the EIA Directive, it reflects a broader principle that environmental assessments cannot remain valid indefinitely where environmental conditions, scientific knowledge and regulatory requirements have changed. The provision provides additional support for the reassessment of ageing infrastructure whose operation continues for decades beyond the assumptions underlying the original authorisation.

¹¹ European Commission, Answer to Question E-002054/2023, *Answer given by Commissioner Sinkevičius on behalf of the European Commission*, 22 August 2023.

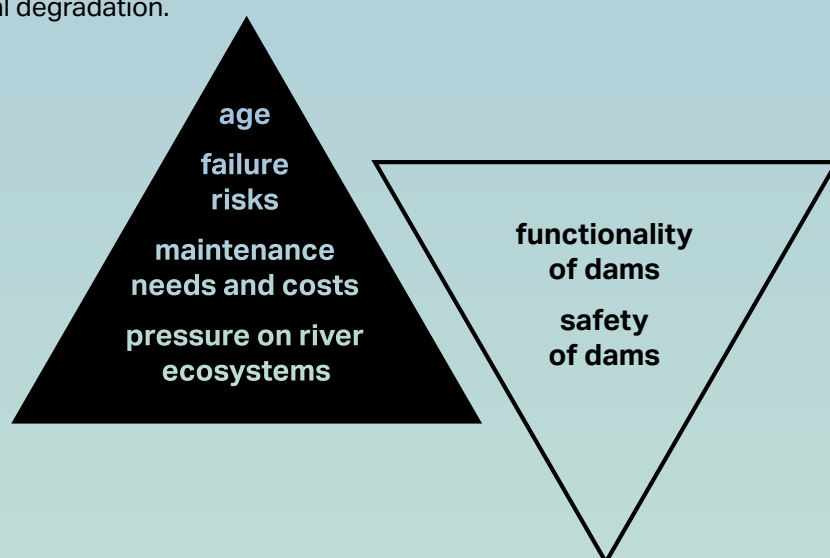
3 The problem of ageing dams

The legal problem of lifetime extensions is not confined to a single sector. It arises across many Annex I projects under the EIA Directive, including dams, nuclear power plants, mines, combustion plants and chemical installations, all of which are designed to operate for decades.

Large dams provide one of the clearest examples. The twentieth century witnessed a radical transformation of river systems in Europe and worldwide, as rivers were increasingly regulated through the construction of large dams. Today, according to the International Commission on Large Dams, there are roughly 62,000 large dams worldwide¹², meaning that most major rivers are now fragmented¹³. These projects reflected the technical, economic and political priorities of their time. Their environmental and social impacts, however, have proved to be long-lasting and, often, irreversible.

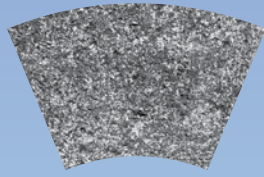
Since then, environmental conditions, technical knowledge and societal priorities have changed substantially. Today, the construction of new large dams in Europe has largely declined, while ageing dams increasingly depend on decisions extending or renewing their operating permits.

As dams age, their functionality and safety decline, while maintenance needs, costs and failure risks increase. Each additional year of operation also prolongs pressure on river ecosystems already weakened by climate change and other drivers of ecological degradation.

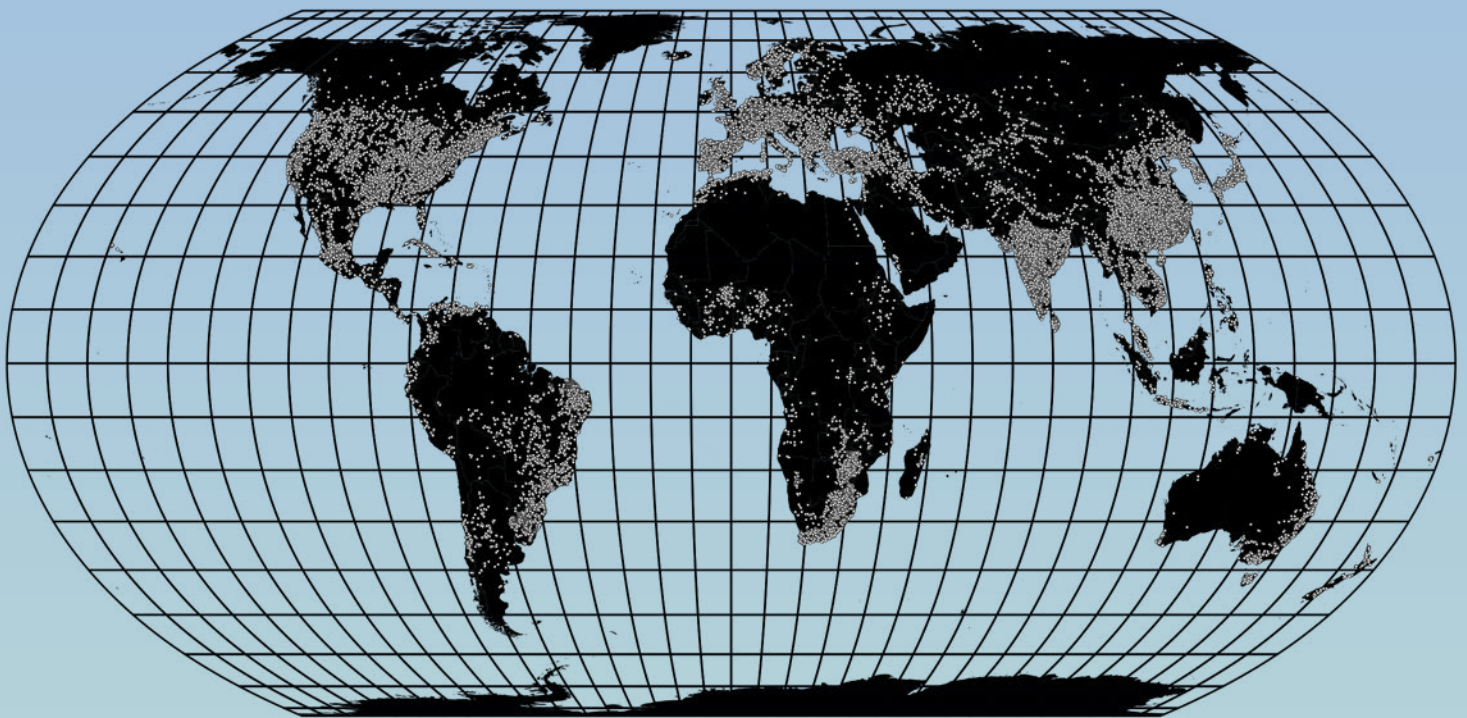


12 The World Register of Dams, maintained by the International Commission on Large Dams, records dams that meet ICOLD's definition of a large dam, namely structures with a height of at least 15 metres above the foundation, or dams higher than 5 metres with a reservoir capacity exceeding 3 million cubic metres. Figures may vary depending on the register used and the definitions applied.

13 Maavara, T., Chen, Q., Van Meter, K. et al. (2020) *River dam impacts on biogeochemical cycling*. *Nature Reviews Earth & Environment* 1: 103–116.



there are ca.
62,000
large dams worldwide



The Global Dam Watch Viewer provides an overview of
dams and reservoirs in Europe and worldwide:
<https://gdw-viewer.web.app/>.

Its database integrates data from multiple sources and
includes 41,145 dam locations and 35,295 reservoirs.

3.1 Ageing dams: rising risks and declining benefits

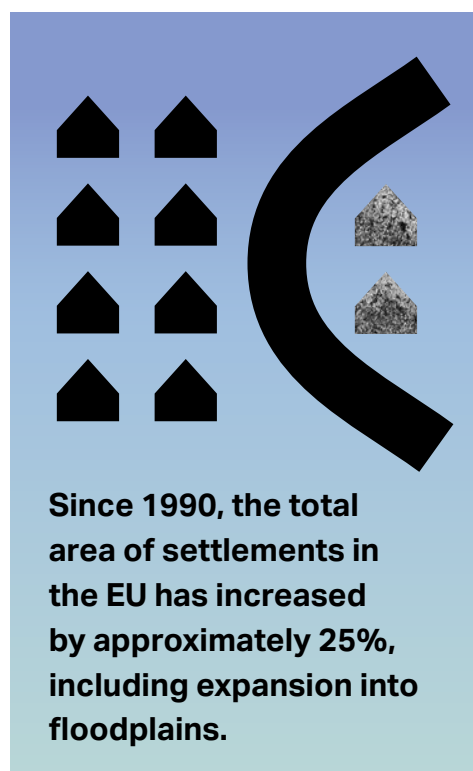
Consider a large dam built in the mid-1970s. By 2026, such a dam would have been in operation for around 50 years, an age identified in the UN report as an alert age for large dams¹⁴.

As construction of large dams in Europe peaked in the 1960s and 1970s¹⁵, the continent is now entering a phase of mass ageing of dams. Those ageing dams are increasingly associated with three interconnected problems: higher failure risks, growing maintenance needs and declining functionality caused by sedimentation and effects of climate change.

3.1.1 Higher risk of failure

As dams age, cracks, erosion and structural weaknesses become more frequent, increasing risks for downstream communities and ecosystems. Floods, droughts, intense rainfall and landslides place additional pressure on ageing infrastructure and accelerate structural degradation. According to the UN University Institute for Water, Environment and Health, long service life is associated with a rising number of defects and a higher probability of failure¹⁶ – a trend that has become more pronounced as many large dams reach or exceed their designed service life.

Moreover, since 1990, the total area of settlements in the EU has increased by approximately 25%, including expansion into floodplains¹⁷. This means that the consequences of dam failure today may be far more severe than originally anticipated.



¹⁴ Perera, D., Smakhtin, V., Williams, S., North, T. and Curry, R. (2021) *Ageing Water Storage Infrastructure: An Emerging Global Risk*, p. 4.

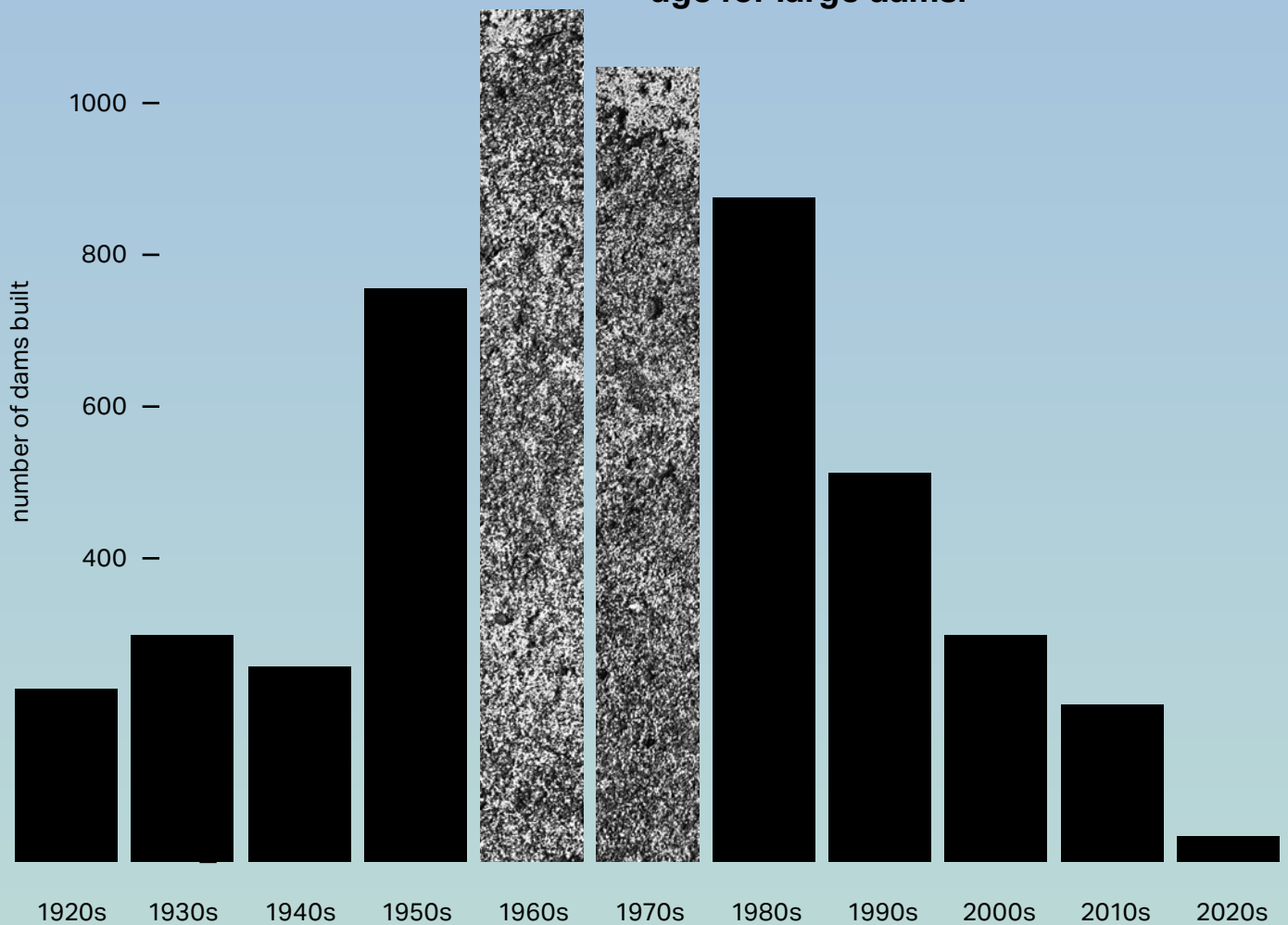
¹⁵ Perera et al. (2021), p. 7.

¹⁶ Perera et al. (2021), p. 13.

¹⁷ European Environment Agency (2025) *Land Use and Land Take*.

As construction of large dams in Europe peaked in the 1960s and 1970s, the continent is now entering an era of mass dam ageing.

A UN report identifies 50 years as the alert age for large dams.



3.1.2 More maintenance needs and higher costs

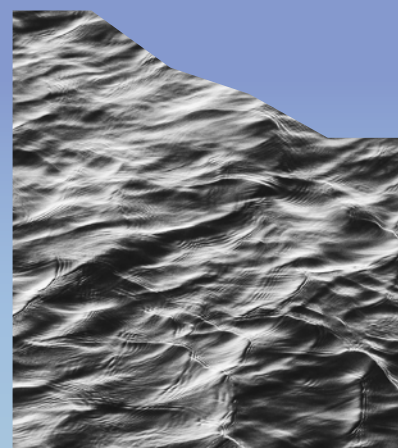
As dams age, maintenance, renovation and safety upgrades become increasingly necessary and expensive¹⁸. In some cases, ageing infrastructure also leads to the construction of additional damming structures, multiplying environmental impacts on rivers.

The history of the Otmuchów reservoir on the Nysa Kłodzka River in Poland illustrates this dynamic. Built in 1933, the Otmuchów reservoir gradually lost functionality. To compensate, the Nysa reservoir was constructed nearby in 1972. After the 1997 flood exposed insufficient flood protection, two further dams – Topola and Kozielno – were added. The cumulative impact of these four structures has heavily altered the river's hydrological regime and ecological continuity. Despite this cascade, the Otmuchów dam is currently undergoing repairs, and a fifth dam is in the planning stage, with a projected capacity of 104 million cubic metres and estimated costs exceeding PLN 1.3 billion.¹⁹

3.1.3 Declining functionality due to sedimentation

Reservoirs slowly fill with sediment. Over time, storage capacity declines, flood protection weakens and hydro-power production drops, while sediment removal becomes technically difficult and extremely expensive.

A recent UN study of more than 47,000 large dams worldwide found that reservoirs have already lost between 13 and 19% of their storage capacity, with a further 10% expected to be lost by 2050. Those losses are deemed to have significant implications for water supply, energy production, and flood management across all regions²⁰.



47,000 large dams worldwide already lost between 13 and 19% of their storage capacity, with a further 10% expected to be lost by 2050.

In the EU alone, an estimated one billion cubic metres of sediment – roughly the volume of 385 Great Pyramids of Giza – are trapped each year in approximately 5,000 large reservoirs, with removal costs ranging from 5 to 8 billion euros²¹.

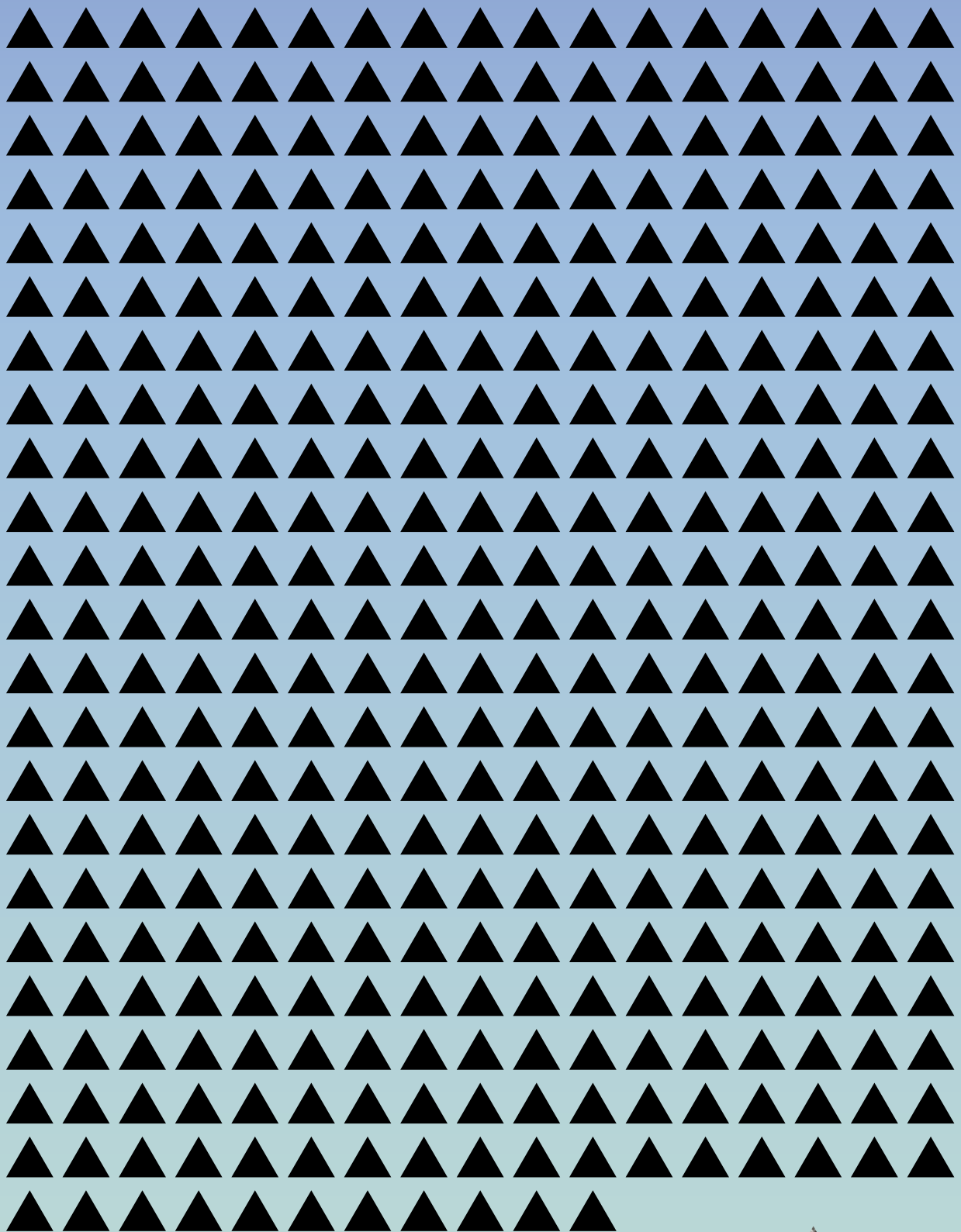
Moreover, research suggests that dams may become less effective in reducing flood risk over time due to morphological changes downstream, including channel incision

¹⁸ Perera et al. (2021), pp. 14–15.

¹⁹ Wody Polskie, *Budowa zbiornika przeciwpowodziowego Kamieniec Ząbkowicki*.

²⁰ Perera, D., Williams, S. and Smakhtin, V. (2023) *Present and Future Losses of Storage in Large Reservoirs Due to Sedimentation: A Country-Wise Global Assessment*. Sustainability 15: 219.

²¹ Panagos, P., Matthews, F., Patault, E. et al. (2024) *Understanding the Cost of Soil Erosion: An Assessment of the Sediment Removal Costs from the Reservoirs of the European Union*. Journal of Cleaner Production 434:140183.



Each year, around one billion cubic metres of sediment become trapped in large reservoirs across the EU – roughly the volume of 385 Great Pyramids of Giza.



and bed coarsening²². During larger flood events, these changes may, in some fine-grained rivers, partially offset or even exceed the flood-risk reduction effects for which a dam was originally built, leading to higher flood stages downstream.

3.1.4 Climate change adds to the risks

Climate change is already reshaping the conditions in which ageing dams operate. Europe is the fastest-warming continent, and rising temperatures, droughts and extreme weather increasingly affect both water infrastructure and water resources²³. Prolonged droughts reduce reservoir levels, dry out surrounding soils and increase erosion risks, especially for embankment dams. Together, these processes weaken structures and accelerate dam ageing.

The impacts are already evident across Europe. During the extreme drought of 2022²⁴, persistently low river flows reduced reservoir levels and led to substantial losses in hydropower production. In Portugal, hydropower storage fell to less than half of the long-term average, while Italian hydropower plants produced approximately 40-50% less electricity²⁵.

22 Ma, H., Nittrouer, J.A., Fu, X. et al. (2022) *Amplification of downstream flood stage due to damming of fine-grained rivers*. *Nature Communications* 13: 3054.

23 European Environment Agency (2024) *European Climate Risk Assessment*. EEA Report No. 01/2024.

24 Bevacqua, E., Rakovec, O., Schumacher, D.L. et al. (2024) *Direct and Lagged Climate Change Effects Intensified the 2022 European Drought*. *Nature Geoscience* 17: 1100-1107.

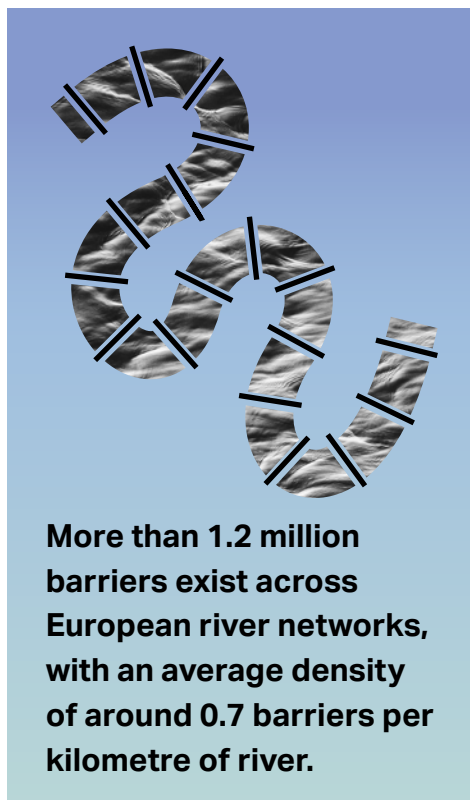
25 Schumacher, D.L., Zachariah, M., Otto, F. et al. (2024) *Detecting the Human Fingerprint in the Summer 2022 Western-Central European Soil Drought*. *Earth System Dynamics* 15(1): 131-154.

3.2 Dams as continuous environmental pressure

The environmental impacts of dams do not end with construction. Large dams exert continuous pressure on river ecosystems for as long as they remain in place. Each additional year of operation prolongs river fragmentation, disrupts ecological processes and delays ecosystem recovery.

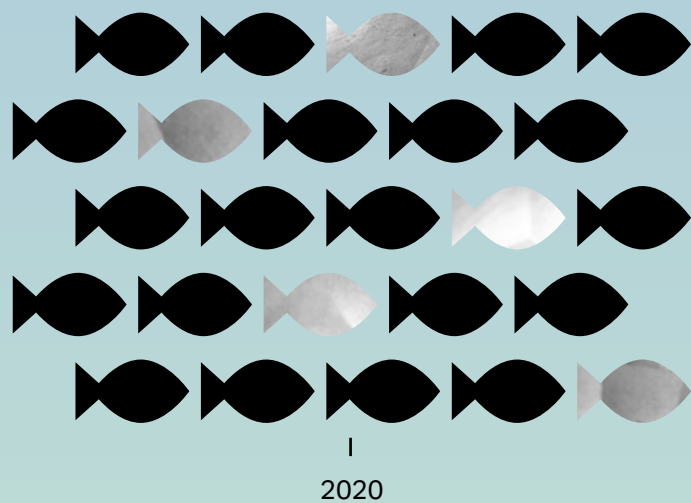
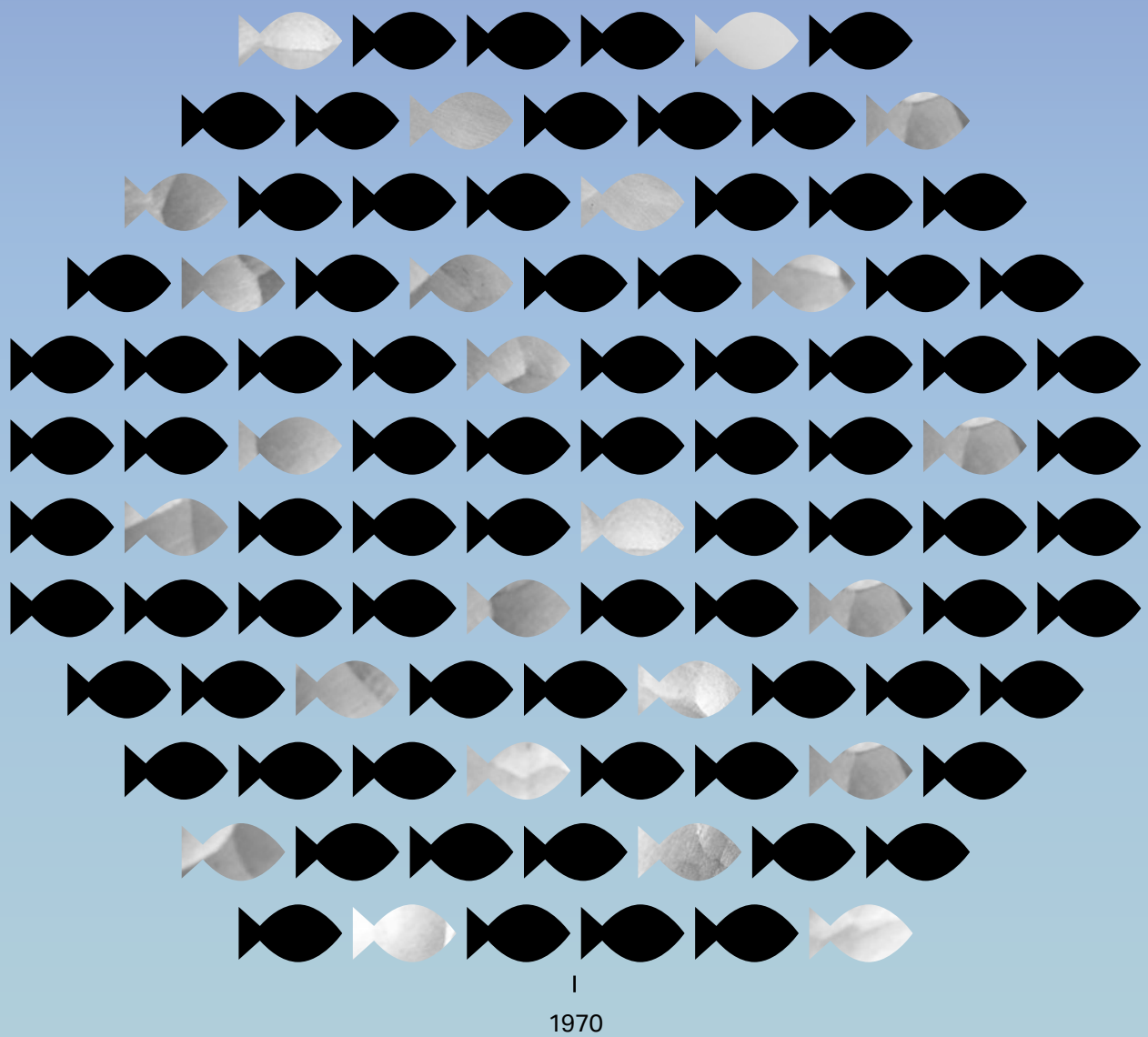
3.2.1 Persistent river fragmentation and loss of connectivity

River fragmentation caused by dams is not a temporary impact but a permanent condition that persists for as long as they remain in place. The defining feature of natural, non-ephemeral rivers is continuity²⁶, and the European Environment Agency has established that river continuity is a key condition for achieving good ecological status of surface waters under the Water Framework Directive²⁷. Dams and other artificial barriers disrupt this continuity by interrupting longitudinal connectivity along river systems. Dams block fish migration routes, prevent the natural movement of sediments and nutrients, and alter the hydromorphology of rivers both upstream and downstream²⁸. Hydromorphological pressures are among the most widespread pressures on surface water bodies in the EU²⁹, whose ecological status continues to decline.³⁰



As a legacy of the 20th-century dam construction boom, Europe's rivers are now among the most fragmented in the world, with almost no large free-flowing river remaining³¹. Recent studies estimate that more than 1.2 million barriers exist across European river networks, with an average density of around 0.7 barriers per kilometre of river³². While most barriers are small, large dams exert a disproportionate

- 26 Belletti, B., Garcia de Leaniz, C., Jones, J. et al. (2020) [More than One Million Barriers Fragment Europe's Rivers](#). *Nature* 588: 436-441.
- 27 European Environment Agency (2021) [Tracking Barriers and Their Impacts on European River Ecosystems](#).
- 28 European Environment Agency (2024) [Europe's State of Water 2024: The Need for Improved Water Resilience](#), p. 39.
- 29 European Environment Agency (2024) *Europe's State of Water 2024*, p. 11.
- 30 European Environment Agency (2025) [Ecological Status of Surface Waters in Europe](#).
- 31 Grill, G., Lehner, B., Thieme, M. et al. (2019) [Mapping the World's Free-Flowing Rivers](#). *Nature* 569: 215-221.
- 32 Belletti et al. (2020)

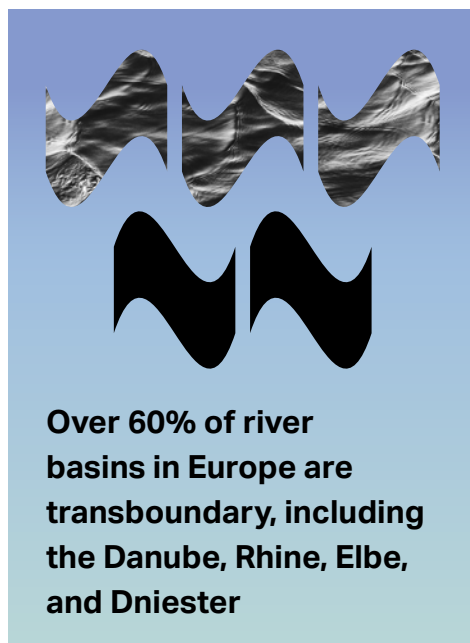


European populations of migratory fish such as salmon and eel have declined by ~ 75% since 1970

influence, causing stronger declines in water quality and aquatic biodiversity downstream³³.

3.2.2 Transboundary impacts of dams

Although dams are usually built to meet domestic needs, those built on transboundary rivers may cause environmental impacts across borders. Over 60% of river basins in Europe are transboundary³⁴, including the Danube, Rhine, Elbe, and Dniester. As a result, many EU countries rely heavily on water originating outside their borders.



These impacts are evident in the case of transboundary migratory fish. The 2025 assessment on migratory freshwater fishes identified hundreds of species that require cross-border action³⁵. It highlights that species whose life cycles depend on connected rivers across national borders are in accelerating decline due to dam construction and habitat fragmentation. Freshwater fish are among the most threatened vertebrates, and transboundary migratory stocks are faring particularly poorly. For example, in Europe, populations of migratory fish such as salmon and eel have declined by approximately 75% since 1970³⁶.

Beyond their environmental effects on aquatic ecosystems, dams may also pose significant cross-border disaster risks.

3.2.3 Intensifying biogeochemical impacts and GHG emissions

By impeding river flows, dams disrupt the downstream transport of key nutrients such as carbon, nitrogen, silicon, and phosphorus along rivers and their tributaries³⁷. Sediment trapped in reservoirs retains these nutrients upstream, depriving downstream reaches of nutrient-rich material. Over time, this loss reduces soil fertility and weakens the capacity of downstream ecosystems to support plant and animal life³⁸.

33 Brown, R.L., Charles, D., Horwitz, R.J. et al. (2024) *Size-Dependent Effects of Dams on River Ecosystems and Implications for Dam Removal Outcomes*. *Ecological Applications* 34(6): e3016.

34 European Commission (2019) *Fitness Check of the Water Framework Directive, Groundwater Directive, Environmental Quality Standards Directive and Floods Directive*. SWD(2019) 440 final, p. 39.

35 Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (2025) *Global Assessment of Migratory Freshwater Fishes*. UNEP/CMS/COP15/Doc.25.6.1/Annex 1, p. 8.

36 Deinet, S., Flint, R. et al. (2024) *The Living Planet Index (LPI) for migratory freshwater fish 2024 update – Technical Report*. World Fish Migration Foundation, p. 15.

37 Maavara et al. (2020)

38 Maavara, T., Lauerwald, R., Regnier, P. et al. (2017) *Global Perturbation of Organic Carbon Cycling by River Damming*. *Nature Communications* 8: 15347.

Globally, reservoirs are also large greenhouse gas emitters. Studies estimate that emissions from reservoir surfaces amount to around 0.8 billion tonnes of CO₂-equivalent each year, comparable in scale to emissions from the transport sector in Europe³⁹, with methane accounting for the majority of this climate impact.⁴⁰ While these effects were not considered when many dams were first authorised, they now represent a growing component of the environmental footprint of long-standing reservoirs.



Reservoir surfaces emit around 0.8 billion tonnes of CO₂-equivalent every year – roughly the same as Europe's transport sector.

3.2.4 Impacts on the hydrological cycle and local climate

Large reservoirs can influence local and regional climate conditions. By increasing evaporation and atmospheric moisture, they may affect the amount, intensity and distribution of rainfall. The extent of these effects depends on reservoir size, climate conditions and operational practices. As a result, the impacts of dams extend beyond the river itself and may affect broader hydrological processes and local weather patterns, including the frequency and intensity of extreme rainfall events.⁴¹

3.2.5 Climate change and declining ecosystem resilience

The environmental impacts of dams do not remain static over time. As reservoirs age and sediment accumulates, ecological pressures intensify while river ecosystems become less resilient. Europe's rivers are already among the most heavily modified and ecologically stressed water bodies, and as climate change, pollution, and land-use pressures intensify, their capacity to absorb additional stress continues to decline.

Climate change further compounds these pressures by warming reservoir waters, reducing oxygen levels that fish and other aquatic organisms need to survive. Reservoirs are losing oxygen faster than lakes, rivers, and oceans, further degrading water quality and increasing pressure on water supply and ecosystem health⁴². In extreme cases, large reservoirs may shrink dramatically, concentrating nutrients and pollutants and triggering algal blooms, as observed in several European reservoirs in recent years.

39 European Environment Agency (2024) *Greenhouse Gas Emissions from Transport in Europe*.

40 Deemer, B.R., Harrison, J.A., Li, S. et al. (2016) *Greenhouse Gas Emissions from Reservoir Water Surfaces: A New Global Synthesis*. *BioScience* 66(11): 949-964.

41 Nature Index. *Climate Impacts of Reservoir-Induced Precipitation Changes*.

42 Liao, L. and Cai, X. (2025) *Satellites Reveal Widespread Deoxygenation of Large Global Reservoirs from 1984 to 2023*. *Scientific Reports* 15: 44680.

A clear illustration is the Klimkówka Reservoir on the Ropa River in Poland. Although construction began in the 1970s, the reservoir became operational only in 1994. In the past years, the water in the reservoir has been steadily drying up. „Instead of 40 million cubic metres of water, only five remain. This is not a temporary trend, but a symptom of profound climatic and hydrological changes” – warned Professor Mariusz Czop, a hydrogeologist at the AGH University of Science and Technology in Kraków.⁴³ In the past, the Ropa River received an inflow of water every spring from melting snow. Today, winters are warmer, snow appears rarely and melts and evaporates quickly.

3.3 Time is not neutral for dams

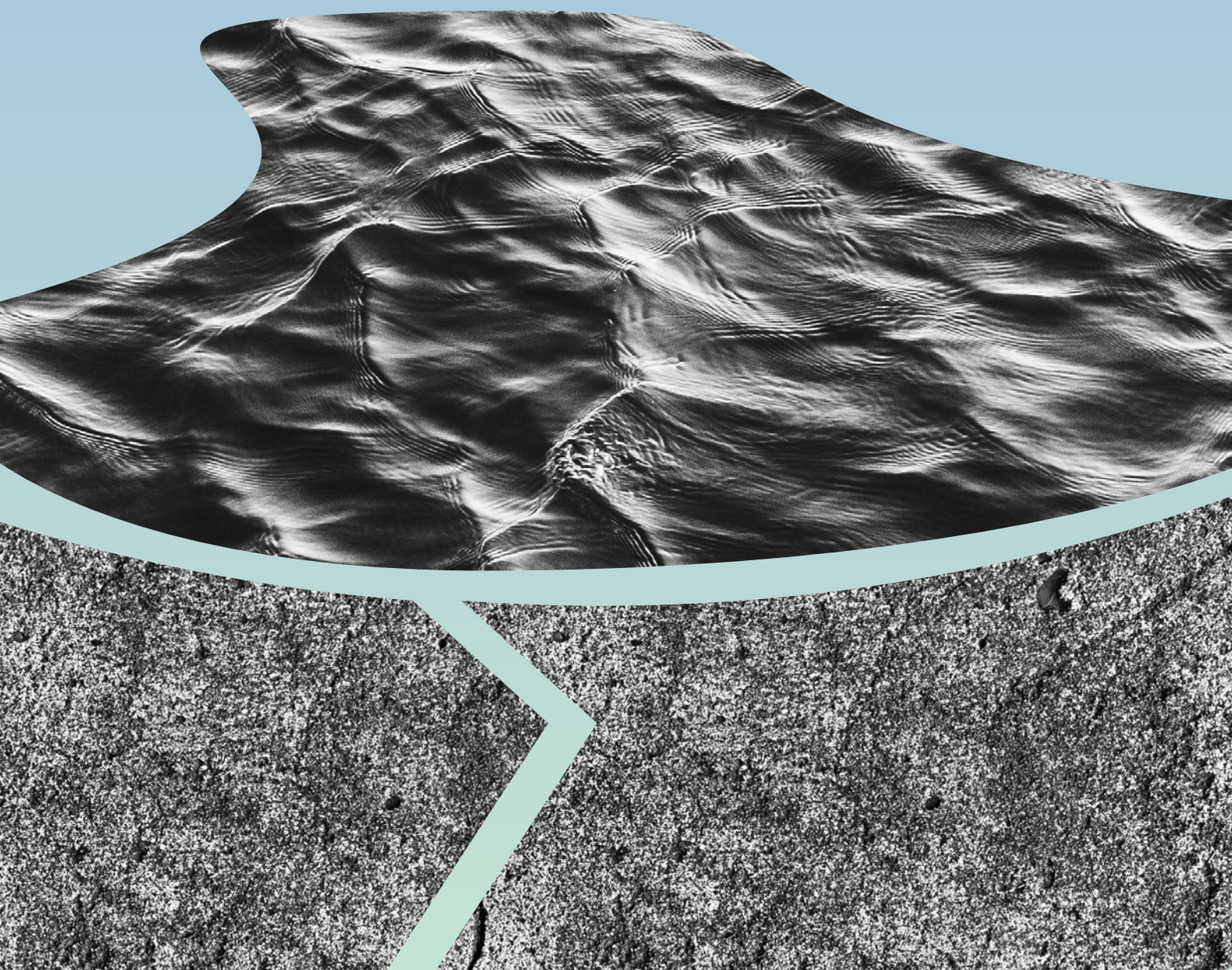
In dam operation, time is inseparable from physical change. Over time, failure risks increase, maintenance needs and costs grow, functionality declines and environmental impacts intensify.

This means that decisions extending the operational lifetime of large dams inherently assume that renovation, maintenance and safety upgrades will become necessary. Lifetime extensions therefore cannot be separated from the physical evolution of ageing infrastructure.

In the context of climate adaptation, a multi-year extension of a dam's operating permit is not merely a change of date, but an authorisation to operate ageing infrastructure under increasingly uncertain climatic and hydrological conditions.

43 Ziaja, B. (2025) *Klimkówka wysycha. Profesor AGH: „Tracimy wodę, której nie da się już odzyskać”*. Radio Kraków, 22 May 2025.

4 Case studies



4.1 Poland

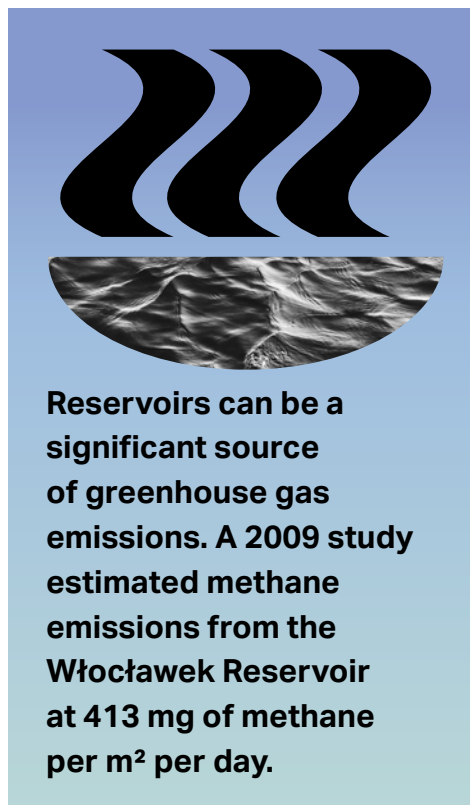
4.1.1 Large dams in Poland

In the 20th century, dozens of large dams were constructed in Poland for flood protection, hydropower generation, and water supply. According to the World Register of Dams maintained by the International Commission on Large Dams ("ICOLD"), Poland currently has 74 dams that qualify as "large dams" under the ICOLD definition. Of these, 46 have a storage capacity of at least 10 million cubic metres and therefore meet the threshold set in point 15 of Annex I of the EIA Directive.

Construction of all 46 dams began before Poland's accession to the European Union in 2004, and more than half of them have been in operation for more than 50 years. This means that the EIA Directive did not apply at the time these dams were constructed, commissioned, or initially permitted.

The ecological consequences of river damming in Poland are well documented. The Włocławek dam on the lower Vistula River, constructed between 1962 and 1970, illustrates the scale of these impacts. Despite an inbuilt fish ladder, the dam has effectively blocked upstream migration of sea trout and vimba bream. Before the dam was built, average annual catches above the future dam site were 14.7 tons of sea trout and 16.4 tons of vimba bream. After the dam was constructed, sea trout catches fell to almost zero and vimba to only 0.1 tons⁴⁴. These figures show how dramatically the dam disrupted long-established migration routes.

Recent monitoring data confirm that fish passage remains extremely limited⁴⁵. In 2024, only 60 fish were recorded crossing the fish ladder: 4 vimba bream and 56 sea trout. No other species were observed. One reason for this very low passage is the low water level in the Vistula River, which often prevents fish from reaching the fish ladder. At low water levels, this structure forms an additional barrier, further reducing the chances for fish to migrate upstream. As climate change progresses, such low-flow conditions become increasingly common.



44 Bartel, R., Wiśniewski, W. and Prus, P. (2007) *Impact of the Włocławek Dam on the Migratory Fish in the Vistula River*. *Archiwum Rybactwa Polskiego/Archives of Polish Fisheries* 15: 141-156.

45 Fundacja Wolne Rzeki (2025) *Jak (nie) działa przepławka na zaporze we Włocławku?*



Poland currently has 74 dams that qualify as "large dams" under the ICOLD definition.

Of these, 46 have a storage capacity of at least 10 million cubic metres and therefore meet the threshold set in point 15 of Annex I of the EIA Directive.

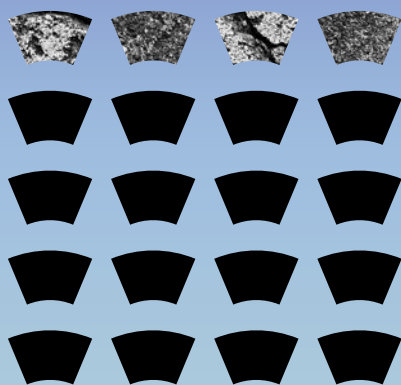


**The Vistula River basin cut off from the
Baltic Sea by the dam in Włocławek.**

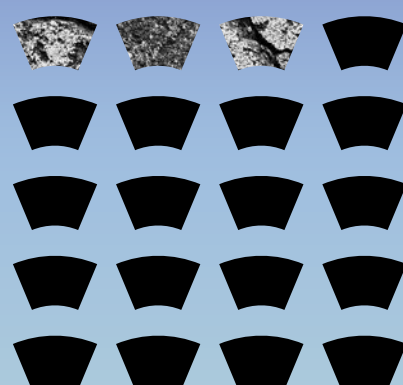
Based on: Piotr Bednarek, Fundacja Wolne Rzeki https://wolnerzeki.pl/fragmentacja_rzek/

ICOLD/CIGB - World Register of Dams/Registre Mondial des Barrages - September 2025

Generated using European Union's Copernicus Land Monitoring Service information;
<https://doi.org/10.2909/393359a7-7ebd-4a52-80ac-1a18d5f3db9c>



In 2023, 21% of hydrotechnical structures of high importance were assessed as being in unsatisfactory condition



17% were considered to pose a direct safety risk

The Włocławek dam has also caused major hydrological changes in the Vistula River channel downstream⁴⁶. Rapid erosion processes began soon after the dam was built. Within four years, the riverbed directly below the dam had deepened by as much as 2.5 metres, and the erosion extended for about 9.2 km downstream. These changes altered aquatic and wetland habitats across a large part of the Vistula basin. Several characteristic features of a natural river landscape disappeared, including islands, sandy bars and side channels; birds nesting on islands and sandbars were particularly affected.

In addition, the Włocławek reservoir emits unexpectedly high levels of methane. A 2009 study estimated emissions of 413 milligrams of methane per square metre per day, comparable to levels observed in large tropical reservoirs⁴⁷.

Decades of operation have further deepened the riverbed below the dam and raised concerns about the dam's structural stability. In response, the construction of a new dam at Siarzewo has been proposed to stabilise the existing structure and ensure the safe operation of the Włocławek dam. The project has been the subject of heated public and expert debate for more than ten years and is estimated to cost a minimum of PLN 7.5 billion (approx. EUR 1.8 billion). At the same time, studies indicate that the project would not necessarily improve flood safety and could in some scenarios even increase flood risk⁴⁸ – in addition to placing further environmental pressure on an already fragile ecosystem.

Concerns about ageing dam infrastructure are not limited to Włocławek. Technical assessments point to growing safety problems in hydrotechnical structures across Poland. In 2016, the Supreme Audit Office found systemic weaknesses in dam safety supervision, including incomplete mandatory inspections, insufficient implementation

46 Wawręty, R. and Żelaziński, J. (eds.) (2006) *Zapory a powódzie*. Towarzystwo na rzecz Ziemi and Polska Zielona Sieć, pp. 37-40.

47 Trojanowska, A., Kurasiewicz, M., Pleśniak, L. and Jędrysek, M.O. (2009) *Emission of Methane from Sediments of Selected Polish Dam Reservoirs*. *Teka Komisji Ochrony i Kształtowania Środowiska Przyrodniczego* 6: 368-373.

48 Fundacja WWF Polska (2012) *Ocena wpływu zbiornika Włocławek oraz planowanego stopnia i zbiornika w Siarzewie na warunki przepuszczania wielkich wód na podstawie powodzi z maja 2010*. Warsaw.

**Stronie Śląskie. City
destroyed by flooding.
Damaged dam.
17 September 2024.**



Photo: Michał Ryniak / Agencja Wyborcza.pl

of recommendations and a growing number of structures posing safety risks. Ageing infrastructure and delays in renovation and upgrades were identified as key factors⁴⁹.

In 2023, 21% of hydrotechnical structures of high importance⁵⁰ were assessed as being in unsatisfactory condition, and 17% were considered to pose a direct safety risk⁵¹. The authors of the report – country experts in hydraulic engineering – urge to address these problems, as the potential consequences of dam failure are catastrophic. Analyses of domino-effect scenarios show that failure of the Goczałkowice dam (in operation since 1955) or the Tresna dam (in operation since 1967), potentially triggering the failure of the Porąbka dam (in operation since 1936) within the Vistula basin, could flood more than 20% of the city of Cracow and cause losses estimated at approximately PLN 30 billion (approx. EUR 7 billion)⁵².

Recent events have shown that these risks are not just theoretical. During the major floods in Poland in 2024, following heavy rainfall, a dam at the Morawka retention reservoir failed. The resulting flood severely damaged two towns, Stronie Śląskie and Łądek-Zdrój. Water released from the damaged reservoir increased flows in the Nysa Kłodzka River, contributing to another flood wave that affected two additional towns – Nysa and Kłodzko.

4.1.2 Legal framework

Under Polish law, the construction of new large dams is subject to a tiered permitting process. For new projects, this typically includes:

- 49 [Najwyższa Izba Kontroli \(2016\) *Nadzór nad stanem technicznym i stanem bezpieczeństwa wodnych budowli piętrzących*. Report No. 174/2015/P/15/051/KSI.](#)
- 50 Permanent hydrotechnical structures in Poland are classified into four importance classes (I to IV), with Class I representing the highest category. The report referred to structures of classes I and II.
- 51 [Radzicki, K., Sieński, M., Gołębiowski, T., Zelaya-Wziętek, D. and Dmitruk, Z. \(2024\) *Stan budowli piętrzących w Polsce – zagadnienia problemowe i wyzwania – część 1*.](#)
- 52 [Grela, J. \(2023\) *Assessment of the Potential Flood Hazard and Risk in the Event of Disasters of Hydrotechnical Facilities-The Exemplary Case of Cracow \(Poland\)*. Water 15: 403.](#)

1. *A decision on environmental conditions.* The environmental impact assessment of a project is carried out primarily as part of the procedure for issuing a decision on environmental conditions, as set out in Poland's EIA Law⁵³. According to Article 71(2) of the EIA Law, obtaining such a decision is required for planned projects likely to have significant effects on the environment. The categories of projects that are always likely to have significant effects on the environment are listed in §2 of the EIA Regulation⁵⁴ implementing the EIA Law. For these categories, conducting an EIA is mandatory. Projects that may always have a significant impact on the environment include:
 - ~ dams or other installations designed to capture and permanently retain (accumulate) not less than 10 million cubic meters of new or additional water mass (§ 2(1) point 35 of the EIA Regulation), transposing point 15 of Annex I to the EIA Directive;
 - ~ damming structures with a water damming height of not less than 5 m (§ 2(1) point 36 of the EIA Regulation);
 - ~ projects involving the expansion, reconstruction, or installation of projects that are being implemented or have been completed and are listed in § 2(1), if such expansion, reconstruction, or installation meets the thresholds specified in paragraph 1, where such thresholds have been defined (§ 2(2) point 1 of the EIA Regulation).

However, qualifying a project under §2 of the EIA Regulation is not sufficient to trigger the obligation to conduct an EIA. The list of projects must be read together with a second list: the list of investment or implementation decisions that must be preceded by a decision on environmental conditions. This list is set out in Article 72 of the EIA Law.

With regard to water-related decisions, Article 72(1) point 6 of the EIA Law includes water permits for water regulation, water permits for the construction of water facilities and water permits for the extraction of stone, gravel, sand and other materials from water.

2. *An appropriate assessment for Natura 2000 sites, where applicable.* For projects requiring an EIA, the appropriate assessment is carried out as part of the procedure for issuing a decision on environmental conditions. For other projects, if the obligation to assess the project's impact on a Natura 2000 site is established under Article 97(1) of the EIA Law, the appropriate assessment is carried out and a decision specifying the conditions for the implementation of the project in relation to its impact on the Natura 2000 site is issued⁵⁵.
3. *A water permit for the construction of water facilities,* in accordance with Article 389 point 6 of Poland's Water Law⁵⁶.

53 [Act of 3 October 2008 on Access to Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments](#) (Journal of Laws 2024, item 1112, as amended). Hereinafter: the EIA Law.

54 [Regulation of the Council of Ministers of 10 September 2019 on Projects Likely to Have Significant Effects on the Environment](#) (Journal of Laws 2019, item 1839, as amended). Hereinafter: the EIA Regulation.

55 Article 98 of the EIA Law.

56 [Act of 20 July 2017 – Water Law](#) (consolidated text: Journal of Laws 2025, item 960, as amended). Hereinafter: the Water Law.

4. *A building permit*, issued after the water permit and the decision on environmental conditions have been granted, in accordance with Article 28(1) of the Construction Law⁵⁷ in conjunction with Article 388(2) point 1 of the Water Law and Article 72(1) point 1 of the EIA Law.
5. *A water permit for the water services*. Under Article 35(3) point 2 of the Water Law, damming, storing or retaining surface or groundwater and the use of such water constitute "water services". Water services require a water permit⁵⁸ issued by the competent water management authority⁵⁹.

For the operation of an existing dam, Polish law requires only the last of the permits listed above, namely a water permit for water services, specifically a permit for damming, storing or retaining surface or groundwater and the use of such water. Importantly, this type of water permit is not included in the list of investment or implementation decisions for which the issuance of a decision on environmental conditions is mandatory. On the contrary, if a decision on environmental conditions were issued where it is not legally required, it would be considered legally invalid⁶⁰. This means that issuing a water permit for the construction of large dams must be preceded by an EIA, whereas issuing a water permit for the operation of large dams does not require such an assessment. Nor is the operation of large dams subject to a water law assessment required under Article 425 of the Water Law. This procedure serves as a more limited assessment focused on compliance with the environmental objectives of the Water Framework Directive and applies to certain investments and activities that may affect water bodies. However, it does not apply to all water services⁶¹. In particular, permits for the damming, storage or retention of surface waters are not subject to a water law assessment. As a result, decisions extending the operation of large dams are not only exempt from EIA, but also fall outside this more limited form of environmental scrutiny under water law.

Water permits are issued for a fixed period not exceeding 30 years⁶². However, they do not expire if the operator applies for the determination of a new validity period within 90 days before the expiry date⁶³. The authority may then determine a new validity period. Such a decision formally extends the validity of the permit but is not itself considered a new water permit; it is a distinct type of administrative decision.

The extension procedure is relatively limited. The operator submits an application together with the water management plan on which the original permit was based and a statement confirming that the plan remains up to date⁶⁴. The water management plan is a private document prepared by the operator and does not cover the full range of environmental impacts typically assessed in an EIA. It is also not subject to public participation or scrutiny by environmental protection authorities. If the

57 Act of 7 July 1994 – Construction Law (consolidated text: Journal of Laws 2025, item 418, as amended). Hereinafter: the Construction Law.

58 Article 389(1) of the Water Law.

59 Article 397 of the Water Law.

60 As provided in Article 156(1)(2) of the Act of 14 June 1960 – Code of Administrative Procedure (consolidated text: Journal of Laws 2025, item 1691).

61 Regulation of the Minister of Maritime Economy and Inland Navigation of 27 August 2019 on the Types of Investments and Activities Requiring a Water Law Assessment (Journal of Laws 2019, item 1752).

62 Article 400(1) of the Water Law.

63 Article 414(2) of the Water Law.

64 Article 414(3) of the Water Law.

water management authority concludes that the information remains valid and that no grounds for refusal exist⁶⁵, the authority issues a decision setting a new validity period for the permit of a maximum of 20 years⁶⁶.

The possibility of extending a water permit was introduced in the Water Law of 2017, which replaced the Water Law of 2001. Still today, the practice of water management authorities when extending the operation of dams remains inconsistent. In some cases, authorities extend existing permits for up to 20 years using the procedure set out in Article 414 of the Water Law. In other cases, they issue new water permits for water services for up to 30 years under Article 389 point 1 of the Water Law.

Regardless of the procedure used, the effect is similar: the authority effectively extends the operational lifetime of a dam for many years without conducting an EIA and without public participation. Moreover, there is no statutory limit on the number of such lifetime extensions, meaning that, in theory, they may be granted indefinitely.

This is confirmed by administrative practice. According to an analysis of approximately 70 water permits and extension decisions issued over the last 15 years⁶⁷, none of these decisions were preceded by a decision on environmental conditions. In other words, they were not subject to either EIA screening or a full EIA. Moreover, almost all lifetime extension decisions analysed used the maximum permitted validity periods of 20 or 30 years.

At the time of publication of this report, in summer 2026, the Aarhus Convention Compliance Committee had found the Polish legal framework and practice described above to be in breach of Articles 6 and 9(2) of the Aarhus Convention with regard to public participation and access to justice (ACCC/C/2017/146). The ACCC concluded that water permits authorising the damming and operation of large dams constitute activities requiring public participation under Article 6 and, consequently, access to justice under Article 9(2). This shows that decisions enabling the continued operation of large dams cannot be treated as merely technical or routine administrative acts.

65 These grounds for refusal are listed in Article 399 of the Water Law. Under this provision, the authority must refuse to issue a water permit if the proposed water use violates, among others, the river basin management plan, management plans for protected areas, flood risk management plans or drought management plans. However, the assessment of whether such grounds for refusal exist is carried out by the water management authority, which may not necessarily have the expertise required to assess the compatibility of the proposed water use with the content of management plans for protected areas. According to our analysis of water permits, the obligation to refuse issuing a permit on the grounds listed in Article 399 is often reduced in practice to a formal verification exercise. In any event, this review cannot replace the EIA procedure, given its limited scope and its focus on compliance with only a selected number of plans and programmes.

66 Article 414(7) of the Water Law. According to Article 414(6), where the information contained in the water permit documentation is no longer up to date, or where relevant circumstances have changed, the competent authority must refuse to extend the permit. Continued operation then requires a new water permit.

67 This analysis formed the evidentiary basis of a complaint submitted in 2023 by ClientEarth, Greenmind Foundation and the Polish Society for the Protection of Birds to the European Commission.

4.2 Italy

4.2.1 Large dams in Italy

Under Italian law on dams, a “large dam” is defined as a retaining barrier that is either more than 15 metres high or creates an artificial reservoir with a volume exceeding 1 million cubic metres of water⁶⁸. According to this definition, Italy has 532 large dams⁶⁹. Of these, 184 exceed the threshold of 10 million cubic metres set out in Annex I to the EIA Directive⁷⁰.

More than 80% of large dams in Italy were built before 1988, when the obligation to carry out an EIA was introduced by Directive 85/337/EEC⁷¹. The vast majority of large dams in Italy therefore predate the EIA Directive. More specific data shows that the average age of Italian dams is 65 years. For hydropower dams, the average age is 75 years, while for irrigation, drinking water, and flood-control dams, the average age is around 50 years⁷².

The country has a tragic history of major dam-related disasters in the twentieth century, including the Gleno (1923, 356 fatalities), Molare (1935, 111 fatalities), Vajont (1963, 1917 fatalities) and Stava (1985, 268 fatalities) dam failures. After the Gleno dam failure in 1923, the Directorate General for Dams and Water Infrastructure (*Direzione generale per le dighe*, DG Dams) was established within the Ministry of Infrastructure and Transport to ensure the safety of large dams and of the downstream territories.

In its 2019 opinion⁷³, DG Dams emphasised that the age of large dams in Italy is a major concern. Where required by law, ageing dams must keep pace with evolving safety standards, as this is essential for protecting both public safety and water resources. DG Dams also noted that their 2013 survey identified 155 dams, including 54 hydroelectric dams, that required safety improvements, including works to restore water storage capacity. Funding was also provided under the Infrastructure Operational Plan (FSC 2014-2020) for interventions on 136 dams managed by public concessionaires.

Currently, Italy faces significant hydrological risks, both in terms of flooding and drought, which are increasingly linked to climate change. Between 2010 and 2020, Italy experienced 946 intense weather events, with 251 fatalities and around

68 Article 1(1) of the Decree-Law No. 507 of 8 August 1994 (*Misure urgenti in materia di dighe*), converted into Law No. 584 of 21 October 1994.

69 Ministry of Infrastructure and Transport: Directorate-General for Dams and Water and Electrical Infrastructure (2019) *Statement Submitted to the Chamber of Deputies (10th Committee – Productive Activities) in the Context of the Fact-Finding Inquiry on the National Energy Strategy and the National Energy and Climate Plan 2030*, 3 December 2019.

70 International Commission on Large Dams, *World Register of Dams*.

71 The deadline for transposition of the EIA Directive expired on 3 July 1988.

72 Ministry of Infrastructure and Transport: Directorate-General for Dams and Water and Electrical Infrastructure (2019).

73 Ministry of Infrastructure and Transport: Directorate-General for Dams and Water and Electrical Infrastructure (2019).



50,000 people displaced. The associated economic losses are among the highest in Europe⁷⁴.

Italy is also one of the European countries most exposed to the risk of climate-related flooding⁷⁵. In 2021, the environmental research agency warned that up to 93.9% of Italian municipalities were at risk of flooding, landslides, and coastal erosion⁷⁶. At the same time, Italy ranks 16th in the world in terms of the number of reservoirs⁷⁷ – it is a high number considering Italy's size (only the 72nd largest country in the world). However, a 2025 study found that Italian reservoirs have only a limited effect on reducing flood peaks, especially in densely populated areas⁷⁸.

Another dimension of climate change impacts is the increasing frequency and severity of droughts. A study published in March 2022 found that, between September 2021 and March 2022, water levels in many Italian reservoirs dropped below their historical minima for the 1970-2019 period⁷⁹.

In 2024, the capacity of the Ancipa reservoir in north-eastern Sicily shrank dramatically. Although the dam has a capacity of more than 30 million cubic metres, data from the Sicilian Hydrographic Basin Authority showed that in December 2024 it held less than 290,000 cubic metres⁸⁰ about 1% of its designed capacity. By the end of November, regional authorities had ordered that water from the reservoir be temporarily used to supply several towns in the neighbouring province of Caltanissetta, which was also affected by drought. The decision triggered what the local press described as a "water war."⁸¹

Water stress is also affecting hydropower generation. Between 2011 and 2019, output relative to installed capacity was significantly lower than in earlier decades, and in particularly dry years such as 2022, production dropped by up to 60% compared to historical levels⁸².

4.2.2 Legal framework

In Italy, dams are regulated through three main elements:

1. the abstraction concession conferring the right to use water or produce energy;
2. environmental procedures, including EIA and Habitats assessment; and
3. dam safety supervision.

74 International Energy Agency (2023) *Italy 2023 Energy Policy Review*, p. 52.

75 Steinhäuser, M., Paprotny, D., Dottori, F. et al. (2022) *Drivers of Future Fluvial Flood Risk Change for Residential Buildings in Europe*. *Global Environmental Change* 76: 102559.

76 L'Istituto Superiore per la Protezione e la Ricerca Ambientale (2021) *Dissesto idrogeologico in Italia: pericolosità e indicatori di rischio*.

77 International Commission on Large Dams, *Number of Dams by Country*.

78 Cipollini, S., Pomarico, I., Volpi, E. and Fiori, A. (2025) *Limited Role of Italy's Large Reservoirs in Flood Mitigation on a National Scale*. *Geophysical Research Letters* 52: e2025GL115861.

79 Toreti, A., Bavera, D., Cammalleri, C., Jäger, A. de, Di Ciollo, C. et al. (2022) *Drought in Northern Italy – March 2022: GDO Analytical Report*. Luxembourg: Publications Office of the European Union.

80 Il Post (2024) *Perché tra Enna e Caltanissetta si litiga per l'acqua*. 1 December 2024.

81 Rai News (2024) *Guerra dell'acqua in Sicilia, continua l'occupazione della diga Ancipa*. 1 December 2024.

82 International Energy Agency (2023), p. 52.

In practice, the continued operation of a large dam depends primarily on the validity of the underlying concession. EIA obligations are typically triggered at the stage of construction, while for existing dams they arise only in limited circumstances, as clarified in the case law of Italy's highest administrative court.

Environmental impact assessment prior to the construction of large dams

The EIA procedure in Italy is governed by Legislative Decree 152/2006 (Environmental Consolidated Act)⁸³. Article 5(1)(g) of the Environmental Consolidated Act defines a "project" as "the execution of construction works or of other installations or structures, and of other interventions on the natural environment or on the landscape, including those intended for the exploitation of soil resources", mirroring the definition set out in Article 1(2)(a) of the EIA Directive.

Under Article 7-bis(2) of the Environmental Consolidated Act, an EIA is required for projects listed in Annex II to Part Two of the Act. Point 13 of Annex II includes installations intended to retain, regulate, or permanently store water where:

- ~ the dam height exceeds 15 metres, or the reservoir volume exceeds 1,000,000 cubic metres; or
- ~ for energy purposes, the height exceeds 10 metres or the reservoir volume exceeds 100,000 cubic metres.

Physical containment works for the remediation of contaminated sites are excluded.

Overall, the Italian thresholds for mandatory EIA differ from those set out in the EIA Directive. While the Directive establishes a higher minimum reservoir capacity (10 million cubic metres), Italian law introduces lower thresholds as well as alternative criteria based on dam height and specific provisions for hydropower projects.

Point 18 of Annex II further provides that any modification or extension of projects listed in the Annex is subject to EIA where the modification or extension itself meets the relevant thresholds, mirroring point 24 of Annex I to the EIA Directive.

In addition, where a dam project is likely to have significant effects on a Natura 2000 site, an appropriate assessment is required pursuant to Article 5 of Presidential Decree No. 357 of 8 September 1997⁸⁴.

Water abstraction concessions

Existing large dams are operated by holders of water abstraction concessions (or, in some cases, by entities designated by the concessionaires). Pursuant to Article 6 of Royal Decree No. 1775 of 11 December 1933 (Consolidated law on water and electrical installations)⁸⁵, water abstractions are classified as either *small* or *large*.

⁸³ Legislative Decree No. 152 of 3 April 2006 (*Norme in materia ambientale*).

⁸⁴ As replaced by Article 6 of the Presidential Decree No. 357 of 8 September 1997 (*Regolamento recante attuazione della direttiva 92/43/CEE relativa alla conservazione degli habitat naturali e seminaturali, nonché della flora e della fauna selvatiche*), as amended by Presidential Decree No. 120 of 12 March 2003.

⁸⁵ Royal Decree No. 1775 of 11 December 1933 (*Approvazione del testo unico delle disposizioni di legge sulle acque e sugli impianti elettrici*).

Large abstractions generally correspond to large dams and are defined by thresholds that vary depending on the intended use, including: power generation (exceeding 3,000 kW of average annual nominal capacity), drinking water supply (exceeding 100 litres per second), irrigation (exceeding 1,000 litres per second or sufficient to irrigate more than 500 hectares), land reclamation (exceeding 5,000 litres per second), industrial uses (exceeding 100 litres per second), aquaculture (exceeding 100 litres per second), and water storage for firefighting or energy recovery purposes (exceeding 100 litres per second).

Since the late 1990s⁸⁶, administrative responsibilities for granting water abstraction concessions have been transferred from the State to the Regions and the Autonomous Provinces of Trento and Bolzano, while the State has retained competence over dam safety supervision via DG Dams. Although the general principles established by the Consolidated law on water and electrical installations remain applicable, regional authorities have developed, to some extent, differing administrative procedures for the issuance of concessions. As a result, the regulatory framework governing water abstraction concessions is fragmented and complex, involving multiple regional and state authorities⁸⁷ and overlapping national and regional rules.

Large abstraction concessions for non-hydropower uses are granted through a regional procedure involving publication of the application, public consultation, and technical assessment. The project is examined within a multi-authority process (*conferenza di servizi*), during which all required permits are issued. Where applicable, EIA and Habitats assessments are integrated into the procedure and conducted at the national level. The project also requires safety approval from the Ministry of Infrastructure and Transport. The validity period of water abstraction concessions cannot exceed 30 years, or 40 years for irrigation uses⁸⁸. A large abstraction concession for non-hydropower use can be renewed if a renewal application is submitted within the required timeframe and if there is no overriding public interest justifying a different use of water.

Water abstraction concessions for hydropower production are subject to a specific regime under Legislative Decree No. 79 of 16 March 1999 (implementing Directive 96/92/EC on the internal electricity market)⁸⁹. Prior to this reform, the electricity sector operated under a near-total monopoly, with generation, transmission, dispatching and distribution largely controlled by Ente Nazionale per l'Energia Elettrica (ENEL), which held long-term water abstraction concessions. Article 12 of the reform introduced a competitive system under which, upon expiry, large hydropower concessions are not simply renewed but reallocated through competitive procedures. The associated infrastructure is transferred to the Regions without compensation and must be returned in proper working condition. New concessions may be granted for between 20 and up to 40 years, extendable by up to 10 years depending on the scale and complexity of the investment (Article 12(1-ter)(f)).

86 Legislative Decree No. 112 of 31 March 1998 (*Conferimento di funzioni e compiti amministrativi dello Stato alle regioni ed agli enti locali, in attuazione del capo I della legge 15 marzo 1997, n. 59*).

87 Competent authorities may include, inter alia, the Regions, municipalities, Regional Environmental Protection Agencies, protected areas' authorities, the Ministry of Environment, the Ministry of Infrastructure and Transport and the Ministry of Culture.

88 Article 21 of the Royal Decree No. 1775 of 11 December 1933.

89 Legislative Decree No. 79 of 16 March 1999 (*Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell'energia elettrica*).

In practice, the new system has been delayed by legal challenges from current concessionaires and ongoing regulatory uncertainty. As a result, many existing hydropower concessions have expired and are currently subject to temporary extensions pending reallocation, while tender procedures are progressing unevenly across regions. Today, the largest hydropower concessionaire is Enel Produzione S.p.A., a subsidiary of the Enel Group, which operates around 180 dams⁹⁰. The long-term concessions originally granted to ENEL S.p.A. are due to expire in 2029 (30 years from the entry into force of the Legislative Decree No. 79/99, in line with Article 12(6)). Overall, it is estimated that 86% of concessions for hydropower production in Italy have expired or are soon expiring⁹¹.

Large water abstraction concessions and their renewals are key decisions that effectively prolong the operational life of existing dams and the environmental pressures associated with them for several decades (up to 40 years). In practice, they enable continued storage and regulation of significant volumes of water, with long-term effects on river flow regimes, sediment transport, and aquatic ecosystems.

EIA obligations for existing dams

The granting or renewal of a large water abstraction concession – despite its practical effect of prolonging the lifetime of an existing dam – does not, as such, trigger an EIA under Italian law. The circumstances in which EIA obligations may arise in relation to existing infrastructure have been clarified in recent case law, notably in a 2025 ruling of the *Consiglio di Stato*, Italy's highest administrative court⁹².

The case concerned an existing offshore gas project in the Adriatic Sea. It arose from a challenge by several Italian municipalities and one province against government decisions approving the drilling of a new well by Eni S.p.A. and, at the same time, extending an existing concession by 10 years. The well was to be drilled from an already operating offshore platform that had previously been authorised and subjected to an EIA in 2000. The applicants argued that the extension should have been subject to a new EIA, but the Court rejected this claim.

In its reasoning, the Consiglio di Stato stated that EIA is, as a general rule, a preventive instrument, intended to assess the environmental compatibility of projects before they are carried out, when they can still be modified to meet environmental requirements⁹³. The Court acknowledged that an *ex post* EIA may be required in exceptional circumstances, where:

- ~ a pre-existing installation becomes subject to further works or activities after the entry into force of Directive 85/337/EEC – in such cases, an EIA can be required at the authorization or renewal stage;
- ~ an authorization must be renewed or reinstated following revocation due to irregularities, even in the absence of new works.

90 Ministry of Infrastructure and Transport: Directorate-General for Dams and Water and Electrical Infrastructure (2019), p. 2.

91 Enel Group (2025) *TEHA–Enel Study on the Strategic Role of Hydroelectric*. Press release, 6 September 2025.

92 Consiglio di Stato, Section IV, Judgment No. 2358 of 21 March 2025.

93 See Corte Costituzionale, Judgment No. 120 of 26 March 2010.

The Court further emphasized that any *ex post* EIA must ensure the effectiveness of the EIA Directive without calling into question the overall location of long-standing installations. Otherwise, this would upset the balance between environmental protection and the preservation of existing infrastructure, whose removal could entail significant economic and social consequences (para. 12.4.2).

Applying these principles to the specific case, the Court relied on two key elements. First, it noted that an EIA had already been carried out in 2000 for the offshore platform. Second, it held that the contested measure constituted not a renewal but merely an extension of the concession. As such, it did not create a new legal relationship and therefore did not trigger a new EIA requirement.

The reasoning of the *Consiglio di Stato* appears overly formalistic. It places decisive weight on the distinction between extension and renewal, concluding that even a 10-year prolongation does not require a new EIA because it's not qualified as a "renewal". This approach overlooks the substantive environmental impacts of the measure. Moreover, the Court adopts a narrow interpretation of when *ex post* EIA is required, limiting it to cases of formal renewal linked to distinct new works. It does not consider whether the combination of concession extension, continued operation, and even the addition of a new well could, taken together, amount to a project under EU law. As clarified by the Court of Justice in case C-411/17, the prolongation of operation combined with works affecting the physical characteristics of a site may itself constitute a "project". Despite being decided in 2025, the Italian court does not engage with this line of reasoning and instead relies only on earlier case law (notably case C-275/09 from 2011 and Italian case law from the 2010s).

Dam safety regulations

Concessionaires of large dams are required to carry out regular inspections, maintenance, and, where necessary, adaptation and safety works in accordance with national technical standards and the provisions issued by the DG Dams, such as the *Technical Standards for the Design and Construction of Retention Barriers (Dams and Weirs)*⁹⁴. The safety of each dam is subject to periodic reassessment, based on monitoring data collected by the concessionaire and on inspections conducted by DG Dams. In 2024, the Ministry of Infrastructure and Transport adopted a new regulation that introduces rules for interventions on existing dams and a risk-based classification system ("attention classes")⁹⁵. This implies that, over the duration of a concession, existing dams are subject to continuous reassessment and to recurring physical interventions aimed at maintaining or improving safety standards.

94 Ministerial Decree of 26 June 2014 (*Norme tecniche per la progettazione e la costruzione degli sbarramenti di ritenuta (dighe e traverse)*), amended by the Ministerial Decree of 17 January 2018.

95 Ministerial Decree No. 94 of 14 May 2024 (*Regolamento recante la disciplina del procedimento di approvazione dei progetti e del controllo sulla costruzione e l'esercizio degli sbarramenti di ritenuta (dighe e traverse)*).

4.3 Bulgaria

4.3.1 Large dams in Bulgaria

Bulgaria has around 5,571 dams⁹⁶, of which the Bulgaria's Water Act identifies 52 as "complex and significant dams"⁹⁷, which are designated public state property⁹⁸. The law, however, does not provide criteria or a definition for this category.

Bulgarian law also distinguishes between large and small dams based on structural characteristics. Large dams are defined as dams with a wall height exceeding 15 metres, or dams between 5 and 15 metres in height that impound more than 3 million cubic metres of water⁹⁹, while dams that do not meet these criteria are classified as small¹⁰⁰. In addition, dams are classified according to their potential hazard level¹⁰¹.

These classifications do not correspond to the thresholds used in the EIA legislation. Under the Environmental Protection Act¹⁰², a mandatory EIA applies to dams with a storage capacity exceeding 10 million cubic metres, meaning that certain dams classified as "large" under the Water Act may not automatically be subject to EIA. According to the World Register of Dams maintained by ICOLD, Bulgaria has 76 dams exceeding the 10 million cubic metres threshold. Most of these dams were constructed before the transposition of the EIA Directive into Bulgarian law in 2002 and therefore were not subject to EIA at the time of their authorisation.

Overall, Bulgarian law uses several different classifications of dams based on different thresholds and criteria. These categories do not correspond to each other, making it difficult to determine how many dams fall within each category and which are subject to particular regulatory regimes.

4.3.2 Water crisis, floods and ageing dams

Climate change is expected to significantly affect water availability in Bulgaria. According to projections, the country could warm by 4.4°C by 2100, while rainfall may decline by more than 20%, increasing the frequency of both droughts and extreme floods. Severe summer droughts could occur every year by the end of the century, while extreme flood events may become up to four times more frequent¹⁰³.

These pressures are already affecting dam systems and water supply. In 2019-2020, the city of Pernik, home to more than 100,000 residents, experienced a severe water

96 Nikolova, M. and Nikolov, V. (2021) *Flood Risk from Dangerous Dams in Bulgaria*. SocioBrains 78.

97 Listed in Annex No. 1 to the Bulgaria's Water Act (State Gazette No. 67 of 27 July 1999). The list of complex and significant dams is available at: <https://www.moew.government.bg/bg/vodi/povurnnostni-vodi/kompleksni-i-znachimi-yazoviri/>.

98 Article 13(1)(1) of the Water Act (State Gazette No. 67 of 27 July 1999).

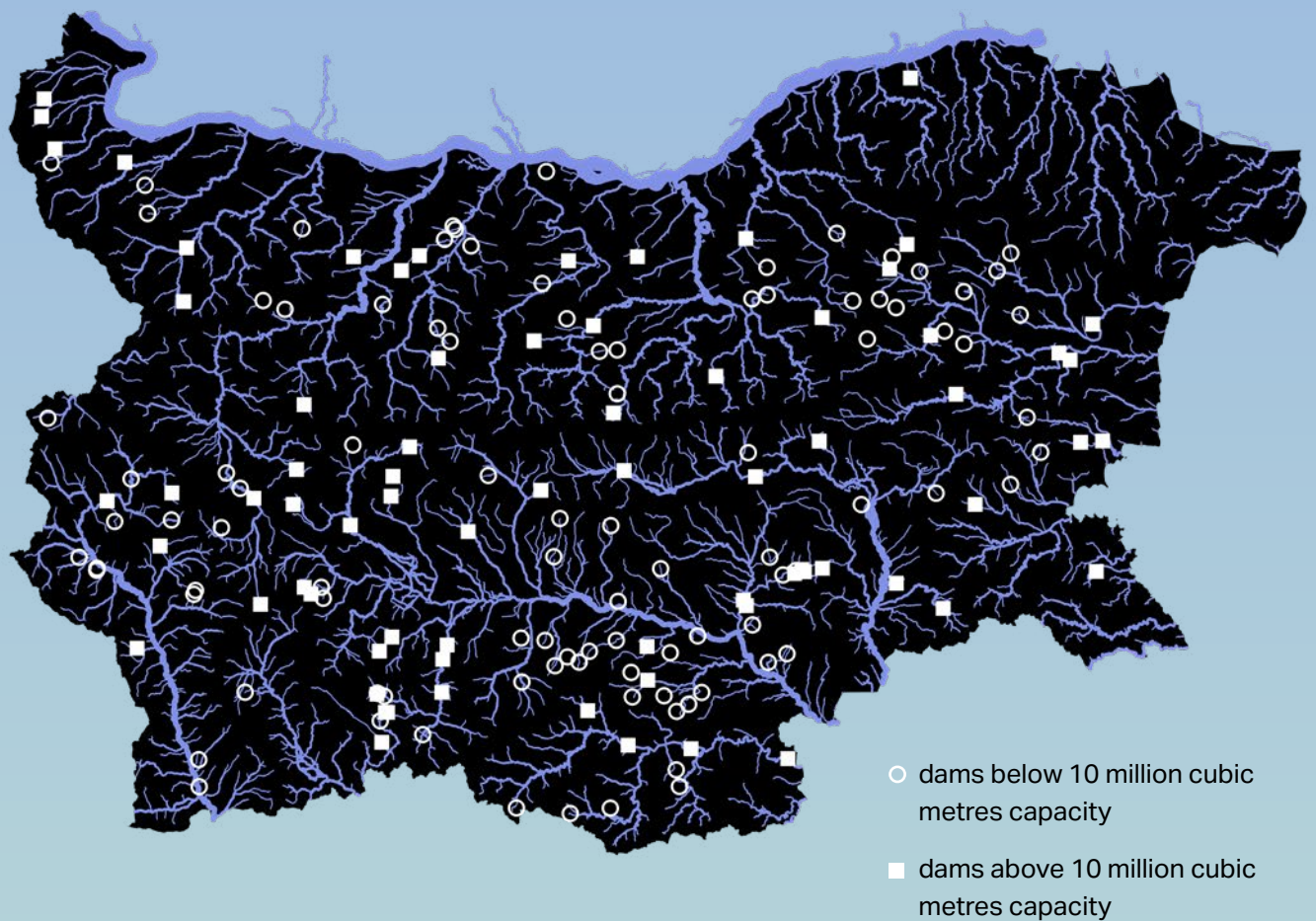
99 Article 141a(1) of the Water Act.

100 Article 141a(2) of the Water Act.

101 Article 141b of the Water Act.

102 Environmental Protection Act (State Gazette No. 91 of 25 September 2002).

103 WWF Bulgaria and Konrad Adenauer Stiftung (2022) *Bulgaria's Climate Challenge: Aligning Science, Policy and Business*, p. 10.



According to the World Register of Dams maintained by ICOLD, Bulgaria has 76 dams exceeding the 10 million cubic metres' threshold.

Most of these dams were constructed before the transposition of the EIA Directive into Bulgarian law in 2002 and therefore were not subject to EIA at the time of their authorisation.

In recent years, Bulgaria has faced repeated water shortages. In 2019, critically low water levels in the Studena Reservoir led to water restrictions in Pernik, Batanovtsi and nine surrounding villages, affecting more than 100,000 people.



Photo: Georgi Kozuharov/Dnevnik

crisis when the Studena dam, in operation since the 1950s, reached critically low levels. Water storage dropped close to the “dead volume” level, where sediment contamination makes water unsuitable for drinking. The crisis triggered a state of emergency and required intervention at the highest levels of government¹⁰⁴.

Similar problems emerged again in 2025, when Bulgaria faced one of its most serious water shortages in recent decades. Prolonged drought and below-average rainfall left several reservoirs far below capacity, in some cases at only around 20% of their storage volume. Hundreds of thousands of residents were affected by water restrictions. Experts attributed the crisis to a combination of climate change, ageing reservoir infrastructure and increasing pressure on water resources¹⁰⁵.

Flood risks associated with ageing dam infrastructure have also had serious social consequences. In 2012, the Ivanovo dam failed after a period of heavy rainfall and snowmelt, causing a sudden flood in the village of Biser in south-eastern Bulgaria. The dam, classified as “large” under the Water Act, released water that inundated the village early in the morning of 6 February. The disaster resulted in several fatalities, widespread damage to homes and infrastructure, and the evacuation of residents. Investigations following the event pointed to long-standing deficiencies in maintenance and oversight of the dam.

4.3.3 Legal framework

Under Bulgarian law, the construction and first operation of a large dam requires the following authorisations:

1. *EIA decision.* Under the Bulgarian Environmental Protection Act, an EIA is mandatory for dams with a water storage capacity exceeding 10 million cubic metres¹⁰⁶. Modifications or extensions to such dams are subject to a screening procedure

¹⁰⁴ Tsoneva, J. (2020) *The Dam and the Damned*. LeftEast, 17 January 2020.

¹⁰⁵ Türkiye Today (2025) *Over 260,000 People in Bulgaria Hit by Severe Water Shortages*. 22 August 2025.

¹⁰⁶ Article 92(1)(1), in conjunction with Annex No. 1, item 15 of the Environmental Protection Act.

to determine whether they are likely to have significant adverse effects on the environment¹⁰⁷. The screening procedure, and where applicable the EIA procedure, must be completed before the issuance of a construction permit¹⁰⁸ and before water permits under the Water Act are granted¹⁰⁹.

Bulgarian law transposed the EIA Directive in 2002 through the Environmental Protection Act, prior to Bulgaria's accession to the EU in 2007. However, environmental impact assessment requirements for dams existed earlier. The Environmental Protection Act of 1991 required an EIA for dams considered projects of national or regional importance¹¹⁰. In 1997, the law was amended to require an EIA for dams or other water storage infrastructure with a capacity exceeding 1 million cubic metres¹¹¹. Since 2002, a mandatory EIA has applied to dams with a storage capacity exceeding 10 million cubic metres.

EIA is also required, under a separate point, for investment proposals for construction, activities and technologies with transboundary environmental impact in accordance with Annex No. 1 to Article 2 of the Espoo Convention¹¹². A mandatory EIA for activities covered by the Espoo Convention, implemented separately in national legislation, is an unusual approach. However, it may provide a potential legal basis for requiring an EIA for lifetime extensions of large dams where such extensions are likely to have transboundary impacts, which is often the case. This is well illustrated by the Arda River. The river originates in the Rhodope Mountains in Bulgaria and flows for approximately 290 km, of which 241 km lie in Bulgaria and the remainder in Greece. The Arda is of key importance for aquatic ecosystems and agricultural production in the border region of northern Greece. On the Bulgarian section, three large dams have been constructed, forming the country's only cascade of large dams on a single river, with a total storage capacity exceeding 1.2 billion cubic metres¹¹³. The potential transboundary impacts of extending the operation of these dams on downstream areas in Greece are evident. However, although this legal pathway exists in theory, it does not appear to have been used in practice.

2. *Permit for the use of a water body.* Under Article 46 of the Water Act, a permit is required for activities affecting water bodies, including the construction of hydraulic infrastructure and flow regulation structures, such as dams.
3. *Construction permit.* The construction of a dam also requires a construction permit issued under the Spatial Development Act¹¹⁴.
4. *Permit for commissioning (permit for use).* After construction and acceptance tests are completed, the developer must obtain a permit for commissioning under Article 177 of the Spatial Development Act. Complex and significant dams are classified as

107 Article 93(1)(3) of the Environmental Protection Act.

108 Article 148(8) of the Spatial Development Act ([State Gazette No. 1 of 2 January 2001](#)).

109 Article 68(9) of the Water Act.

110 Environmental Protection Act (State Gazette No. 86 of 18 October 1991).

111 Environmental Protection Act (State Gazette No. 85 of 26 September 1997).

112 Article 92(1)(2) of the Environmental Protection Act.

113 The Water Diplomat (2025) [Bulgaria and Greece Sign Five-Year Agreement on Transboundary Waters](#), 14 May 2025.

114 Article 148(1) of the Spatial Development Act.

first-category constructions and may be put into operation only based on a permit issued by the Directorate for National Construction Control¹¹⁵.

5. *Water abstraction permit.* A separate permit is required for the abstraction of water, including for the use of water energy (e.g. hydropower generation)¹¹⁶. Depending on the purpose of water use, the validity period of the permit varies. Such permits may be issued for up to 20 years in general cases and up to 35 years for impoundment and water abstraction from complex dams for hydropower production¹¹⁷. The use of water in complex and significant dams is further regulated through annual and monthly operating schedules approved by the Minister of Environment and Water, which form an integral part of the water abstraction permit¹¹⁸.

Once a dam has been constructed and put into operation, its continued operation is not subject to a specific permit governing the exploitation of the dam as a whole. The commissioning permit issued under Article 177 of the Spatial Development Act confirms that construction has been completed in accordance with the applicable technical and legal requirements, but it does not have a validity period and therefore does not limit the duration of the dam's operation.

Certain operational aspects of dams are instead regulated through sector-specific water abstraction permits under the Water Act, valid for up to 35 years, as indicated above. Water permits may be extended upon application by the permit holder before their expiry, provided that legal requirements and permit conditions are fulfilled (Article 78 Water Act). While the Water Act does not specify the duration of the extension, permits may be granted within the maximum time limits set in Article 57 (up to 20-35 years depending on the use), allowing them to be repeatedly extended in practice.

The extension of water permits under Article 78 Water Act does not in itself trigger an environmental assessment. An EIA or screening is required only where the permit concerns a new project or a modification likely to have significant environmental effects under the Environmental Protection Act.

In any event, water abstraction permits regulate specific activities carried out at dams, such as water abstraction or hydropower generation, rather than the operation of the dam as an integrated infrastructure project. In particular, the impoundment of water itself – the retention of river flows within the reservoir – is not treated as a separate activity requiring a permit, as the river is considered to flow naturally into the reservoir.

As a result, once a dam has entered into operation, Bulgarian law does not require any periodic EIA of its continued operation. Since most large dams in Bulgaria were constructed before the introduction of modern EIA legislation, their environmental impacts have never been assessed. In practice, existing large dams may therefore continue operating indefinitely without any comprehensive assessment of their environmental effects.

¹¹⁵ Article 137(1)(1)(e), in conjunction with Article 177(2) of the Spatial Development Act

¹¹⁶ Article 44 of the Water Act.

¹¹⁷ Article 57 of the Water Act.

¹¹⁸ Article 53 of the Water Act.

4.4 Romania

4.4.1 Large dams in Romania

Romania has a large and ageing dam stock: public sources estimate over 2000 dams nationwide, but available data on their number, condition and permitting status is inconsistent across authorities¹¹⁹. Despite these inconsistencies in the overall number of dams, data from the Romanian National Dams Register indicate that more than 100 dams in Romania exceed 10 million cubic metres of storage capacity, thus meeting point 15 of Annex I threshold under the EIA Directive¹²⁰. Almost all of these dams¹²¹ were constructed before the transposition of the EIA Directive into Romanian law in 2004, and were never subject to an environmental impact assessment.¹²²

The environmental impacts of dams in Romania are well documented. By interrupting river continuity, dams alter hydrological regimes, block sediment transport and disrupt fish migration. This is clearly illustrated by the Iron Gates dam system on the Danube, where two large dams built in 1972 and 1985 block sturgeon migration upstream of the Danube Delta, leading to a long-term collapse of sturgeon populations due to the loss of access to spawning habitats¹²³.

Ageing dams have also produced negative social impacts. In late 2025, problems at the 55 year old Paltinu Dam in Prahova County disrupted drinking water supply for over 100,000 people. Scheduled hydrotechnical works, combined with heavy rainfall, increased sediment loads and reduced reservoir levels, making safe water treatment impossible. Water supply was suspended in several localities, schools moved classes online and hospitals restricted admissions.

4.4.2 Legal framework

Currently, the construction of new dams and major works on existing dams require several permits under Romanian law, including:

1. *Safe functioning approval* for construction or works that modify the basic parameters of existing dams¹²⁴. The dam safety legislation classifies dams into Categories A to D on the basis of a risk formula combining the probability of failure and the consequences of such failure¹²⁵. Category A ("exceptional importance") and Category B ("special importance") dams correspond to high

119 According to the 2023 Romanian Court of Auditors report, there are 2,013 dams in Romania. In 2019, however, the National Water Management Authority reported 2,405 dams.

120 National Register of Dams of Romania. The register is consistent with the World Register of Dams maintained by the International Commission on Large Dams, according to which Romania has 99 dams meeting the threshold established in Annex I to the EIA Directive.

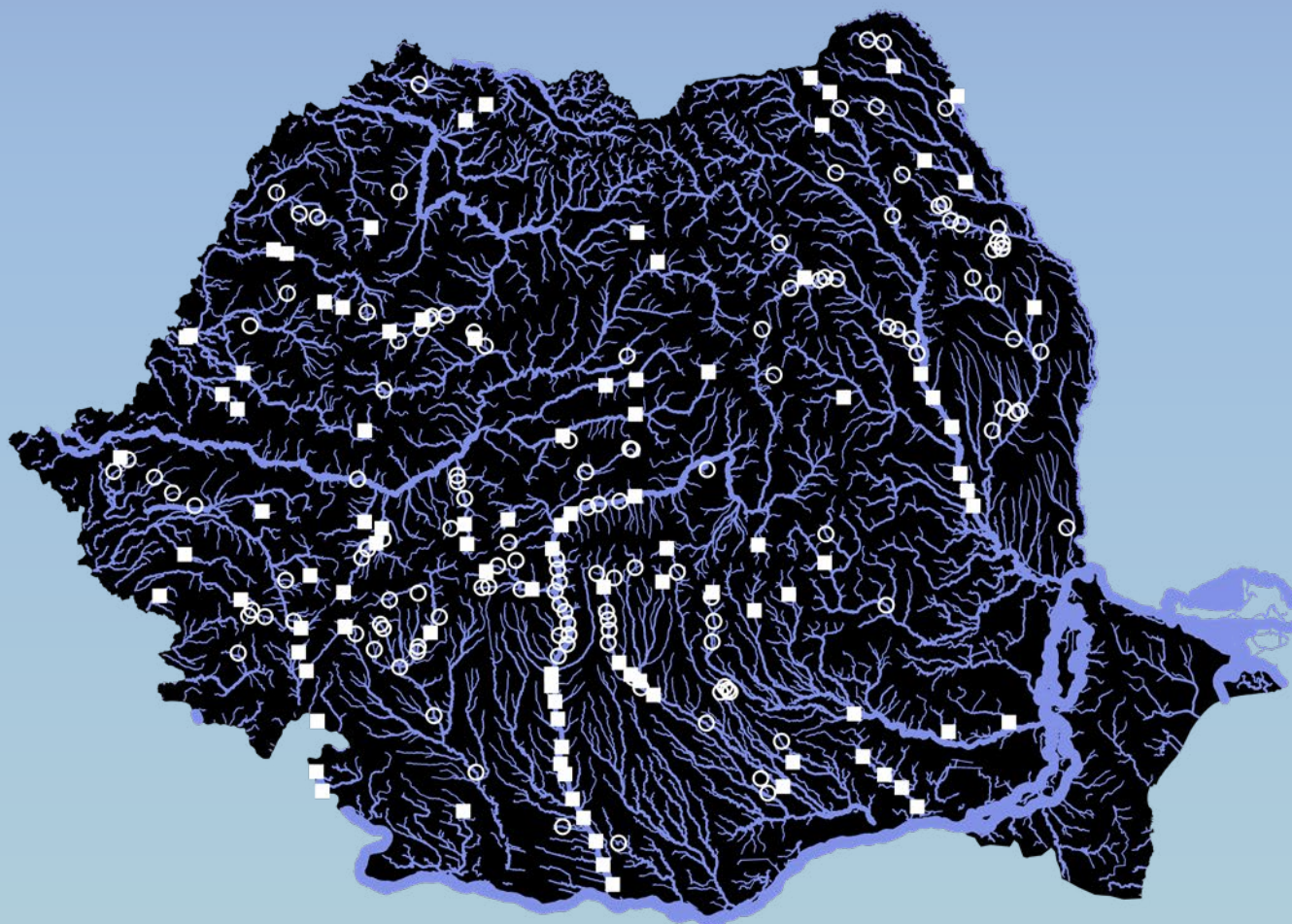
121 Only three dams have a recorded construction date later than 2004.

122 Romania acceded to the European Union in 2007. However, the first legislation transposing the EIA Directive was adopted in 2004.

123 WWF Romania. Barajele Porțile de Fier și întreruperea migrației pentru reproducere

124 Article 6(1) of the Government Emergency Ordinance No. 244 of 28 November 2000 on Dam Safety. Hereinafter: Dam Safety Ordinance.

125 Article 3(3) of the Order No. 115 of 11 February 2002 on the Methodology for Establishing Dam Importance Categories (NTLH-021) and Article 2(b) of the Dam Safety Ordinance.



- dams below 10 million cubic metres capacity
- dams above 10 million cubic metres capacity

Romanian National Dams Register indicate that more than 100 dams in Romania exceed 10 million cubic metres of storage capacity, thus meeting the point 15 of Annex I threshold under the EIA Directive.

Almost all of these dams were constructed before the transposition of the EIA Directive into Romanian law in 2004, and were never subject to an environmental impact assessment.

and moderate risk levels and fall under the competence of the National Water Management Authority. Categories C and D are subject to the competence of regional water management authorities¹²⁶. A safe functioning approval is specific to dams, but it applies irrespective of storage capacity or risk category, and is a prerequisite for obtaining a construction permit¹²⁷.

2. *EIA decision*. Under Article 7(1) of the Romanian EIA Law¹²⁸, projects listed in Annex I are subject to mandatory EIA. Dams with a storage capacity exceeding 10 million cubic metres fall under point 15 of Annex I. Modifications to existing dams are subject to screening under Annex II and may result either in a full EIA or in an evaluation decision¹²⁹. However, in practice, most dams in Romania were constructed before the EIA Directive was transposed into national law in 2004 and therefore have never been subject to an environmental impact assessment. Their environmental effects were never assessed at the time of authorisation, as no such legal obligation existed.
3. *Water management approval*, issued following an assessment of impacts on water bodies. This assessment may be conducted as a stand-alone procedure or in coordination with the EIA, where applicable¹³⁰.
4. *Appropriate assessment authorisation*, where applicable. Where a project may have a significant effect on a Natura 2000 site, an appropriate assessment under nature protection rules is required. This assessment is carried out either as part of the EIA procedure or in coordination with it¹³¹.
5. *A building permit*, which can only be issued once the EIA decision has been obtained¹³².

For the operation of an existing dam, Romanian law requires:

1. *The safe functioning permit*¹³³ applies exclusively to the existing dams and is distinct from the safe functioning approval required for construction or major works. The permit is issued for a maximum period of seven years¹³⁴; upon expiry, it must be renewed at the request of the titleholder, based on the documentation prepared by an expert¹³⁵. As a result, existing dams should be, at least in theory, subject to a technical review cycle approximately every seven years.

126 See Articles 2 and 3 of the [Order No. 105 of 22 April 2003 on Dam Safety Assessment](#). Hereinafter: Dam Safety Assessment Order.

127 Article 6(4) of the Dam Safety Ordinance.

128 [Law No. 292 of 3 December 2018 on the Assessment of the Effects of Certain Public and Private Projects on the Environment](#). Hereinafter: EIA Law.

129 Articles 8(1)(a) and 9 of the EIA Law.

130 Articles 5(1), 5(3) and 5(5) of the [Procedure for Conducting the Environmental Impact Assessment \(Annex 5 to the EIA Law\)](#). Hereinafter: EIA Procedure.

131 Article 4(2), in conjunction with Article 9(5) of the EIA Law, and Articles 5(1), 5(2) and 5(5) of the EIA Procedure.

132 Article 7(1) of the EIA Law and Article 3(1)(a) of the [Law No. 50 of 29 July 1991 on the Execution of Construction Works](#).

133 Articles 7(1) and 7(2) of the Dam Safety Ordinance.

134 Article 8(2)(a) of the [Instructions approved by the Dam Safety Assessment Order](#), which mentions specifically that this is the validity period of the safe functioning permit for existing dams.

135 Article 8(3) of the [Instructions approved by the Dam Safety Assessment Order](#).

In 2025, problems at the 55 year old Paltinu Dam in Romania disrupted drinking water supply for over 100,000 people.



Photo: Andrei Pungovschi

A valid safe functioning permit is a prerequisite for both the water management permit and the environmental permit¹³⁶. However, the 2023 Romanian Court of Auditors report¹³⁷ identified significant gaps in compliance: 983 dams held a valid safe functioning permit, 221 permits had expired, 809 dams had never been assessed under the safe permitting procedure, and 121 dams lacked clear ownership. Overall, more than half of the assessed dams did not hold a valid safe functioning permit.

The report states:

“Dams that not only do not have a safe functioning permit, but are also not subject to maintenance and repair works, are in an advanced state of degradation, abandoned, or affected by problems with hydromechanical equipment; moreover, those managed by other entities or lacking a known owner or legal administrator may pose a hazard during flood events, depending on their technical condition, creating a risk of accidents with adverse effects on the safety of the population and property in the affected areas.”¹³⁸

2. *Water management permit.* The water management permit authorises the use of water resources and the operation of water-related infrastructure¹³⁹. In practice, its validity is linked to the duration of the safe functioning permit¹⁴⁰.
3. *Environmental permit.* Operation of certain dams may also require an environmental permit for operation, insofar as such operation can be classified as *water abstraction, treatment and distribution or electricity generation*¹⁴¹. However, this

136 Article 7(3) of the Dam Safety Ordinance and Article 8(1) of the Instructions approved by the Dam Safety Assessment Order.

137 Romanian Court of Auditors (2023) *Riscul de inundații: prevenire, răspuns și refacere post-dezastru* [Flood Risk: Prevention, Response and Post-Disaster Recovery].

138 Romanian Court of Auditors (2023), p. 6.

139 Articles 5(a) and 5(e) of the Procedure for Issuing Water Management Permits, approved by Order No. 3147 of 6 December 2023. Hereinafter: the Water Management Permits Procedure.

140 Article 27(c) of the Water Management Permits Procedure.

141 Article 3(1), in conjunction with points 249 and 253 of Annex 1 to the Order No. 1798 of 19 November 2007 on the Procedure for Issuing Environmental Permits.

permit covers only a limited and activity-specific segment of the operation and its environmental effects, rather than the dam as a project as a whole. Since July 2018, the environmental permit has been issued for an indeterminate period, provided that the titleholder obtains an annual endorsement from the competent environmental protection agency¹⁴². The annual visa merely confirms that the activity continues to be carried out under unchanged conditions and in compliance with the existing permit¹⁴³. This regime replaced the previous system, under which environmental permits were issued for a fixed period of five years.

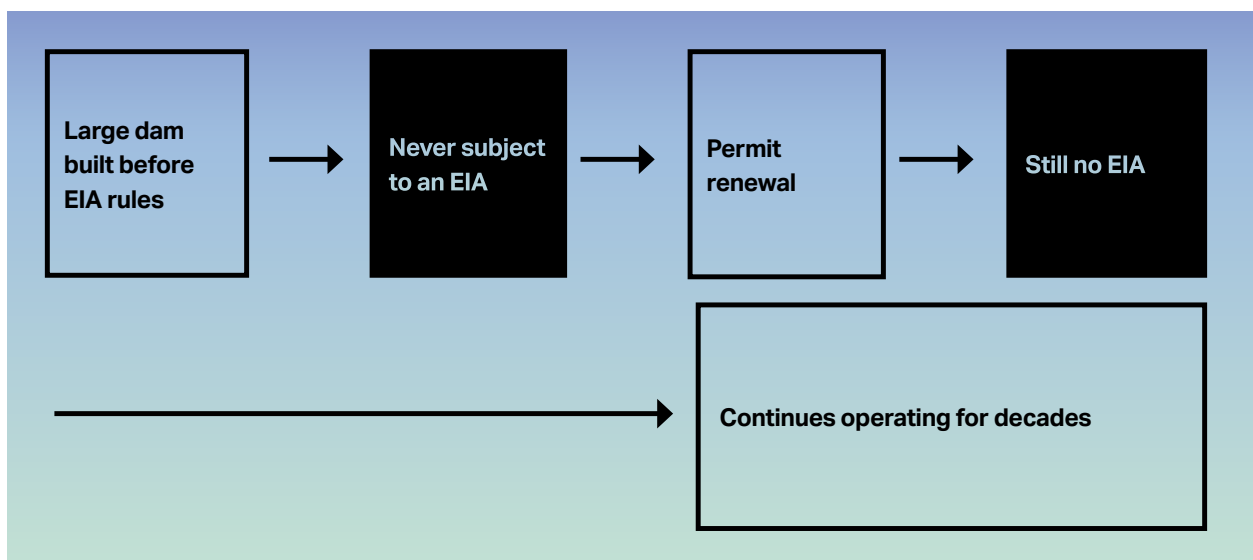
142 Article 16(2) of the Government Emergency Ordinance No. 195 of 30 December 2005 on Environmental Protection, as amended by Article I of the Government Emergency Ordinance No. 75 of 19 July 2018.

143 Article 3 of the Order No. 1150 of 27 May 2020 on the Procedure for Applying the Annual Endorsement to Environmental Permits and Integrated Environmental Permits

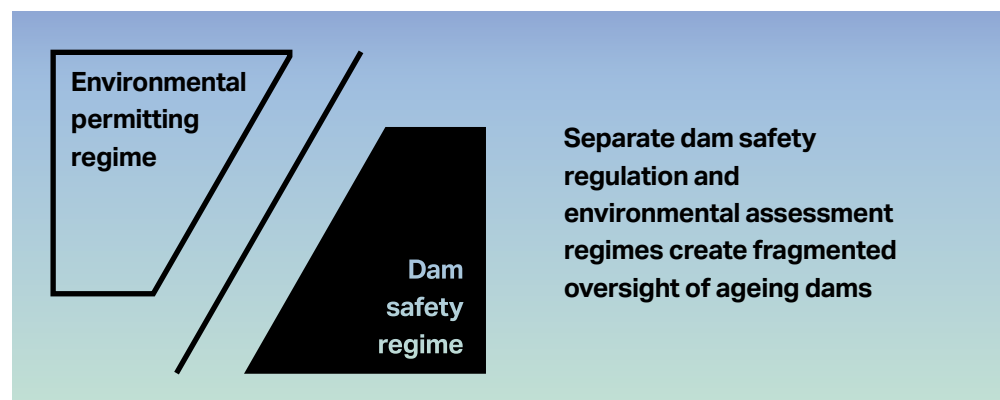
4.5 Common patterns and structural problems

The case studies reveal several common patterns.

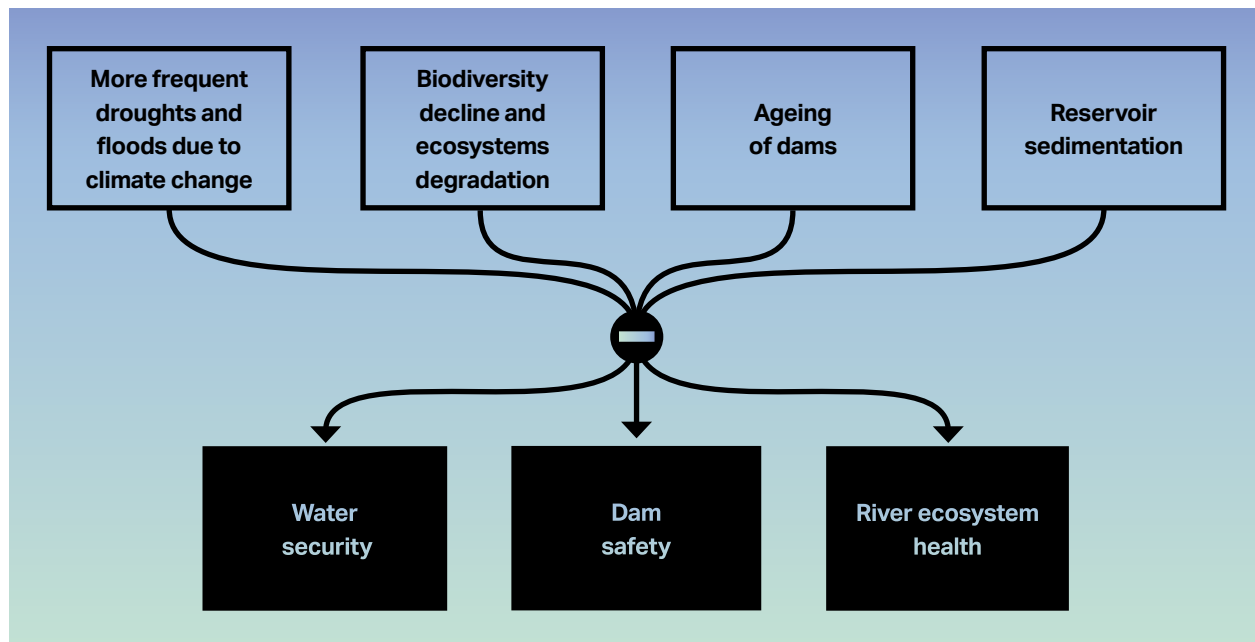
First, most large dams currently operating in the analysed countries were constructed and put into operation before the introduction of EIA rules and were therefore never subject to EIA. Their continued operation now depends on recurring administrative decisions, such as renewals or extensions of concessions, water permits, water abstraction permits and safe functioning approvals, granted for periods ranging from seven years (safe functioning approvals in Romania) to forty years (water abstraction concessions in Italy). These procedures are generally not treated as decisions triggering the EIA obligation, even where they allow large dams to continue operating for several more decades.



Secondly, dam safety regulation and environmental assessment regimes are structurally separated. Dam safety supervision and environmental permitting are governed by different legal frameworks, authorities and classifications of dams. In practice, this fragmentation makes effective oversight of ageing dams difficult from the perspective of both environmental protection and public safety.



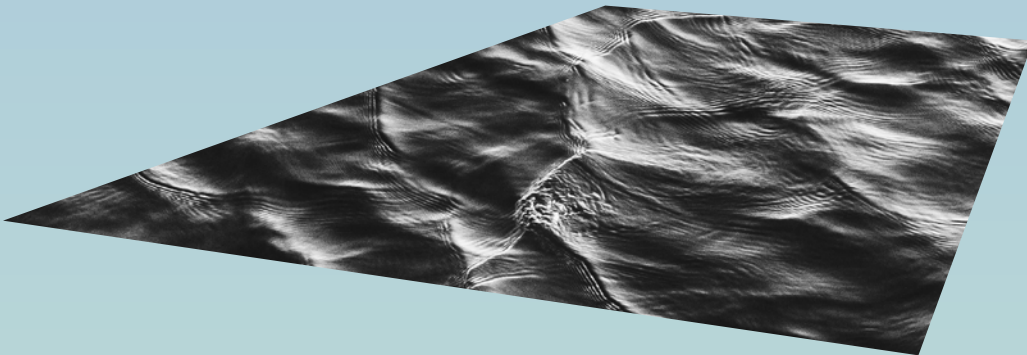
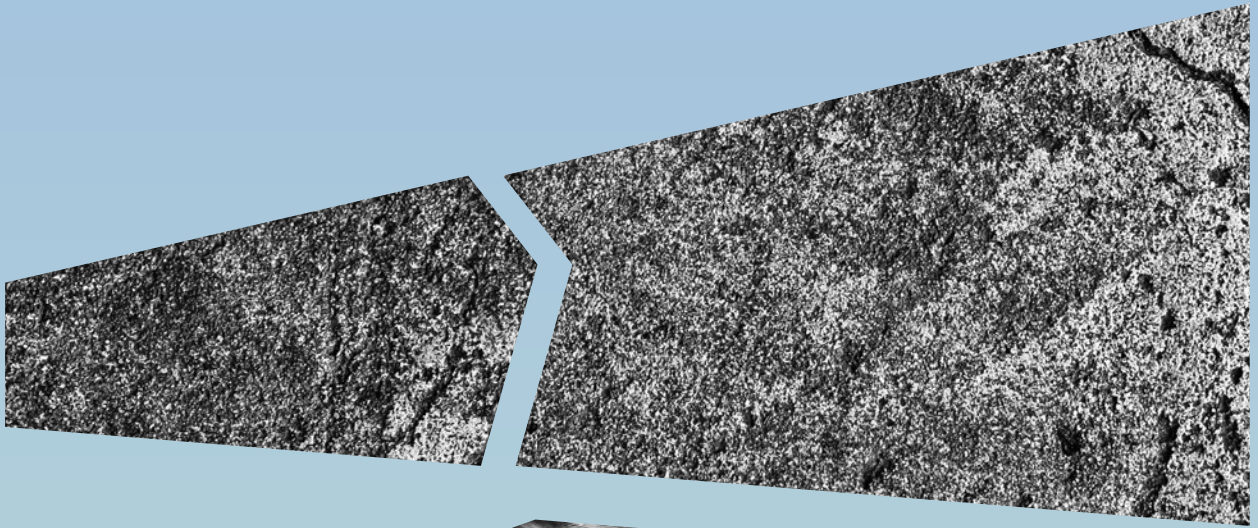
Thirdly, the case studies show wider governance problems affecting the oversight of ageing dam infrastructure. In Romania, inspections revealed serious deficiencies in compliance with dam safety obligations. In Italy, legal uncertainty surrounding hydropower concessions contributed to fragmented approaches to the operation of existing dams.



At the same time, climate change, droughts, floods, sedimentation, biodiversity decline and ageing infrastructure significantly alter both the risks and environmental impacts associated with continued operation. The case studies show that these impacts are already affecting river ecosystems, water security and dam safety across the analysed countries.

Despite this, decisions extending the operation of large dams are treated as routine administrative decisions, without being subject to EIA and the related requirements for public participation and, where relevant, transboundary EIA. As a result, large dams authorised before the implementation of the EIA Directive in the analysed countries continue operating without any comprehensive assessment of their environmental and societal effects.

5 Key conclusions



5.1 Lifetime extensions without EIA create a legal and operational blind spot

Across Europe, many installations with significant environmental impacts, such as dams, were built decades ago, often before the EIA Directive entered into force. This is especially, but not only, the case in Central and Eastern European countries that joined the European Union in the 2000s.

Under the current interpretation of the EIA Directive, renewals or extensions of these ageing installations may allow them to continue operating for decades without undergoing an EIA. The reason is that a lifetime extension is generally not considered a “project” within the meaning of Article 1(2)(a) of the Directive. Although Case C-411/17 slightly broadened earlier case law by recognising that lifetime extensions may constitute projects where they are linked to works affecting the physical aspects of the site, the practical scope of this interpretation remains limited. The judgment relies on case-by-case assessments in situations where projects may in fact fall within the scope of mandatory EIA obligations.

At the same time, extending an installation’s lifetime by 10, 20 or even 30 years is a decisive condition that allows continued operation. Such extensions may produce environmental effects comparable to those associated with the original authorisation. During long-term operation, new scientific knowledge about risks often emerges that could not have been taken into account previously. At the same time, climate change and continuous environmental degradation may significantly alter the impacts of existing infrastructure.

This interpretation of Article 1(2)(a) is difficult to reconcile with the objective of the EIA Directive, which is to ensure the assessment of projects likely to have significant environmental effects by reason of their nature, size or location. It also creates inconsistencies with the broader approach adopted under the Espoo Convention and the Aarhus Convention, international law instruments binding for both the EU and its Member States.

At the same time, the wording of Article 1(2)(a) leaves room for an interpretation consistent with those international obligations. An extension of an operating permit could be understood as “other intervention in the natural surroundings and landscape” under the second intent of Article 1(2)(a), where it authorises the continued functioning of infrastructure capable of producing significant environmental effects.

Recognising this would help ensure that the long-term operation of harmful infrastructure is assessed in light of growing climate and environmental risks.

5.2 For dams, time is inseparable from physical change

Time is not neutral for dam operation. If the lifetime of a dam is extended by a decade or longer, both the infrastructure and the natural surroundings will continue to change during that period. Dams age: materials corrode, fatigue and wear, while rivers evolve under the cumulative pressures imposed by dams and other installations. Climate change accelerates these processes, placing additional stress on already vulnerable aquatic ecosystems, and resulting in more extreme floods and droughts. These conditions further accelerate dam ageing and increase the risk of failure. Ultimately, a dam built 50 years ago was not designed to withstand the pressures of the current climate.

When all these factors are considered: the age of dams, the higher risk of failure, continuous environmental degradation, and new risks linked to climate change, extending a dam's lifetime is clearly not a neutral decision. It changes the pressures on the environment and may create risks comparable to those that existed at the time of the original approval. A lifetime extension is therefore not just a temporal shift, but a guaranteed alteration of the physical state of the project.

Even if the passage of time alone is not considered sufficient to qualify a lifetime extension as a "project" – that is, an intervention in the natural surroundings and landscape – under the EIA Directive, such decisions still implicitly recognise that renovation or safety works will eventually be required. These works constitute the type of "interventions that alter the physical aspects of a site" referred to in the CJEU case law. Numerous reports at both the UN and national levels confirm that hydrotechnical structures such as dams are often in poor condition and require renovation or upgrades to ensure their safety.

Consequently, a lifetime extension does not merely preserve the status quo. It allows an ageing dam to operate in a very different environment, exposed to risks that were not considered at the time of its design, while implicitly accepting future works that will alter the physical aspects of the site.

5.3 Climate change makes (re) assessment unavoidable

Decisions extending the operational lifetime of environmentally harmful infrastructure are among the most consequential environmental decisions taken today. Yet in practice they are treated as routine administrative acts, taken without a comprehensive environmental assessment and proper public scrutiny.

The EU Climate Adaptation Strategy¹⁴⁴ emphasises that infrastructure often lasts for many decades, while much of the existing stock is not coping well with a changing climate. It adds that “investing in resilient, climate-proof infrastructure pays off”. But investing in resilient and climate-proof infrastructure cannot mean only building new assets. It must also include assessing the resilience of existing infrastructure. Such assessments may lead to uneasy results: some ageing installations may create environmental, safety or health risks that are no longer acceptable.

144 European Commission (2021) *Forging a Climate-Resilient Europe – the New EU Strategy on Adaptation to Climate Change*. COM(2021) 82 final.

5.4 Decisions on ageing dams shape Europe's water future

The European Union is already far from achieving its biodiversity objectives in aquatic ecosystems, and this situation is worsening due to persistent hydro-morphological pressures, including dams, combined with the growing impacts of climate change.

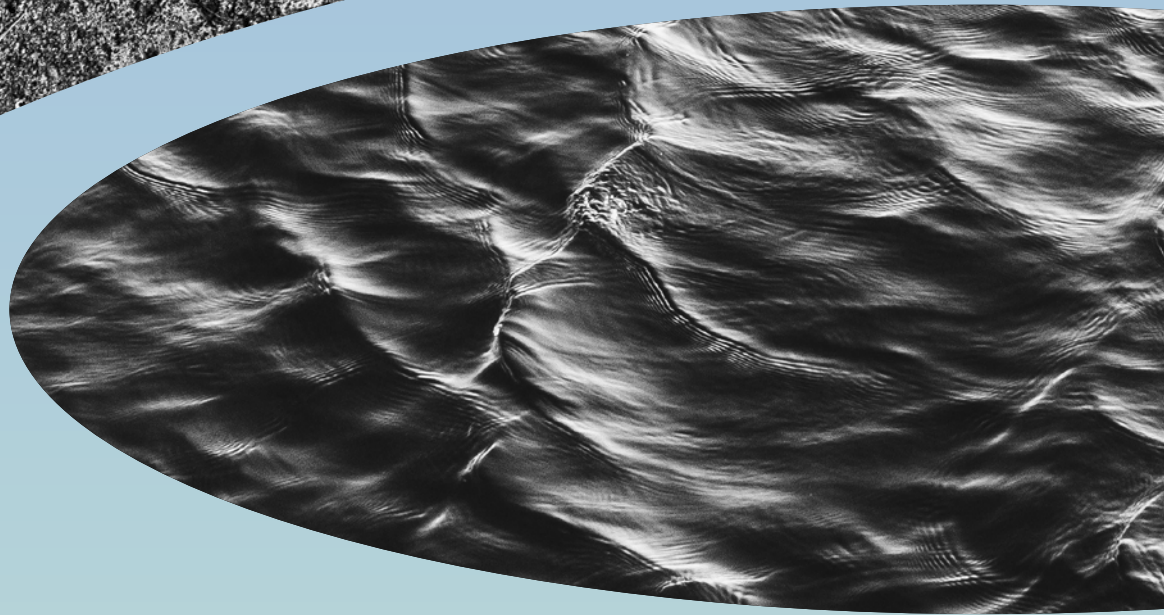
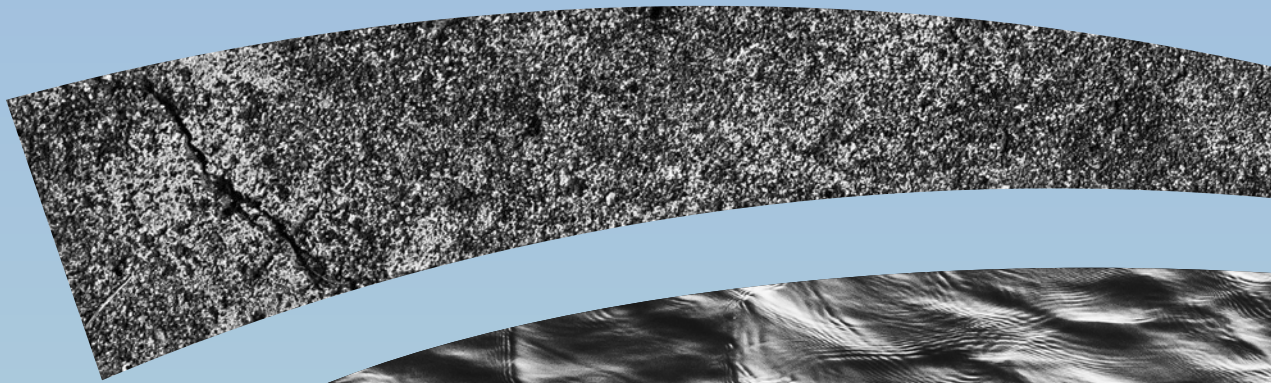
According to the European Environment Agency¹⁴⁵, current climate and economic trends will require strategic decisions about which water-dependent activities can be sustainably maintained in the future.

We are entering a period in which decisions about water management, river restoration, and the construction, repair or removal of dams will have major consequences not only for agriculture and industry in EU Member States, but also for the health of river ecosystems and the wellbeing of communities that depend on them. These decisions will also shape how societies respond to the growing risks associated with droughts, floods and water scarcity.

Although a gradual shift in thinking about dams is already emerging in Europe, the pace of change remains slow compared to the scale of the challenge. In the context of accelerating climate change and increasingly extreme weather events, there is a growing need for a systematic assessment of existing dams and a more open discussion about the role of dam removal as part of river management and climate adaptation.

145 European Environment Agency (2024) Europe's State of Water 2024, p. 78.

6 Recommendations



6.1 Recommendations for the European Commission

6.1.1 Revise the 2024 EIA guidance to clarify that lifetime extensions may constitute projects

The Commission should revise its 2024 guidance¹⁴⁶ on the interpretation of project categories under Annexes I and II of the EIA Directive to clarify that lifetime extensions may constitute projects, particularly where they allow environmentally significant infrastructure to continue operating for substantial additional periods.

The current guidance states that lifetime extensions do not constitute projects, referring to the Brussels Airport case (C-275/09), while at the same time recognising, with reference to Case C-411/17, that restarting industrial production may constitute a project. In practice, the distinction remains unclear. The guidance also fails to reflect developments under the Aarhus and Espoo Conventions concerning public participation and transboundary EIA of lifetime extensions.

The revised guidance should clarify the circumstances in which decisions extending the operation of Annex I and Annex II installations may require environmental assessment, taking into account the risks associated with ageing infrastructure and impacts of climate change.

6.1.2 Address systemic non-compliance concerning lifetime extensions of large dams

The Commission should assess whether the absence of EIA and public participation for lifetime extensions of large dams constitutes a systemic compliance problem in Member States. The case studies presented in this report suggest that the issue is not limited to individual permitting decisions, but reflects broader regulatory and administrative practices that allow ageing infrastructure to continue operating for additional decades without EIA, despite changing environmental conditions, increasing safety risks, associated modernisation works and evolving scientific knowledge.

Where appropriate, the Commission should consider the use of infringement proceedings. Such cases could provide an opportunity for the CJEU to further clarify the circumstances in which lifetime extensions may themselves constitute projects within the meaning of the EIA Directive. Greater legal clarity would support more consistent implementation of the Directive across Member States.

¹⁴⁶ European Commission: Directorate-General for Environment (2024) *Interpretation of Definitions of Project Categories of Annex I and II of the EIA Directive*, p. 8.

6.1.3 Develop guidance on barrier removal prioritisation in connection with Article 9 of the Nature Restoration Regulation, taking into account the challenges associated with ageing dams

With regard to dams specifically, the Commission should develop guidance on barrier removal prioritisation in connection with Article 9 of the Nature Restoration Regulation, which establishes the objective of restoring at least 25,000 km of rivers into free-flowing condition by 2030, primarily through the removal of river barriers. Such guidance should take into account the specific challenges associated with ageing dams, including their declining functionality and increasing safety risks and maintenance costs. Guidance should encourage Member States to prioritise barriers whose original functions have substantially declined, whose maintenance costs are increasing, or whose operation creates disproportionate environmental or safety risks. Further analysis and recommendations concerning Article 9 of the Nature Restoration Regulation can be found in the legal briefing *Going with the flow: Barrier removal for healthier rivers* prepared by ClientEarth and Living Rivers Europe¹⁴⁷.

6.2 Recommendations for Member States

6.2.1 Implementing EIA for lifetime extensions

Member States should treat lifetime extensions of infrastructure listed in Annexes I and II to the EIA Directive as decisions requiring EIA and EIA screening, respectively.

The EIA Directive establishes minimum requirements for the assessment of projects likely to have significant environmental effects, including rules on public participation and the assessment of cumulative impacts. Member States therefore remain free to apply broader EIA requirements under national law. Such an approach would allow Member States to better fulfil their obligations under the Aarhus and Espoo Conventions concerning public participation and, where relevant, transboundary EIA. It would also strengthen climate resilience, improve information on ageing infrastructure and reduce environmental and disaster risks associated with long-term operation.

Requiring EIA before granting lifetime extensions would not undermine legal certainty or the stability of existing authorisations. The original authorisation of the installation would remain intact. An EIA does not automatically mean that a dam, or another type of legacy infrastructure, must cease operating or be dismantled. Rather, it ensures that environmental impacts and safety risks associated with ageing infrastructure are properly reassessed (or, in some cases, assessed for the first time), that the public can participate in decision-making, and that mitigation or adaptation measures are considered.

In practice, this will require changes both to national EIA legislation and to administrative practice. Decisions renewing or extending permits enabling long-term operation of large dams should be subject to EIA or EIA screening, depending on the characteristics and scale of the installation. In some Member States, these changes could largely be achieved through interpretative guidance and administrative practice.

In Bulgaria, for example, the key issue is how provisions concerning “dams with a storage capacity exceeding 10 million cubic metres” are interpreted – whether they apply only to the original construction of the dam or also to decisions enabling continued long-term operation, even in the absence of major new construction works.

In Poland, legislative amendments would be necessary. The list of decisions requiring prior environmental assessment would need to be expanded to include water permits authorising continued dam operation.

In Romania, environmental reassessment could be linked to the periodic safe functioning permit issued every seven years, although the report demonstrates significant enforcement gaps within the current system. Alternatively, EIA obligations could be linked to water management permits.

In Italy, changes could initially be introduced through administrative practice and coordinated guidance developed jointly by the Ministry of Environment and Energy Security and the Directorate-General for Dams within the Ministry of Infrastructure and Transport.

In Member States where original permits are granted without a fixed end date, periodic environmental reassessment should nevertheless be introduced in order to account for changing climatic, hydrological and ecological conditions, which may substantially alter both the risks and the benefits associated with continued operation.

Importantly, this approach does not require the creation of entirely new regulatory systems. EIA is already a well-established and familiar procedure within Member States' legal systems. Extending its application to lifetime extensions would therefore require significantly less legislative, institutional and administrative adaptation than introducing an entirely new environmental regime.

6.2.2 Ensuring the continued validity of environmental assessments

Member States should ensure that environmental assessments remain up to date through the application of Article 8a(6) of the EIA Directive.

In the context of Article 8a(6), best practice would be to establish clear validity periods for reasoned conclusions to ensure legal certainty and consistent administrative practice. Such time limits would help identify when a reassessment is required and reduce the risk that environmental assessments continue to be relied upon long after the conditions on which they were based have changed.

The assessment of whether a reasoned conclusion remains up to date should be based on objective criteria. Member States could draw on the screening criteria set out in Annex III to the Directive, which already identify relevant considerations relating to the characteristics of the project, its location and its likely impacts. This would provide a structured framework for determining

whether environmental conditions, scientific knowledge or other relevant circumstances have changed sufficiently to justify further assessment.

Where the competent authority is not satisfied that a reasoned conclusion remains valid, it should be able to require supplementary studies or, where necessary, a new EIA. This may be particularly relevant in the case of long-term permit renewals and installations associated with significant accident risks, substantial environmental impacts or high vulnerability to climate change.

Applied in this way, Article 8a(6) could provide a complementary mechanism for addressing a gap in the current system. While lifetime extensions of environmentally significant infrastructure often fall outside the scope of EIA because of the current interpretation of the concept of “project”, Article 8a(6) offers a mechanism for ensuring that outdated environmental assessments do not continue to serve as the basis for decisions taken decades later.

6.2.3 Improving governance of ageing dams

A new assessment of environmental impacts may reveal situations in which the environmental and safety risks of continued operation outweigh the benefits. The example of ageing dams shows clearly that functionality often declines over time, while maintenance costs and safety risks increase. In some cases, EIA may demonstrate that reduced operation, partial decommissioning or dam removal would be more justified and cost-effective than further, long-term operation.

Decisions extending the operation of large dams should therefore assess whether continued operation remains justified under current conditions. EIA reports should consider alternatives, including reduced operation, partial decommissioning and dam removal.

Many large dams currently operating in Europe were authorised decades ago, often before the EIA Directive entered into force. Yet their environmental impacts continue throughout their operational lifetime and intensify over time. River fragmentation, sediment disruption, biodiversity loss and hydromorphological impacts do not end with construction. Climate change and increasing hydrological instability further alter both the risks and the functions associated with long-term dam operation.

Member States should also maintain public registers of large dams containing information on ownership, permits, concession periods, safety status, environmental impact assessments and potential decommissioning plans. This could be developed as part of the exercise under Article 9 of the Nature Restoration Regulation, which requires Member States to create inventories

of artificial barriers to surface water connectivity and identify barriers whose removal is necessary to meet river restoration objectives.

Finally, dam safety and environmental assessment regimes should no longer operate in silos. Member States should improve coordination between environmental authorities and dam safety authorities, including through common guidance, shared terminology and integrated assessment procedures.

List of abbreviations

ACCC	Aarhus Convention Compliance Committee
CJEU	Court of Justice of the European Union
EEA	European Environment Agency
ECIC	Espoo Convention Implementation Committee
EIA	Environmental Impact Assessment
ICOLD	International Commission on Large Dams
TFEU	Treaty on the Functioning of the European Union
WFD	Water Framework Directive

