# DAM REMOVAL PROGRESS 2025

DAM REMOVAL EUROPE

*Removal of the Kurunkoski Dam on the Torsanjoki River, Finland © Mikko Nikkinen, Storymakers*

**EUROPE'S BIGGEST YEAR YET WITH MORE THAN 600 BARRIER REMOVALS**

*Removal of a weir on the Ribble River, England, UK © Jonathan Grey*

# INTRODUCTION

Across Europe, habitat restoration is gaining momentum, supported by evidence that healthy ecosystems deliver universal, long-term well-being of our health, our homes and our economies. Among these, restoring river connectivity stands out as a critical driver of climate resilience, water security and biodiversity recovery (Garcia de Leaniz et al. 2023). At the European level, the Nature Restoration Regulation (NRR)[1] marks an important step forward by establishing legally binding targets to restore degraded ecosystems. A key element of the Regulation is the target to restore at least 25,000 km of free-flowing rivers by 2030, explicitly recognizing barrier removal as a key measure to achieve ecological connectivity and resilience.

By setting objectives related to free-flowing rivers, the NRR provides a strong policy signal that obsolete and harmful barriers should be addressed as part of national restoration planning. Member States have until September this year to submit their draft National Restoration Plans, where they need to indicate which barriers they plan to remove (see text-box 1).

Countries beyond the borders of the EU are also increasingly embedding river restoration and barrier removal into national biodiversity strategies, climate adaptation plans, and flood risk management policies. In part, this is to contribute to global commitments such as the Kunming Montreal Global Biodiversity Framework[2], which calls for restoring freshwater connectivity and ecosystem function worldwide, but mostly due to the recognition that barrier removal is an effective, multi-purpose restoration measure, that delivers a wide range of benefits.

At the same time, environmental laws are under growing pressure. Environmental legislation faces increasing political and economic pressure, creating uncertainty and delaying the much-needed implementation. The announced reopening of the Water Framework Directive[3] signals a broader trend towards weakening environmental ambition, where safeguards are diluted in the name of competitiveness of industry. Such dynamics matter directly for river restoration: strong, enforceable water and nature legislation has been a key driver of progress on barrier removal to date. What is at stake goes far beyond water policy. The Habitats Directive and the Birds Directive - together forming the backbone of the Natura 2000 network - are expected to be the next targets. These laws have protected thousands of species and habitats for decades and represent one of the world's most ambitious systems for conserving biodiversity. If these protections are reopened under the banner of "simplification", hard-won environmental standards will be diluted just when ecosystems face unprecedented pressure from climate change. Similar pressures are visible beyond the EU, where environmental laws and permitting frameworks are increasingly challenged by competing priorities such as energy security, mining of critical raw materials, and short-term economic recovery.

[1] https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-regulation_en

[2] https://www.cbd.int/gbf

[3] https://environment.ec.europa.eu/news/commission-launches-call-evidence-water-legislation-2026-03-17_en

## AUSTRIA'S PLAN TO IMPLEMENT NATURE RESTORATION REGULATION

In March 2026, Austria presented its first national plan to restore river connectivity under the Nature Restoration Regulation (Figure 1). Today, only 12% of the country's rivers remain free-flowing. Using the official criteria for identifying free-flowing rivers provided by the European Commission and pre-existing national data, more than 2,500 km of river stretches have been identified and could potentially be restored, with ~450 km planned to be restored by 2030.

The plan was developed by Austria's Federal Ministry (BMLUK) together with the federal states through an interdisciplinary and transparent process, with input from stakeholders, scientists and WWF. Restoring these rivers will require targeted measures for river connectivity, with dam removal expected to play a key role. A public consultation was launched in March 2026 via an online map, giving everyone the opportunity to explore the plan and share feedback.

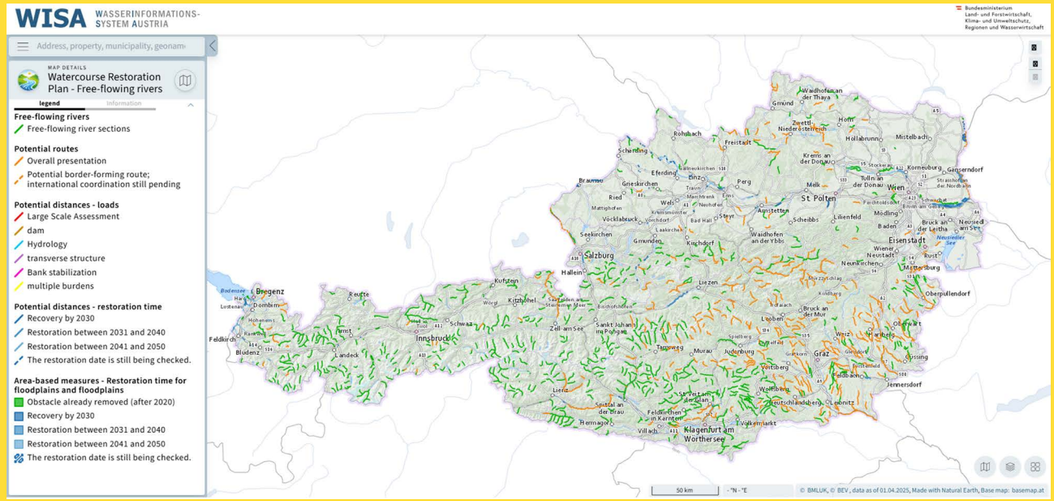



**Figure 1.** Map showing Austria's national plan to restore free-flowing rivers under the Nature Restoration Regulation © BMLUK (available at: https://maps.wisa.bmluk.gv.at/frei-fliessende-fluesse/#/cffr:fl,pot,str/bgrau/a-/@47.71437,12.53762,8z)

Preventing a weakening of environmental regulations will require strong and visible public engagement[4]. Local communities, organizations, researchers, and citizens across Europe must make it clear that environmental laws are not bureaucratic obstacles but provide essential protection for nature, water, and public well-being. Maintaining clear legal mandates for restoring river connectivity and demonstrating the societal and economic benefits of barrier removal is essential for safeguarding momentum across both EU and non-EU countries.

In this context, the Dam Removal Europe (DRE) coalition has been publishing an annual progress report for the last six years to evaluate the progress and impact of barrier removal[5] as a river restoration measure Europe-wide (Table 1; Figure 2).

[4] https://handsoffnature.eu/

[5] Barrier removals refer to complete removal of the full vertical extent of the structure or partial removal permitting fish passage and ecological flow. Creation of nature-like rock ramps that "eliminate" a barrier are also considered removals. Any type of fishway, bypass, etc. is not considered a barrier removal



**Table 1.** Number of barrier removals and of countries that reported removals to Dam Removal Europe per year. Note: England, Scotland, Wales and Northern Ireland are considered under UK as a single unit

| Year | No. of removed barriers | No. of countries |
|---|---|---|
| **2020** | 101 | 11 |
| **2021** | 239 | 17 |
| **2022** | 325 | 16 |
| **2023** | 487 | 15 |
| **2024** | 542 | 23 |
| **2025** | 603 | 21 |

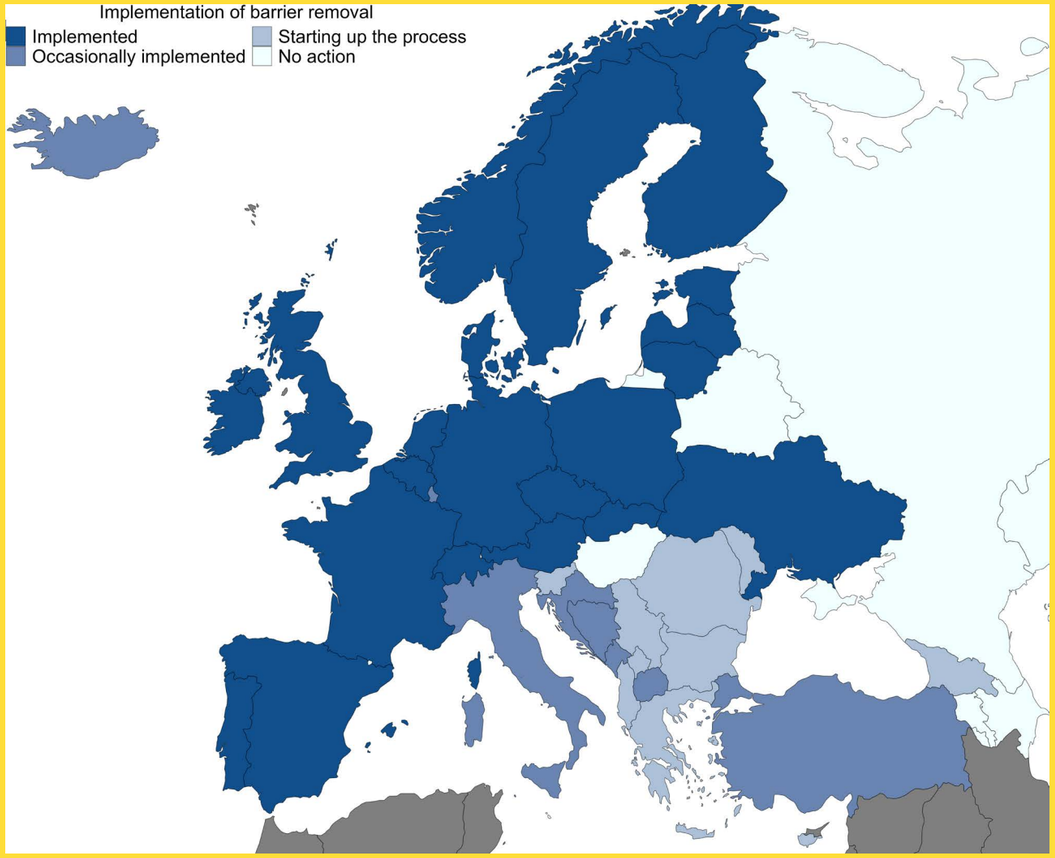



**Figure 2.** Implementation of barrier removal as a river restoration tool in Europe. Note: barrier removals which took place in England, Scotland, Wales and Northern Ireland are considered under the UK as a single unit; Implemented = barrier removals occurred at least in three of the last five years; Occasionally implemented = barrier removals occurred in one or two years in the last five years; Starting up the process = actions that will lead to future barrier removals have taken place; No action = no actions relevant to barrier removal known to DRE

## DATA COLLECTION AND RESULTS

The data presented in this report were provided by ministries, municipalities, water agencies, NGOs, scientists, researchers, and other river restoration practitioners. Accurate estimations of the total number of barrier removals executed per year remain a highly complex endeavor, notably because the verification process of such projects, and the assessment of whether they satisfy the DRE criteria for a barrier removal, is resource-intensive and time-consuming. For example, last year, DRE discovered 24 additional barrier removals after the publication of the annual report. A centralized, annually coordinated national system to gather such information, led by the respective Ministry, exists in countries like Spain, Denmark and Estonia, while in others, including Austria, the data is collected every few years. Other countries, like Finland and Sweden, also have processes to collect this information by several authorities. However, such mechanisms are lacking in most European countries. In that respect, the final number of removed barriers reported herein should be considered an underestimation.

Based on the information gathered, DRE reports that in 2025:

- **At least 603 barriers were removed in 21 European countries (Figure 3)**

- **Iceland and North Macedonia officially removed their first barriers ever**

- **Sweden was the new trailblazer of European barrier removal (Figures 3-4), followed by Finland and Spain**

- **50% of the removed barriers were culverts and 31% were weirs[6]. Dams were the next most common type of the removed barriers (10%), followed by timber floating dams**

- **78% of the removed barriers were lower than 2 m, 20% were 2-5 m high and 2% were more than 5 m high[7]**

- **5% of the removed barriers were used or originally built for hydropower production[8]**

- **More than 3,740 km were reconnected through barrier removals[9]**

The total number of removals recorded in 2025 represents an 11% increase from the previous year (542 barrier removals in 2024; Mouchlianitis 2025; Table 1) and marks a new European record. The number of European countries that reported barrier removals in 2025 decreased by two (2) compared to 2024 (Table 1). However, two (2) countries officially executed their first barrier removals, and more are expected to do so as well in the near future (like Romania, Kosovo and Greece). Half of the barriers that were removed last year were culverts, following the trend from 2024. The number of removed weirs was also high. Most of the removed barriers were low-head structures (<2 m high) as was the case also in 2024.

[6] Type was available for 316 out of the 603 barriers that were included in this report

[7] Height was available for 258 out of the 603 barriers that were included in this report

[8] Original use was available for 181 out of the 603 barriers that were included in this report

[9] Number of reconnected km was available for 198 out of the 603 barriers that were included in this report. The length of the reconnected river sections was calculated as the sum of the km to the first barrier upstream and the first barrier downstream (if any) of the location of each removed barrier. Note: this approach is a simplification and differs from the approach described in NRR

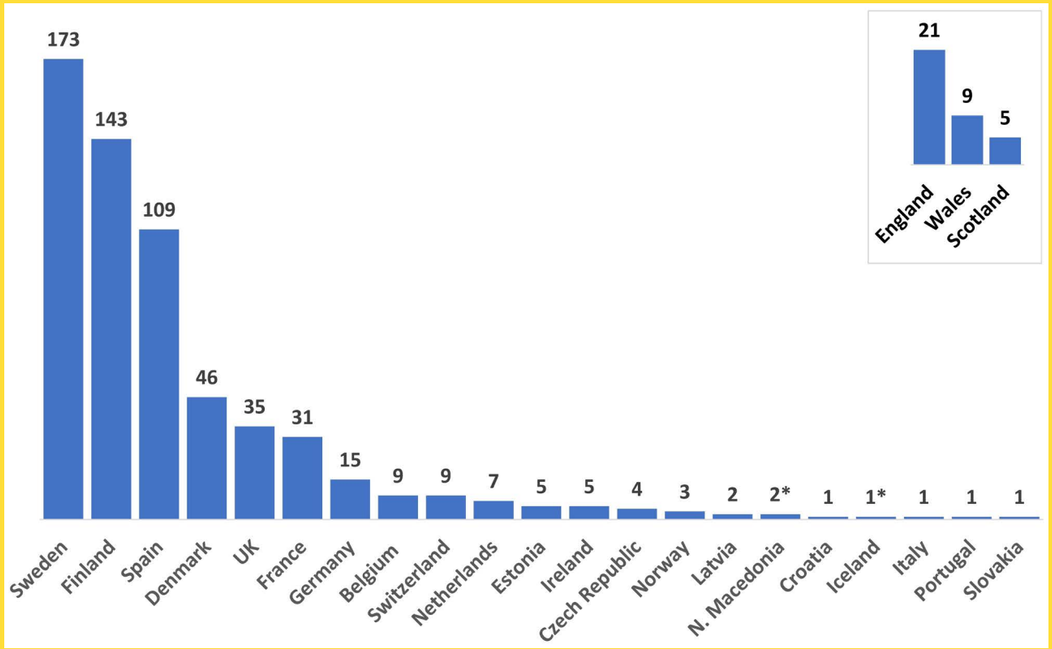



**Figure 3.** Number of barriers removed per country in 2025. Note: the inset shows the removals per country in the UK. The countries that officially removed their first barriers in 2025 are marked with an asterisk (*)

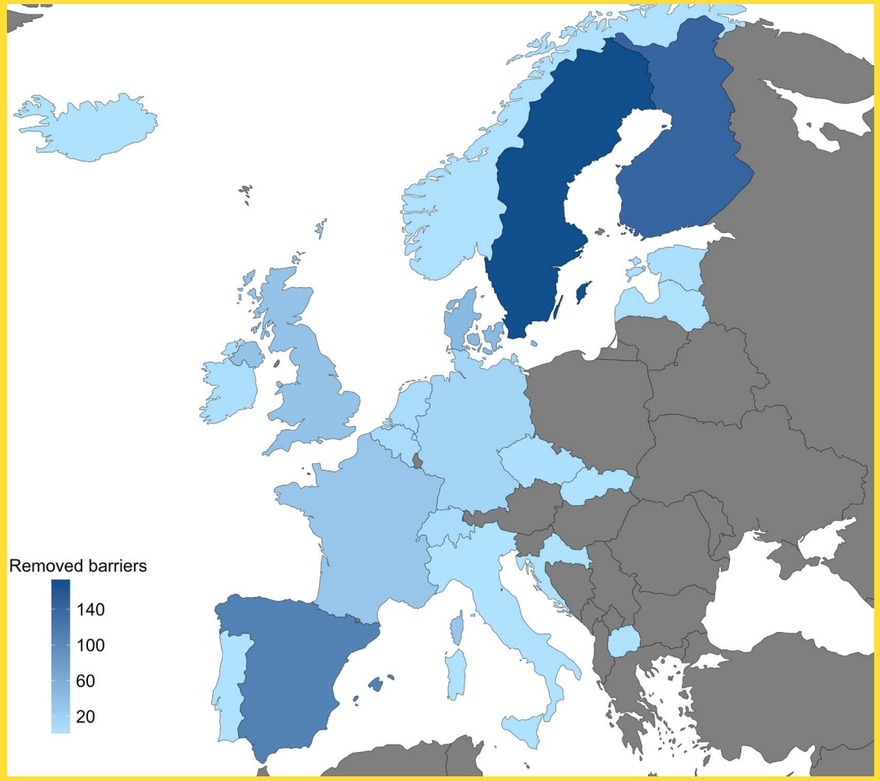



**Figure 4.** Map of European countries that reported barrier removals in 2025. Colour gradient refers to the number of removals per country. Note: barrier removals which took place in England, Scotland, Wales and Northern Ireland are considered under UK as a single unit

# BEFORE AND AFTER REMOVALS

BROCKSIDE WEIR – BROCK RIVER – ENGLAND, UK © Wyre Rivers Trust

FRÄKENTJÄRNSDAMMEN TIMBER FLOATING DAM – VINDEL RIVER CATCHMENT – SWEDEN
© Rewilding Sweden (link)

ISABY RIVER – FRANCE © FDAAPPMA65 (link)

VILDOGA RIVER – LATVIA © Pasaules dabas fonds (link)

SOURINHO DAM – ALVIELA RIVER – PORTUGAL © GEOTA (link)

LIRI RIVER – ITALY © (left) James Shooter, (right) Bernardo Bartolomucci (link)

## RESTORING LIFE TO THE PČINJA: NORTH MACEDONIA'S FIRST BARRIER REMOVALS

The Pčinja River Basin in North Macedonia has long been fragmented by 46 barriers, disrupting habitats of key native fish species. In a landmark initiative[10], Eko-svest successfully removed two barriers – one on the Kriva River and one on the Pčinja River – unlocking 72 km of habitat. These removals, the first in the country, followed a structured methodology for prioritizing barriers and were strongly supported by the public, with 91% favoring restoration of free-flowing rivers nationwide.

The barrier at Kriva River, a 1.6-m-high and 10-m-long structure, was removed in a single day in August 2025. Removal works of the Shuplji Kamen barrier (5.3 m high, 52 m long; Figure 5) ran from October to December 2025. The project cost ~42000 € and involved expert engagement, permit acquisition, community consultation, and policy advocacy.

Implementation faced major challenges. Institutional delays arose from the lack of national regulations on barrier removal and poor coordination between agencies.

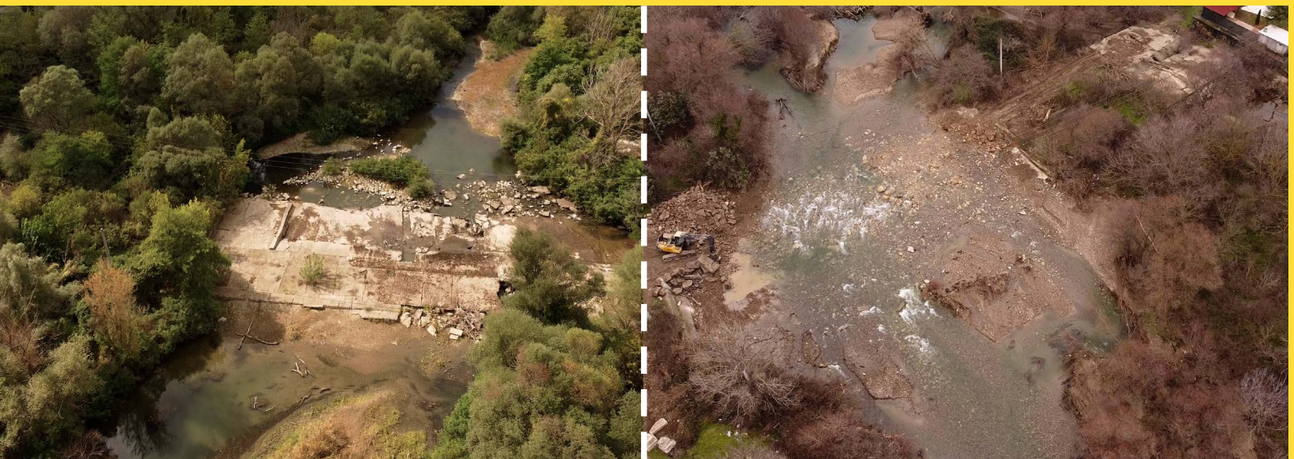
The project was also put on hold in 2024 due to the parliamentary elections. Environmental risks at the Kriva River site, including lead, cadmium, and arsenic contamination, had to be taken into account and required careful handling. The removal of the Shuplji Kamen barrier faced technical difficulties as heavy machinery was needed on the site.

Despite these obstacles, the project reconnected habitats that are critical for more than ten (10) native fish species, including *Barbus balcanicus* and *Rhodeus meridionalis*. Water quality was also improved, and flood and safety risks for communities were reduced.

Ongoing monitoring focuses on fish population recovery and riverbank erosion. This pioneering effort provides a replicable model for river restoration and highlights the importance of institutional coordination and regulatory frameworks for future barrier removals in the country, but also on a European level.

[10] https://openrivers.eu/projects/202407597-two-barrier-removals-north-macedonia/

**Figure 5.** Shuplji Kamen barrier site at Pčinja River in North Macedonia, (left) during and (right) after the removal works © Eko-svest



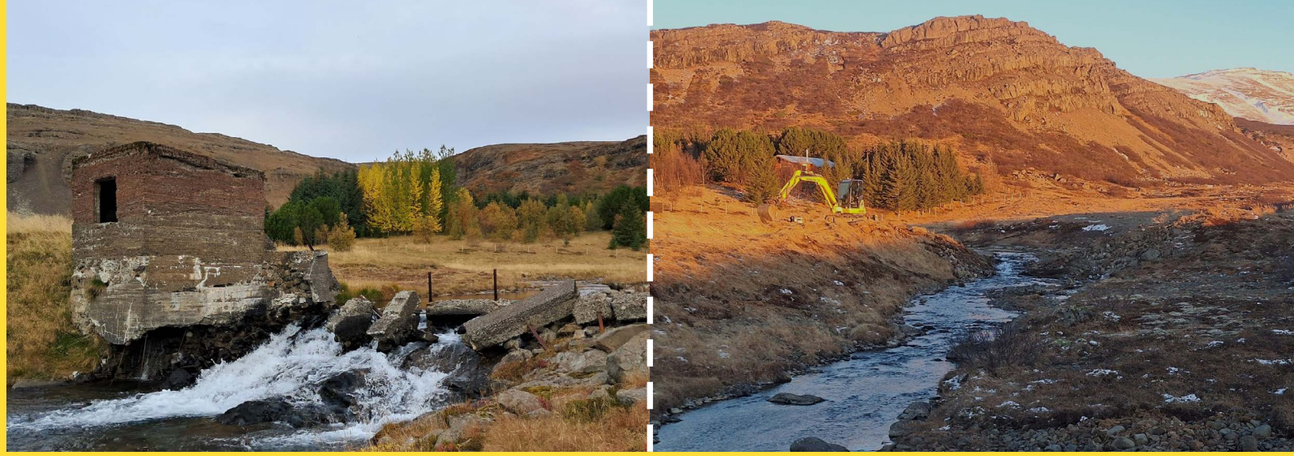


**Figure 6.** The Ytri-Hraundalur hydropower dam site at Melsá River in Iceland, (left) before and (right) after the removal works © (left) Jóhannes Guðbrandsson, and (right) Iðunn Hauksdóttir

## ICELAND'S FIRST OFFICIALLY DOCUMENTED DAM REMOVAL

A dam on the River Melsá in Ytri-Hraundalur, Iceland, was removed in December 2025 in what is, as far as currently known, the first officially documented barrier removal project in the country[11]. The initiative was funded by the Open Rivers Programme and implemented by Fuglavernd (BirdLife Iceland), with the goal of restoring natural river processes and improving habitat conditions for fish and bird species.

Originally built in 1958 to supply electricity to a local farm, the small hydropower dam had long been obsolete but continued to block fish migration (Figure 6). As the only barrier between the river's source and the sea, its removal not only reconnected 2.55 km of upstream habitat, but also made River Melsá completely free-flowing. Pre-removal surveys found no juvenile fish upstream, underlining the barrier's ecological impact, and thus its demolition was of critical importance for species such as sea trout and Atlantic salmon.

The project was carried out in collaboration with Land og skógur (Land and Forest Iceland), Hafrannsóknastofnun (Marine and Freshwater Research Institute), and the Royal Society for the Protection of Birds (RSPB), with technical support from the Scottish consultancy CBEC.

Preparatory work began in May 2025, including hydrological monitoring and site planning. Implementation faced some challenges, including delays due to heavy rainfall and the need for frozen ground conditions to allow machinery access. Additionally, a larger-than-expected volume of concrete was discovered beneath the structure. Despite these constraints, the dam was fully removed as planned.

The successful implementation of this – first of its kind in Iceland – project marked an important milestone for river restoration in the country and demonstrated the benefits of removing obsolete infrastructure.

[11] https://openrivers.eu/projects/202407588-removing-two-obsolete-small-hydroelectric-dams-in-myrar-iceland/

**Figure 7.** Countries in Southeastern Europe where barriers have been removed and/or actions have been implemented that will lead to future infrastructure demolitions

## FOCUS REGION: SOUTHEASTERN EUROPE

Barrier removal remains relatively uncommon in southeastern Europe (Figure 2). Only 1.3% of all recorded barrier removals in Europe (125 out of 9,681 cases, 2025 included) have occurred in this region. Detailed barrier inventories are also lacking in most southeastern European countries (AMBER Consortium 2020). However, progress is slowly accelerating with increasing numbers of people engaging in barrier removal activities, including developing enabling conditions.
*The Scaling up dam removal: implementation plan for Southeastern Europe* is an initiative aiming to turn the tide in the pace of river restoration. The project has a budget of 1.2 million euros, is coordinated by WWF Netherlands in partnership with local and international organizations such as Fauna & Flora, MedINA Greece, WWF Adria, WWF Slovakia, Wetlands International Europe, and the European Rivers Network, and is financially supported by the European Open Rivers Programme (ORP). Through this project hundreds of activities have been initiated, supported and highlighted across the region (Mouchlianitis 2025), including/aiming at:

**• scaling up the implementation of barrier removal through seminars, webinars, stakeholder engagement, knowledge dissemination, capacity building efforts for relevant practitioners, and targeted efforts to influence policy and legislation so that barrier removal is better embedded in national frameworks**

**• conducting preparatory fieldwork that will lead to barrier demolitions, such as *de novo* inventory efforts and assessment/prioritization of existing barriers, and the pre-removal works, including baseline surveys needed (e.g., ichthyological, hydrological, archaeological, etc.)**

**• supporting and enabling actual barrier removal works**

Significant progress has been made in recent years (Figure 7) with 36 proposals submitted to ORP from 14 countries by the end of 2025, and a total of 52 projects in various stages of readiness from countries in the region. In addition, the network of practitioners in the region is growing, with more than 2,200 people, while thousands of people and key stakeholders have been reached through online and in-person events and outreach. Particularly successful was the celebration of the first ever Dam Removal Day in October 2025, with 45 events organized in thirty countries, ranging from hands-on workshops and field sampling to educational seminars and cultural festivities, creating opportunities for participants to engage, learn, and connect (Baratech 2025). However, continuous support is needed to launch additional projects, to promote awareness about the benefits of free-flowing rivers, to create networks for practitioners to exchange methods and lessons learned, and drive the policy and regulatory changes necessary to systematically enable barrier removal at scale.

## RESTORING A NORWEGIAN RIVER WITH DYNAMITE

An old, obsolete 6-m-high dam in the Vinstra River in Innlandet, Norway, was demolished in December 2025 – with explosives (Figure 8)! Restoring river free-flowing conditions with a blast. The dam, built for industrial purposes over a century ago, was a major barrier for fish migration preventing trout and grayling from reaching upstream spawning areas. Only ~2 km of habitat downstream of the dam were accessible for spawning, while large upstream sections remained cut off. As a result, local fish populations, especially trout, were in a critical state, with reduced population size and low genetic diversity.

By removing the dam, ~30 km of largely undisturbed upstream river reaches with highly suitable conditions for fish spawning and juvenile growth were reconnected. A significantly increase in fish populations is expected, that will lead to multiplying current stock levels. The project was led by the Gudbrandsdal Sportsfishing Association, with support from research institutions and engineering consultants. It was based on field surveys of fish populations and habitat conditions conducted in recent years.
In addition to ecological benefits, the project will also reduce flood risk in the area by lowering water levels near an old mill structure that is currently vulnerable during high flows. The dam removal was planned as a controlled, step-by-step process using heavy machinery, with careful handling of sediments and construction waste to minimize environmental impact.

**Figure 8.** (left) Detonation of explosives during the removal of a dam on the Vinstra River, Norway, and (right) restored site after the dam removal © Kjetil Rolseth

## LOOKING AHEAD: A JOINT DAM REMOVAL STRATEGY

Over the last year, DRE partners have worked together to develop a shared, forward-looking strategy that sets out how the coalition will deliver tangible and lasting impact for free-flowing rivers across Europe. Facilitated by The Nature Conservancy, this process brought together expertise, experience, and ambition from all coalition members. The result is a collective roadmap for action-showcasing what we will do, together, to enable barrier removal at scale.

At its core, the strategy defines a clear ambition: to accelerate barrier removal across Europe while inspiring and supporting the growth of a much broader movement that drives impact well beyond DRE's direct activities. DRE's role is to act as a catalyst for change, unlocking policy, funding, capacity, and knowledge so that barrier removal becomes a mainstream, preferred solution for river restoration, biodiversity recovery, and climate adaptation across Europe.
To achieve this, the strategy is structured around five distinct but interdependent bodies of work:

**• Policy: Supporting the effective and well-targeted implementation of the EU Nature Restoration Regulation, enabling Member States to reconnect at least 25,000 km of rivers by 2030 through barrier removal.**

**• Funding: Unlocking greater public and private investment for barrier removal, including influencing the EU's Multiannual Financial Framework to better support river reconnection.**

**• Awareness Raising: Building and communicating strong evidence base for the benefits of barrier removal, tailored to a broad audience base, from the public to decision makers and practitioners, to position it as a go-to solution for nature restoration and climate resilience.**

**• Capacity Building: Expanding and strengthening a Europe-wide network of key actors, like engineering firms, local champions, and public authorities, and equipping them with the skills, knowledge, and tools to effectively deliver barrier removal projects on the ground.**

**• Monitoring & Learning: Tracking removals, capturing lessons on impact and implementation, and feeding this learning back into awareness-raising and capacity-building efforts.**

Together, these bodies of work provide a practical and action-oriented framework to guide DRE's collective efforts, turning shared ambition into sustained progress toward healthier, free-flowing rivers across Europe.



## ACKNOWLEDGEMENTS

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**Boverhoff J. and Duque I. prepared the policy analysis. Ricker M. prepared the text relevant to the DRE strategy. Bendall B., Boverhoff J., Brink K., Mileusnic D., Ricker M., Royte J., and Vilhunen S. reviewed the original draft. This report was produced with financial support from WWF Netherlands, The Nature Conservancy, Wetlands International European Association and the European Union.**

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*Removal of Rietmüli Weir on the Altbach River, Switzerland © Fluss frei (Free the Rivers) project*

*Removal of a bridge and culvert on the Ålgån River, Sweden © Jönköpings Fiskeribiologi AB*

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**Resources and tools**

For more information about dam removal showcases, events, tools and resources visit the website www.damremoval.eu



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