



Towards a legal definition of ecological restoration: Reviewing international, European and Member States' case law

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Funding information

This research was funded by European Union under Partnership Instrument, grant number PI/2017/388-178–Lot 1 Water Management and Ecological Security. The contents are the sole responsibility of the project partners and do not necessarily reflect the views of the European Union.

Abstract

Ecological restoration is of crucial importance to mitigate the impact of human activity on the environment and preserve biodiversity and ecosystem services. Therefore, the concept of restoration is at the core of international and European Union (EU) environmental policy and governance. This article seeks to shed light on this concept in international and European case law. To this end, it reviews the definition, objectives and scope of restoration according to international scientific standards. It further distinguishes restoration from other related terms such as compensation, mitigation, conservation and rehabilitation. The article then analyses judgements rendered by the International Court of Justice, the Court of Justice of the EU and EU Member States' courts pertaining to restoration. It concludes that there are wide discrepancies in the use of the term restoration by the judiciary, in particular with regard to objectives, baselines and reference conditions. In light of these conclusions, the authors support the adoption of a legal definition of restoration.

1 | INTRODUCTION

Nature and the ecosystem services that it provides to humans are deteriorating at an unprecedented rate due to human-induced changes in ecosystems' composition and functioning. In the last 50 years, the human population has doubled, the global economy has grown fourfold and global trade has grown tenfold, which has accelerated the global demand for energy, materials, food and land,

and fostered massive biodiversity loss.¹ This ecological emergency is a direct result of human activities, and it puts at risk the achievement of all biodiversity targets for 2030, human wellbeing and all life on Earth.

¹S Díaz et al (eds), *Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Secretariat 2019) 12.

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The global community has repeatedly acknowledged that restoration is a powerful tool to address the global ecological crisis. In 2010, the parties to the Convention on Biological Diversity (CBD) adopted the Aichi Biodiversity Targets, in which they committed to restore a minimum of 15% of degraded ecosystems by 2020 under target 15.² In 2011, 61 countries signed up for the Bonn Challenge setting up a global goal to restore 350 million hectares by 2030.³ In 2015, the United Nations (UN) included restoration in Goal 15 of the Sustainable Development Goals, with a target to restore degraded land and soil by 2030,⁴ and in the same year the parties to the UN Convention to Combat Desertification (UNCCD) reached an agreement to set land degradation neutrality targets at the national level, by restoring degraded lands.⁵ In 2019, the UN General Assembly declared 2021–2030 as the UN Decade on Ecosystem Restoration,⁶ and in 2020, the Group of 20 (G20) launched its Global Initiative on Reducing Land Degradation and Enhancing Conservation of Terrestrial Habitats, which includes a key objective of ‘restoring degraded land’.⁷ The CBD Post-2020 Biodiversity Framework, still under negotiation at the time of writing, includes a broad goal of ensuring the long-term sustainability of ecosystem services, by restoring currently declining ecosystems and a target to ‘ensure that at least 20% of degraded freshwater, marine and terrestrial ecosystems are under restoration, ensuring connectivity among them and focusing on priority ecosystems’.⁸

At the regional level, the European Union (EU) has also recognized the pivotal role of ecological restoration to address in parallel the climate crisis and massive biodiversity loss. The European Green Deal aims, among other things, to preserve and restore ecosystems and biodiversity.⁹ The Biodiversity Strategy for 2030 adopted by the European Commission in 2020 sets a commitment to legally protect a minimum of 30% of the land and 30% of the sea in the union by 2030. These objectives are to be achieved, among other strategies, through the restoration of areas which, once restoration produces its full effect, meet the criteria for protected areas.¹⁰ On 22 June 2022, the European Commission published its proposal for a regulation on

nature restoration, which sets multiple binding restoration targets and obligations for Member States, which together shall cover at least 20% of the Union's land and sea areas by 2030, and all ecosystems in need of restoration by 2050.¹¹

Despite these widespread commitments to restoration, the rate of habitat and biodiversity loss continues to be alarming with serious social, environmental, economic and geopolitical consequences.¹² Aichi Target 15 was not met by 2020, and recent large-scale assessments demonstrate the continued and ongoing degradation of all types of ecosystems.¹³

The lack of a clear and shared understanding of the main components and dimensions of restoration in law, policy and practice may be jeopardizing the achievement of global restoration targets. The term ‘(ecological) restoration’ is less familiar to lawyers than terms like ‘rehabilitation’ or ‘remediation’, which have more established legal meanings. This may relate to the way legal terms are typically honed: through adversarial litigation rather than scientific investigation or practitioner sharing of knowledge.¹⁴ A lack of case law on restoration, or different interpretations across jurisdictions, can make it hard to arrive at a consistent legal definition of what constitutes an obligation to restore. Lack of an explicit or agreed definition of restoration may ease the way for adjudicators and officials to choose the most convenient option to fulfil an obligation to restore in the face of budget constraints or political controversies.¹⁵ It also creates legal uncertainty for both national authorities and private operators, which can dampen investments in restoration.

A lack of shared understanding of restoration also affects measurement and reporting in relation to restoration. For example, Aichi Target 15 was drafted as a quantitative target with a single percentage value. However, as recognized by the CBD executive secretary in a 2019 report on a successor to the target, the experience with implementation showed that a single percentage value is not adequate for a complex and multidimensional process such as restoration, which has at least three different dimensions: (i) the extent of restored area; (ii) the degree of recovery from a baseline; and (iii) time.¹⁶ Similarly, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment report on land degradation and restoration found that different definitions of degradation

²CBD ‘The Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets’ UN Doc UNEP/CBD/COP/10/27 (20 January 2011).

³See <<https://www.bonnchallenge.org>>. The Bonn Challenge is on track. By 2017, it had already surpassed the 150 million hectare goal and, according to the latest data available at the time of writing this article from 2020, pledgers were restoring 210 million hectares of degraded and deforested lands.

⁴UNGA ‘Transforming Our World: The 2030 Agenda for Sustainable Development’ UN Doc A/RES/70/1 (21 October 2015) Goal 15, Target 15.3.

⁵UNCCD ‘Integration of the Sustainable Development Goals and targets into the implementation of the United Nations Convention to Combat Desertification and the report of the Intergovernmental Working Group on Land Degradation Neutrality’ UN Doc ICCD/COP(12)/4 (7 July 2015).

⁶UNGA ‘United Nations Decade on Ecosystem Restoration (2021–2030)’ UN Doc A/RES/73/284 (6 March 2009).

⁷G20 ‘Global Initiative on Reducing Land Degradation and Enhancing Conservation of Terrestrial Habitats’ (Version 4.1) (16 September 2020) <<https://www.env.go.jp/press/files/jp/115070.pdf>>.

⁸CBD ‘First Draft of the Post-2020 Global Biodiversity Framework’ UN Doc CBD/WG2020/3/3 (12 July 2021) para 12.

⁹Commission (EU) ‘The European Green Deal’ (Communication) COM(2019) 640 final, 11 December 2019, para 2.1.

¹⁰Commission (EU) ‘Criteria and Guidance for Protected Areas Designations’ (Staff Working Document) SWD(2022) 23 final, 28 January 2022.

¹¹Commission (EU) ‘Proposal for a Regulation of the European Parliament and of the Council on Nature Restoration’ COM(2022) 304 final, 22 June 2022, art 1.

¹²IPBES, ‘Summary for Policymakers of the Assessment Report on Land Degradation and Restoration’ (IPBES Secretariat 2018) 10, 15.

¹³Secretariat of the CBD, *Global Biodiversity Outlook 5* (Secretariat of the CBD 2020) 100; Intergovernmental Panel on Climate Change (IPCC), ‘Summary for Policymakers’ in PR Shukla et al (eds), *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems* (IPCC 2019). IPCC, *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (IPCC 2019).

¹⁴A Telesetsky, A Cliquet and A Akhtar-Khavari, *Ecological Restoration in International Law* (Routledge 2017) 23.

¹⁵BJ Richardson, ‘The Emerging Age of Ecological Restoration Law’ (2016) 25 *Review of European, Comparative and International Environmental Law* 277, 289.

¹⁶CBD ‘Considerations on Ecosystem Restoration for the Post-2020 Global Biodiversity Framework, including on a possible successor to Aichi Biodiversity Target 15’ UN Doc CBD/POST2020/SW/2019/11/3 (30 October 2019) 9–10.

TABLE 1 Comparison of definitions of restoration and their implications according to SER, UNEP and IPBES

	Definition	Scope	Standard/objective	Reference
SER	'any activity with the goal of achieving substantial ecosystem recovery relative to an appropriate reference model, regardless of the time required to achieve recovery' ^a	process/activity	goal of substantial ecosystem recovery	reference model (healthy ecosystem)
UNEP	'the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity' ^b	process/practices	result in improved ecosystem services and recovered biodiversity	not specified
IPBES	'any intentional activity that initiates or accelerates the recovery of an ecosystem from a degraded state' ^c	intentional activity	initiates/accelerates recovery	baseline (degraded state)

^aGD Gann et al, 'International Principles and Standards for the Practice of Ecological Restoration' (2nd edn, SER 2019) 16.

^bUNEP, 'Becoming #GenerationRestoration: Ecosystem Restoration for People, Nature and Climate' (UNEP 2021) 7.

^cIPBES, 'The IPBES Assessment Report on Land Degradation and Restoration' (IPBES Secretariat 2018) Annex I—Glossary.

and baselines has made it hard to measure progress towards Aichi Target 15.¹⁷

This article aims to assess the existence of a gap between the scientific meaning of restoration (and related terms such as rehabilitation, remediation, mitigation, revegetation, compensation, offsetting and others) and the meaning and use that is given to these terms by courts. It is structured in two parts. The first explores the different meanings of restoration and distinguishes this term from other related terms, which can be used interchangeably by legal professionals. The second analyses use of these terms in case law at the International Court of Justice (ICJ), the Court of Justice of the European Union (CJEU) and national courts of seven Member States. This vertical analysis including international, regional and national jurisdictions serves to disentangle the use of the terms by legal professionals at different levels of adjudication. The ICJ and CJEU cases provide context for the national court cases. The terms are used (and misused) differently by courts debating interpretation of legal concepts and those deciding concrete cases on the ground and ordering remedies. However, some common themes and issues are apparent across jurisdictions.

The ultimate purposes of this research are (i) to better understand and override potential obstacles to the inclusion of ecological restoration in legal frameworks, (ii) to clarify and harmonize requirements on restoration activities and other forms of ecosystem enhancement and (iii) to support the implementation of global and national commitments on restoration.

2 | THE MEANING OF RESTORATION

There is no internationally adopted legal definition of the word restoration, though it appears throughout modern international environmental discourse. Reports by the Society for Ecological Restoration (SER), the United Nations Environment Programme (UNEP) and the IPBES include different definitions of restoration, with implications for

interpretation of legal obligations and implementation in practice (Table 1).

2.1 | Varying scientific definitions of restoration

SER defines ecological restoration as 'the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed'.¹⁸ The SER International Principles and Standards for the Practice of Ecological Restoration specify that ecological restoration refers to 'any activity with the goal of achieving substantial ecosystem recovery relative to an appropriate reference model, regardless of the time required to achieve recovery'.¹⁹ SER's definition of restoration is more strict than other definitions on the level of recovery that must be sought: it requires a *substantial* recovery. It integrates two key additional factors: (i) the recovery must be relative to an appropriate reference model; and (ii) the recovery may require a long time, which does not affect the restorative nature of the activity. A reference model approximates the condition the restoration site would be in if it had not been degraded. It is not the condition prior to degradation, but the condition the site would be in today taking environmental changes into account.²⁰ The SER report also defines a baseline condition, as the condition of the site immediately prior to restoration activities, but the reference for the purpose of the definition is the reference model.²¹

The UNEP report released in 2021 to launch the UN Decade on Ecosystem Restoration uses a markedly different definition of restoration. It defines restoration as 'the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity. Ecosystem restoration encompasses a wide continuum of practices, depending on local conditions'.²² According

¹⁸GD Gann et al, 'International Principles and Standards for the Practice of Ecological Restoration' (2nd edn, SER 2019) 15.

¹⁹ibid 16.

²⁰ibid 82.

²¹ibid 78.

²²UNEP, 'Becoming #GenerationRestoration: Ecosystem Restoration for People, Nature and Climate' (UNEP 2021) 7.

¹⁷IPBES (n 12) 28.

TABLE 2 Comparison of definitions of restoration, remediation, rehabilitation and recovery according to the OED, SER and IPBES (emphases added)

	OED ^a	SER ^b	IPBES ^c
Restoration	'The action of restoring a thing to a former state or position'	'The process of <i>assisting the recovery</i> of an ecosystem that has been degraded, damaged or destroyed'	'Any intentional activity that <i>initiates or accelerates the recovery</i> of an ecosystem <i>from a degraded state</i> '
Remediation	'The process of restoring a site or a natural product by rendering harmless or removing pollutants and contaminants'	'A management activity, such as the <i>removal</i> or detoxification of contaminants or excess nutrients from soil and water, that aims to <i>remove sources of degradation</i> '	
Rehabilitation	'The restoration of a thing to a previous condition or status'	'Management actions that aim to <i>reinstate</i> a level of ecosystem functioning on degraded sites, where the goal is <i>renewed and ongoing provision of ecosystem services</i> rather than the biodiversity and integrity of a designated native reference ecosystem'	'Restoration activities that may <i>fall short of fully restoring</i> the biotic community to its <i>pre-degradation state</i> '
Recovery	'The restoration of a person (or more rarely, a thing) to a healthy or normal condition, or to consciousness'	'The process by which an ecosystem <i>regains</i> its composition, structure and function relative to the levels identified for the <i>reference ecosystem</i> '	

^aOxford English Dictionary (3rd edn, March 2010), published online March 2022 <www.oed.com>.

^bGD Gann et al, 'International Principles and Standards for the Practice of Ecological Restoration' (2nd edn, SER 2019) Section 5—Glossary of Terms.

^cIPBES, The IPBES Assessment Report on Land Degradation and Restoration' (IPBES Secretariat 2018) Annex I—Glossary.

to this definition, restoration is a process encompassing a continuum of practices. Where the SER definition requires a *goal* of substantial recovery relative to a reference model, the UNEP definition requires a *result* of improvement or recovery of the ecosystem. Although the definition does not specify a reference, it refers to improvement in terms of an implied baseline of the current degraded state of the ecosystem. Moreover, the goal of restoration can be minor or partial restoration as long as some improvement results. Finally, the definition includes *halting* degradation, as well as reversing it, implying a more blurred line between conservation and restoration.

The 2018 IPBES report on land degradation and restoration uses yet another slightly different definition. It defines restoration as 'any intentional activity that initiates or accelerates the recovery of an ecosystem from a degraded state'.²³ Like the other definitions, the IPBES definition restricts the definition of restoration to the activity, rather than the outcome, but in this case specifies that the activity must be *intentional*. It does not require the intention to be substantial or full recovery, only that the activity results in improvement from a degraded state, and it includes 'rehabilitation' activities that fall short of full restoration to a pre-degradation state. While the definition itself uses the baseline of the degraded state, the IPBES report does go on to emphasize the importance of identifying a reference state, while acknowledging the difficulties in doing so.²⁴

The discrepancies between these three definitions point to larger inconsistencies in use of the term restoration in legal frameworks and practice, as will be demonstrated in the following sections.

2.2 | Overlapping legal terms: Rehabilitation, recovery, remediation, mitigation, offsetting, compensation and reparation

To make the issue more complex, a number of related terms are often used interchangeably or confused with restoration. These include rehabilitation, recovery and remediation. Complementary terms like mitigation, compensation and offsetting are also relevant, but may be used differently in different circumstances.²⁵ Interpretation of these terms has the potential to impact understanding of legal obligations as well as restoration area accounting at the national and international level. SER and IPBES both provide definitions of these terms, which we compare to the definitions in the Oxford English Dictionary (OED) (Table 2) to give a sense of how both legal experts and the public might understand the words.²⁶ Although the latter might understand

²⁵'Rewilding' is a popular term to describe large-scale ecosystem restoration focused on reconceptualizing the relationship between humans and nature. Usage of the term has been inconsistent, and it is largely absent from legislation and legal discourse, so we have not included it in the analysis. See S Carver et al, 'Guiding Principles for Rewilding' (2021) 35 Conservation Biology 1882, 1884.

²⁶Oxford English Dictionary (3rd edn, March 2010), published online March 2022 <www.oed.com>. Where a term is not legally defined, lawyers and judges will often look to an established dictionary such as the OED to build the case for a specific interpretation.

²³IPBES (n 12) 18.

²⁴ibid 28.

them as synonyms, the scientific community makes important distinctions between them.

The OED definitions for restoration, rehabilitation and recovery are very similar, indicating that in common language the terms may be understood as synonyms. The OED definition of remediation is also close to the others, though more specific to removal of pollutants, contaminants or other harm. By contrast, SER—and, to a lesser extent, IPBES—clearly distinguishes between the four terms. Under the SER definition, remediation aims to remove sources of degradation but does not aim to achieve any higher level of enhancement. IPBES and SER definitions share the idea that rehabilitation aims to achieve a lower level of recovery than the pre-existing or reference state, with the SER definition focusing on provision of ecosystem services. Finally, SER distinguishes between the term ‘restoration’, referring to a process or activity undertaken by humans, and ‘recovery’, referring to the outcome for the ecosystem.

In response to the difficulties in undertaking successful ecological restoration, SER and, in a different context, UNEP, developed a set of principles and standards to guide conservationists and decision makers. SER guidelines include six attributes that should be taken in regard if we are practising restoration: threats (absence of contamination, invasive species and over-utilization); physical conditions (chemical and physical characteristics of water and substrate); species composition (native species and biota); structural diversity (biological strata, spatial patterning and trophic levels); ecosystem functions (productivity/cycling, habitat and interactions and resilience/recruitment); and external exchanges (habitat links, gene and landscape flows). Other attributes include stakeholder engagement and the use of best available science. They also provide that clear indicators must be identified to measure progress and that restoration actions aim to achieve a full recovery.²⁷

The 2022 EU proposal for a regulation on nature restoration introduced, for the first time, a legal definition of restoration to be applied by the Member States. It is defined as

the process of actively or passively assisting the recovery of an ecosystem towards or to good condition, of a habitat type to the highest level of condition attainable and to its favourable reference area, of a habitat of species to a sufficient quality and quantity, or of species population to satisfactory levels, as a means of conserving or enhancing biodiversity and ecosystem resilience.²⁸

This definition sets different restoration objectives and references for different biological units. For ecosystems, the reference is ‘good condition’, for habitat type ‘the highest level of condition attainable’ and ‘favourable reference area’, for habitat of species ‘sufficient quality and quantity’ and for species population ‘satisfactory levels’.²⁹ These different references are separately defined. This fragmentation of

standards under the definition may create unnecessary confusion and the potential for misinterpretation. Given that ‘ecosystem’ is defined to include habitat types, habitats of species and species populations, and that habitats necessarily contain species populations, more than one restoration objective will almost always apply. The restoration of a species seems unsustainable without the restoration of its habitat. Likewise, the restoration of habitats and habitat types, without restoring the other elements of the ecosystem, may be limiting to achieve the landscape or seascape restoration needed to support adaptation and mitigation to climate change. Taken together, this will make evaluating whether a given restoration measure meets the obligations of the law highly complicated. The Commission may make efforts to avoid confusion and misinterpretation by issuing interpretation and guidance documents.

The terms mitigation, compensation and offsetting are also highly relevant for restoration, though they have more clearly distinct meanings. These terms are often used in the context of project planning or proposal as part of the mitigation hierarchy, a tool for addressing environmental impacts of economic activity. Under the mitigation hierarchy, project proponents have a responsibility to (i) avoid impacts as far as possible; (ii) minimize or mitigate any impacts that cannot be avoided; (iii) rehabilitate to correct any residual impacts that could not be mitigated or minimized; and (iv) offset or compensate for any residual impacts or to create a net positive impact.³⁰ The term ‘mitigation’ can refer to measures taken to minimize or reduce the intensity or extent of unavoidable impacts, or it can refer to the full set of activities that fall within the hierarchy.

The mitigation hierarchy takes a forward-looking approach to restoration and rehabilitation by integrating it in the project planning process, while emphasizing that it is not a justification for environmental destruction. More broadly, the mitigation hierarchy is an example of a broader concept in international conservation policy that restoration is not a substitute for conservation and mitigation is not a substitute for restoration.

Beyond the mitigation hierarchy, the term ‘compensation’ is highly significant for legal interpretation of restoration. From a legal perspective, compensation describes a payment or other action that is necessary to return an injured party to their former condition—to make them whole.³¹ In the environmental context, compensation refers to payments or other measures to provide reparation for biodiversity damages caused by a project.³² Compensation can involve, for example, monetary payments to cover the loss of ecosystem services, or conservation or restoration actions to offset biodiversity loss.

The term ‘reparation’ is closely related to the term ‘compensation’. ‘Reparation’ broadly refers to remedying the harm caused by a wrongful act. In international law, reparation can involve (i) restitution

³⁰WNS Arlidge et al, ‘A Global Mitigation Hierarchy for Nature Conservation’ (2018) 68 *BioScience* 336. See also UN Global Compact and International Union for the Conservation of Nature (IUCN), ‘A Framework for Corporate Action on Biodiversity and Ecosystem Services’ (2012).

³¹Black’s Law Dictionary (2nd edn, 1910) <<https://thelawdictionary.org/compensation/>>.

³²World Conservation Congress ‘IUCN Policy on Biodiversity Offsets’ WCC-2016-Res-059-EN (2016) <https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_059_EN.pdf>.

²⁷Gann et al (n 18).

²⁸Commission (EU) (n 11) art 3.

²⁹ibid art 3.

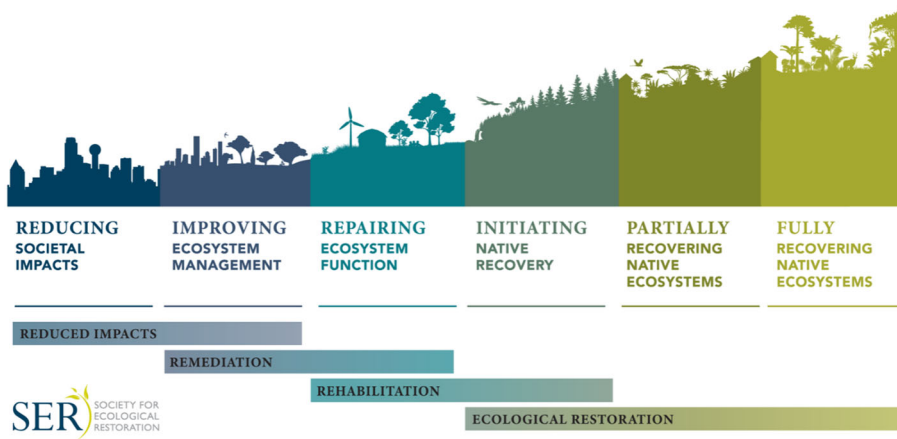


FIGURE 1 The restorative continuum, reprinted from SER's International Principles and Standards for the Practice of Ecological Restoration.

to restore the situation which existed before the wrongful act; (ii) financial compensation; and (iii) satisfaction, meaning an acknowledgement and/or apology for the wrong.³³

2.3 | The restorative continuum

In practice, restoration encompasses a wide range of activities and goals related to reversing ecosystem degradation and enhancing integrity, which SER describes as the restorative continuum (Figure 1).³⁴ Different activities along the continuum are closely connected, but vary in terms of the baseline condition and the goals and objectives pursued (reference conditions to be achieved).³⁵

On one end of the continuum are harm reduction and remediation activities intended to address drivers and sources of degradation on heavily degraded ecosystems. Next are activities intended to rehabilitate degraded ecosystems, particularly through repairing ecosystem functions and services. The other end of the continuum includes the process of ecological restoration, from initiation through partial to full recovery. The restorative continuum highlights the overlapping relationship between remediation, rehabilitation, restoration and recovery, as SER uses those terms.

From this perspective, which reflects the usage of scientists and practitioners, restoration is a distinct albeit multifaceted concept that overlaps with, but is not synonymous with, remediation and rehabilitation, which have different baselines and goals and references.³⁶ However, as implied by the overlapping OED definitions, this nuanced practitioner's understanding is not necessarily evident in the plain meaning of the words. This exacerbates the danger that legal interpretation and use of the terms may be inconsistent, or may not reflect scientific understanding leading to ineffective or inappropriate remedies.

The legal understanding of restoration may require its own form of nuance. The kind of restoration required for a case related to heavy pollution of water ecosystems may be different from a case related to damage associated with mining, or a case where claimants request that the government implement restoration measures for purposes of adaptation to climate change. Ensuring consistency and alignment with scientific understanding across these cases will be important not only for achieving the goals of restoration but for legal fairness and rule of law.

3 | USE OF 'RESTORATION' IN CASE LAW

In view of the uncertainty surrounding the concept of restoration and related terms, we reviewed international and EU case law in order to understand how courts are applying the concepts to specific cases. In our analysis of each case, we sought to identify whether the Courts' decisions define 'restoration' either explicitly or implicitly, and whether the decisions made reference to a baseline and an objective of the restoration activities ordered. While none of the cases we analysed provided specific definitions of the term 'restoration', their discussion of restoration and associated concepts shines light on trends and discrepancies in legal understanding in this area.

3.1 | Methodology

To get a picture of how the concept of restoration is used in legal cases, we analysed judgements rendered by the International Court of Justice (ICJ), the Court of Justice of the EU (CJEU) and national courts of EU Member States.

At the global level, we focused on cases from the ICJ, a global court established in 1945 to mediate disputes between States. The court has heard over 180 cases to date. We reviewed secondary literature to identify cases related to the environment, biodiversity and natural resources, and read through these cases to find those which addressed restoration, reparation or compensation related to environmental harm. We ultimately focused on a detailed analysis of

³³UNGA 'Responsibility of States for Internationally Wrongful Acts' UN Doc A/RES/56/83 (28 January 2002) arts 34–37.

³⁴Gann et al (n 18) 48.

³⁵GD Gann et al, International Principles and Standards for the Practice of Ecological Restoration. Second Edition' (2019) 27 Restoration Ecology S1.

³⁶Telesetsky et al (n 14) 18.

one case that explicitly addresses environmental restoration and compensation.

We conducted research on case law in the EU at the union level and at the national level. To identify restoration-related cases, we searched for the terms 'restoration', 'requalification', 'remediation', 'rehabilitation', 'mitigation' and 'compensation' in relevant jurisprudence databases at both levels. Given that many of these terms are commonly used in many unrelated contexts, we further combined these terms with 'environment', 'environmental', 'ecologic' and 'ecological'. We did not include a date range in our search. We further narrowed the results into two common scenarios in which the Court could order restoration actions in response to environmental degradation: (i) environmental damage occurred due to the performance of a dangerous or an illegal activity; or (ii) the integrity of the ecosystem of a Natura 2000 site was affected by an unauthorized activity, work, project, plan or programme. Both scenarios focus on restoration in response to recent illegal or unauthorized activity. We did not identify any cases interpreting or seeking to enforce broader ecosystem restoration commitments, such as those under Article 8(f) of the CBD.

We searched for cases from CJEU through two databases: EUR-LEX and CURIA.³⁷ To refine the search, we added several filters: (i) we only looked at judgements and excluded other judicial decisions; (ii) we selected 'environment' as the subject matter; and (iii) we only selected closed cases and excluded pending cases. We collected two different types of decisions from the CJEU: preliminary rulings and infringement proceedings. Preliminary rulings are cases referred to the CJEU by judges of national courts from EU Member States for further interpretation of EU legislation. Infringement proceedings are cases brought by the European Commission against a Member State for failure to comply with EU law. Using the parameters described above, we selected 12 cases for more detailed analysis.

At the national level, we searched jurisprudence databases of seven Member States: Belgium, France, Germany, Italy, Netherlands, Portugal and Spain. We chose countries where cases were available in French, Spanish, English, German and Portuguese, to allow detailed analysis based on the linguistic capacity of the researchers. Belgium, France, the Netherlands and Spain have centralized databases that comprise all court decisions in the country and all subject matters, which we searched using the parameters described above. For Germany, Italy and Portugal, as no centralized database was freely available, we focused on the highest courts with jurisdiction on constitutional, administrative, civil and criminal law. When possible, depending on the search criteria of the database, the exact term 'ecological restoration' was searched and screened. However, not all databases allowed for the use of fine searches. For example, the database of the *Consiglio di Stato* of Italy showed 'error' or no results when using '*restauro ecologico*' or '*recupero naturalistico*', which gave results of all the cases with the word 'restauro' and/or 'ecologico' separately. The databases of the *Bundesverfassungsgericht* and *Obersten Gerichtshöfe des Bundes* in Germany do not accept 'ökologische Sanierung'

together, so we had to choose between the results of the term 'ökologische' or of the terms 'Sanierung', 'Aufwertung' or 'Wiederherstellung'.³⁸ This led to a high number of results that could not be screened. The research led to the identification of 16 cases in 7 Member States rendered before October 2021.

3.2 | International Court of Justice

The ICJ has heard several cases that have greatly contributed to the development of international environmental law.³⁹ However, the question of reparations for environmental damage has only been addressed in the *Case Concerning Certain Activities Carried out by Nicaragua in the Border Area (Border Area)*, between Costa Rica and Nicaragua. This case recognized international legal obligations to repair environmental damage, including through ecosystem restoration, and engaged in a discussion of baselines and reference models in the context of its calculation of compensation.

3.2.1 | ICJ cases related to restoration

Early claims for compensation for environmental damage before the ICJ failed to result in a decision granting restoration. The question of the restoration of a contaminated area was first brought before the ICJ in 1989 by the Republic of Nauru against the Commonwealth of Australia in the case *Certain Phosphate Lands in Nauru*, but the parties reached an agreement that ended the dispute before the ICJ could reach a decision.⁴⁰

In *Gabčíkovo-Nagymaros*, Hungary asked the court to order Slovakia to restore the Danube river to the situation it was in prior to its diversion by Czechoslovakia, claiming that the diversion imposed substantial risk of long-term damage to the environment in Hungarian territory.⁴¹ It also cited 'reparation of the damage to the fauna, the flora, the soil, the sub-soil, the groundwater and the aquifer' and other damage arising from Czechoslovakia's unilateral operation of jointly owned installations.⁴² The court limited itself to ordering Slovakia to compensate Hungary for the environmental damage caused by the former Czechoslovakia on account of such river diversion.⁴³ However,

³⁸Other words searched for were '*Renaturierung*', '*Umweltgestaltung*' and '*Umweltsanierung*'.

³⁹On ICJ cases related to environmental law, see JE Viñuales, 'The Contribution of the International Court of Justice to the Development of International Environmental Law: A Contemporary Assessment' (2008) 32 *Fordham International Law Journal* 232; J Harrison, 'Significant International Environmental Law Cases: 2015–2016' (2016) 28 *Journal of Environmental Law* 533.

⁴⁰*Certain Phosphate Lands in Nauru (Nauru v Australia)* (Application Instituting Proceedings) [1989] ICJ Rep 80, para 20.

⁴¹*Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* (Memorial of the Republic of Hungary) (2 May 1994) para 8.40; *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* (Judgement) [1997] ICJ Rep 7 (*Gabčíkovo-Nagymaros*) para 13. For summaries and commentaries of the case, see: A Akhtar-Khavari and D R Rothwell, 'The ICJ and the Danube Dam Case: A Missed Opportunity for International Environmental Law?' (1998) 22 *Melbourne University Law Review* 507; S Stec and G Eckstein, 'Of Solemn Oaths and Obligations: The Environmental Impact of the ICJ's Decision in the Case of the Gabčíkovo-Nagymaros Project' (1998) 8 *Yearbook of International Environmental Law* 41.

⁴²*Gabčíkovo-Nagymaros* (n 41) para 127.

⁴³*ibid* para 155.

³⁷Court of Justice of the European Union <<https://eur-lex.europa.eu/homepage.html>; https://curia.europa.eu/jcms/jcms/j_6/en/>.

it also ordered Hungary to compensate Slovakia for the damage caused by its failure to uphold its own responsibilities for the project, and suggested that the claims for compensation might cancel each other out, while leaving the details for the parties to negotiate among themselves.⁴⁴

In the case *Aerial Herbicide Spraying* initiated in 2008, Ecuador requested compensation to cover 'reasonable measures to clean and restore the environment as appropriate' alleging transboundary harm caused by Colombia's use of toxic herbicides near the border, but the parties reached an agreement and discontinued the case in 2013, before it came before the court.⁴⁵

In *Pulp Mills*,⁴⁶ Argentina argued for reparation in the form of dismantling the mill in question to remedy the breach of procedural obligations in its construction. While acknowledging that restitution of the condition prior to the wrongful act is a form of reparation under international law, the court found the requested reparation disproportionate to the breach of obligations. It likewise rejected Argentina's request for compensation for harm to its tourism and agriculture sectors.⁴⁷

3.2.2 | *Nicaragua v Costa Rica*

The first time that the ICJ granted compensation for environmental damage was in the *Case Concerning Certain Activities Carried out by Nicaragua in the Border Area*. The court found that Nicaragua had breached the international law by dredging the San Juan River, shared between Costa Rica and Nicaragua, and by excavating one channel (*caño*) in 2010 and two more *caños* in 2013 in the disputed territory in the northern part of Laguna los Portillos, an area which the court found to be under Costa Rican sovereignty. As a consequence, the court found that Nicaragua had an obligation to compensate Costa Rica for the damages caused by these activities.⁴⁸

Given that the parties did not reach an agreement on the compensation, in 2017 Costa Rica requested the Court to settle the question.⁴⁹ In answering this matter, the Court recalled the international legal principle of full reparation, which states that 'reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed'.⁵⁰ The court recalled that 'it is consistent with the principles of international law governing the consequences of internationally wrongful acts, including the principle of full reparation, to hold that compensation is due for damage caused to the environment, in and of itself, in addition to expenses incurred by

an injured State as a consequence of such damage'.⁵¹ The court then considered *what* can be compensated for in relation to environmental damage. It found that compensation may include both (i) payment for the impairment or loss of environmental goods and services in the period prior to recovery and (ii) payment for the restoration of the damaged environment. Furthermore, according to the court, 'payment for restoration accounts for the fact that natural recovery may not always suffice to return an environment to the state in which it was before the damage occurred. In such instances, active restoration measures may be required in order to return the environment to its prior condition, in so far as that is possible'.⁵² After this statement, the court focused on the calculation of the compensation, without making any comment as to how ecological restoration actions should take place. These actions had already been taken by Costa Rica in 2013, with the intention of avoiding further environmental damage.

The next key question was *how to calculate the compensation due* for environmental damage. The court recalled that there is no specific valuation method prescribed by international law. Each party presented its own methodology to the court. Costa Rica defended the 'ecosystem services approach', which calculates the value of both 'direct use' (goods traded on the market) and 'indirect use' (e.g. ecosystem services such as flood prevention, air regulation, water capture, etc.). To ascribe a monetary value to the ecosystem goods and services, Costa Rica argued for the 'value transfer' approach, which is based on studies of the value of ecosystems considered to have similar conditions to the ecosystem concerned and damaged. Nicaragua rejected these approaches and argued that Costa Rica was entitled to recover the 'replacement costs', that is, the costs incurred for replacing an ecosystem good or service for another. This calculation is to be calculated 'by reference to the price that would have to be paid to preserve an equivalent area until the services provided by the impacted area are recovered'.⁵³

The court rejected these methodologies because, in its view, international law does not prescribe any specific method of valuation for the purposes of compensation for environmental damage, and because it is necessary to take into account the specific circumstances of each case.⁵⁴ Then, the court analysed Costa Rica's claims for compensation for three 'environmental goods' (standing timber, air quality and raw materials) and three 'environmental services' (natural hazards mitigation, soil formation and erosion control and habitat and nursery for biodiversity). The court assessed the existence of a damage and the existence of a direct causal link between the damage and Nicaragua's conduct, in relation to each one of these environmental goods and services. The court found a clear existence of damage and a causal link in relation to four environmental goods and services, but refused to compute them separately. Instead, the court defended that the environmental damage was valued as a whole 'by adopting an overall assessment of the impairment or loss of environmental goods and services prior to recovery, rather than attributing values to

⁴⁴ibid para 153.

⁴⁵*Case Concerning Aerial Spraying (Ecuador v Colombia)* (Order of 13 September 2013) [2013] ICJ Rep 278.

⁴⁶*Pulp Mills on the River Uruguay (Argentina v Uruguay)* (Judgement) [2010] ICJ Rep 14.

⁴⁷ibid paras 270–276.

⁴⁸*Case Concerning Activities Carried out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* and *Case Construction of a Road in Costa Rica along the San Juan River (Nicaragua v Costa Rica)* (Judgement) [2015] ICJ Rep 665, paras 93, 139 and 142.

⁴⁹*Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* (Compensation, Judgement) [2018] ICJ Rep 15, paras 11, 21.

⁵⁰ibid para 29.

⁵¹ibid para 41.

⁵²ibid para 43.

⁵³ibid para 43.

⁵⁴ibid para 53.

specific categories of environmental goods and services and estimating recovery periods for each of them.⁵⁵ This ‘overall valuation’ approach looks at the most significant damage to the area, in this case, the removal of trees by Nicaragua during the excavation of the *caños*, and then makes correlations to other harms to the environment that arise from this damage, such as loss of other raw materials, air quality services and biodiversity habitats and nursery. The court’s ‘overall valuation’ approach takes into consideration the specific characteristics of the affected area, in this case the area’s capacity for natural regeneration, and the length of the period of recovery.⁵⁶ The court awarded to Costa Rica the sum of US \$120,000 for the impairment or loss of the environmental goods and services of the impacted area in the period prior to recovery; US \$ 2708.39 to cover the cost of restoration measures (soil replacement); and US \$185,414.56 for the expenses Costa Rica had incurred in connection with the construction in 2015 of a dyke across the eastern *caño* to remedy and prevent further damage to the affected wetland.

This court decision helps to identify three key issues for the legal definition of restoration: (i) where environmental damage is the consequence of an illegal act, there is an obligation to repair the damage in full; (ii) to compensate for the harm prior to repair and recovery of the damaged ecosystem; and (iii) the objective of restoration actions in these cases is to re-establish the ecosystem to the state it was before the illegal act occurred.

The issue of the baseline conditions prior to the damage is not sufficiently addressed in the court’s decision. The court only stressed that Costa Rica had not sufficiently documented the baseline conditions in the area, nor had it demonstrated that the affected ecosystems would require a 50-year period to recover to the state prior to the damage.⁵⁷ According to the court, different components of the ecosystem require different periods of recovery, and it would be incorrect to assign a single recovery time to the various goods and services affected. However, after this statement, the court did not give any orientation on how to ensure or assess that the recovery of the damaged ecosystem reaches the state in which it was before the illegal act. The absence of a baseline makes it difficult to assess whether the reparation of the environmental damage was in full, considering all the ecosystem goods and services that the ecosystem provided before the damage occurred. This suggests that there is a need for a legal definition of ‘restoration’, which directs the judges to consider the baseline and the objectives pursued by the restoration actions (reference conditions).

3.3 | CJEU

The CJEU is a supranational court charged with interpreting EU law and ensuring that it is applied consistently in each Member State. Applying the methodology described in Section 3.1, we selected 12 CJEU cases for analysis (Figure 2). These cases fall broadly into

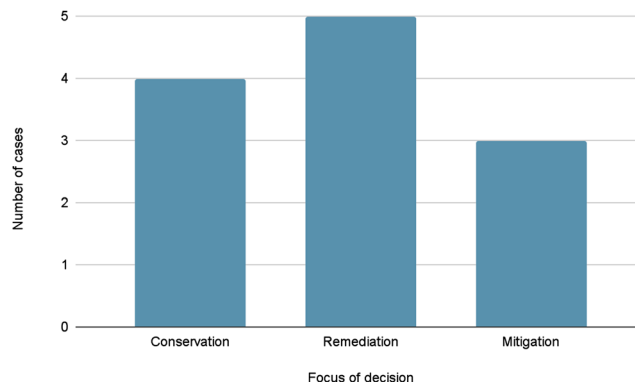


FIGURE 2 Number of collected court cases from the CJEU in relation to the focus of decision or actions mandated: ‘conservation’, ‘remediation’ or ‘mitigation’. CJEU, Court of Justice of the European Union.

three categories: (i) interpretation of obligations to protect designated areas, ecosystems or species, including Natura 2000 sites (four cases); (ii) determination of liability or obligations to take remedial action in cases of environmental damage (five cases); and (iii) processes for approval of infrastructure projects that threaten to lead to environmental harm (three cases) (summary of main criteria of these type categories in Table 3).

None of these cases explicitly address the concept or definition of restoration. In almost all of the decisions retrieved from the word search ‘restoration’, the only references to this word were in direct citations from the text of one of the directives, typically the Habitats Directive.⁵⁸ In these cases, the court uses the terms rehabilitation, recovery, remediation, compensation, reparation and even conservation interchangeably, without regard to the different meanings ascribed to these terms by the scientific and practitioner communities as explained in Section 2.3. This might be the result of the lack of a clear definition of restoration in the EU Directives. For example, the Habitats Directive defines ‘conservation’ as ‘a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status’.⁵⁹ The directive does not distinguish between conservation and restoration. This stands in contrast to the distinction used by scientists and practitioners between conservation, understood as ‘maintaining’ a good status quo, and ‘restoration’, understood as the adoption of measures specifically designed for achieving a (substantial) improvement in the status of a degraded ecosystem.

The 2022 EU proposal for a regulation on nature restoration may address this issue. The proposed regulation defines restoration according to specific objectives and references depending on the ecosystem component (see Section 2.2). In each case, the restoration

⁵⁵ibid para 78.

⁵⁶ibid para 79–82.

⁵⁷ibid para 76.

⁵⁸The sole exception is Case C-418/04, *Commission v Ireland*, ECLI:EU:2007:780 para 80, in which the Commission argued that, ‘with appropriate restoration measures, the sandwich tern might resettle this important long-standing breeding ground’. The court accepted this argument but did not further discuss the question of what might constitute appropriate restoration.

⁵⁹Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7 (Habitats Directive) art 1(a) (emphasis added).

TABLE 3 Summary of main criteria assessed in collected court cases

	Protected species/ecosystems	Environmental damage	Infrastructure projects
Trigger	Listing of site or existence of protected species	Environmental damage	Project authorization
Reference	favourable conservation status	Condition prior to damage and services that would have existed if damage had not occurred	Reference conditions based on impact to Natura 2000 site
Objective	Achieve/maintain	Restore or provide equivalent alternative	Protection of overall coherence of Natura 2000
Duty-bearer	Member State	Polluter/landowner	Member State

objective is related to a reference scenario: 'good condition' (for ecosystems), 'highest level of condition attainable' (for habitat types), 'sufficient quality and quantity' (for habitat of a species), or 'satisfactory levels' (for species populations). This definition may lead to more explicit discussion of restoration in future cases.

3.3.1 | Restoration as conservation: interpreting obligations to protect ecosystems and species

Cases involving Natura 2000 sites and other protected areas and species have largely centred on the interpretation of the scope and content of the Member States' obligations derived from the Habitats Directive or the Birds Directive. In these cases, the CJEU has not interpreted the general concept of conservation or restoration, but focused on the specific obligations involved in 'halting degradation' or 'maintaining the status of the habitat'. For example, in *Commission v United Kingdom*, the court held that Article 6(2) of the Habitats Directive, which requires the Member States to avoid the deterioration of natural habitats and species, entails two different obligations: (i) to protect designated sites from any operation with potential to cause disturbance; and (ii) to adopt measures to prevent natural developments that may cause the conservation status of species and habitats in special areas of conservation (SACs) to deteriorate.⁶⁰ It is possible that the second obligation could include restoration measures designed to enhance the resilience of an ecosystem against natural disaster. However, the court did not explicitly engage with this point.

This category of cases does demonstrate some elements that may be relevant to developing and implementing the obligation to restore. First, the listing of a site in the Natura 2000 network triggers an obligation to adopt measures to maintain or restore the site at a favourable conservation status. The existence of endangered species may also trigger the obligation, even if the site was not listed. In *Commission v Ireland* (2007), the court found that areas that were not included in a Special Protection Area should have been protected because they contained important habitat for the sandwich tern, a species listed in Annex I of the Birds Directive, as well as other bird species. The court found that Ireland therefore had an obligation to protect and restore the site, rejecting the argument that the degraded habitat no longer

warranted protection based on evidence that, with appropriate restoration measures, the sandwich tern may resettlement the area.⁶¹

Second, the objective of conservation and restoration measures in these sites is to achieve or maintain a favourable conservation status of natural habitats. The Habitats Directive defines 'favourable conservation status' as one where (i) the natural range of a habitat is stable or increasing; (ii) the structure and functions necessary for long-term maintenance of the habitat exist and are likely to continue to exist indefinitely; and (iii) the typical species of the area have a viable population likely to be maintained on a long-term basis.⁶² Although none of the analysed cases addressed this definition in the context of restoration, the definition of 'favourable conservation status' nonetheless describes a theoretical reference model that is relevant for elaborating restoration obligations. This definition is in line with the proposed EU regulation on nature restoration regarding the level of recovery of ecosystems that EU Member States should aim to achieve through their restoration plans.⁶³

Third, the duty-bearer of planning and/or implementing measures to ensure that a favourable conservation status is achieved or maintained is the Member State on whose territory the site is located, through its appropriate or designated authorities.⁶⁴ This duty would be the same for cases involving restoration.

3.3.2 | Restoration as remediation: Interpreting obligations to impose environmental liability and manage waste

The CJEU cases interpreting the directive on environmental liability⁶⁵ and the Waste Framework Directive⁶⁶ do not explicitly define restoration, but they do interpret obligations to remedy environmental damage. The directive defines 'remedial measures' as: 'any action, or

⁶¹*Commission v Ireland* (n 60) paras 82–89.

⁶²Habitats Directive (n 59) art 1(e).

⁶³Commission (EU) (n 11) art 3.

⁶⁴See *Commission v United Kingdom* (n 60) para 37. The CJEU held that 'inasmuch as domestic law contains no express provision obliging the competent authorities to avoid the deterioration of natural habitats and the habitats of species, it involves an element of legal uncertainty as to the obligations with which those authorities must comply'.

⁶⁵Directive 2004/35/EC of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage [2004] OJ L143/56 (Environmental Liability Directive)

⁶⁶Directive 2008/98/EC of 19 November 2008 on waste and repealing certain Directives [2018] OJ L318/3.

⁶⁰Case C-6/04, *Commission v United Kingdom*, ECLI:EU:C:2005:626; Case C-235/04, *Commission v Spain*, ECLI:EU:C:2007:386. In a similar direction, see Case C-418/04, *Commission v Ireland*, ECLI:EU:C:2007:780.

combination of actions, including mitigating or interim measures to restore, rehabilitate or replace damaged natural resources and/or impaired services, or to provide an equivalent alternative to those resources or services'.⁶⁷ Although the first part of this definition overlaps with the definitions of restoration described in Section 2.3, the option of providing an equivalent alternative to the resources or services connects more closely with the concepts of compensation and offsetting described in Section 2.2.

In these cases, the obligation to remediate arises where environmental damage has been established and must be repaired. The objective is to restore the environment to 'the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available'.⁶⁸ The duty-bearer of restoration actions is the polluter and/or, in a subsidiary and limited manner, the owner of the land where the polluting activity takes place.⁶⁹

Most cases in this category relate to remediation of pollution or contamination. In several cases, the CJEU applied a broad interpretation to 'waste' to apply the remediation obligations under the Waste Directive to a range of conducts and substances. For example, in *Van de Walle v Texaco Belgium*, the court determined that contaminated soil caused by a hydrocarbon spill was considered waste within the meaning of the Waste Directive, and therefore the holder would be liable for remediation following the polluter pays principle.⁷⁰ Similarly, in *Commune de Mesquer*, the court found that coastal contamination from an offshore oil spill qualifies as waste under the Waste Directive, and the producer, total, could be held liable and compelled to pay for cleanup.⁷¹

The 2020 case *Naturschutzbund Deutschland v Kreis Nordfriesland* addresses the question of when environmental liability may be imposed in case of damage to species and ecosystems in a protected area. The CJEU found that activities authorized by the relevant authorities under the Habitats Directive or Birds Directive as part of the 'normal management of sites' are excluded from the environmental liability regime under Directive 2004/35.⁷² This interpretation restricts the application of the directive in cases of ecosystem damage to those involving illegal or unauthorized activities, which limits its usefulness as a tool for ecosystem restoration.

3.3.3 | Restoration as compensation: Interpreting obligations in planning and approval of infrastructure projects

The third category of CJEU cases involves authorization of infrastructure projects or other projects with potential environmental impacts.

These cases arise where a proposed or authorized project causes or threatens environmental harm. The court is typically asked to decide whether approving the project constitutes a violation of the Member State's obligations under the Habitats Directive, in particular with respect to mitigating and compensatory measures. While none of the cases directly address restoration, compensatory measures often refer to restorative activities.

The Habitats Directive provides that, in cases where a Member State approves a project that will adversely affect the integrity of a Natura 2000 site—which it may do for reasons of overriding public interest—the Member State 'shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected'.⁷³ Compensatory measures might include restoration of degraded land, for instance through reforestation or restoration of water resources, to offset negative effects of a project that impacts a similar habitat.⁷⁴

The court has found that such compensation measures should not be considered in the weighing of whether a plan or project may be approved, but only when there is an overriding public interest that justifies the approval of a project.⁷⁵ For example, in *Commission v Portugal*, the court found that approving a new motorway found to have a negative impact on a Natura 2000 site without considering an alternative route violated the Habitats Directive, regardless of the adoption of compensatory measures.⁷⁶ This is in line with the mitigation hierarchy, discussed in Section 2.2.

Moreover, the court clearly distinguished between mitigation measures, which can be taken into account in the environmental impact assessment, and compensation measures which cannot. In *Briels v Minister*, the court found that 'protective measures provided for in a project which are aimed at compensating for the negative effects of the project on a Natura 2000 site cannot be taken into account in the assessment of the implications of the project'.⁷⁷ In that case, which addressed the approval of the expansion of a motorway with impacts on a Natura 2000 site, the court rejected the argument that creation of new habitat of a larger area and higher quality than the affected habitat could be considered 'mitigating measures'. The court warned that allowing such 'mitigating measures' would allow national authorities to get around the requirements of the directive and authorize projects with adverse impacts on the site in the absence of an overriding public interest.⁷⁸

These cases indicate that restoration obligations can be triggered by the authorization of a project with negative environmental impacts on a Natura 2000 site. In such cases, restoration would be a form of compensatory measure used to offset the impacts on the biodiversity

⁷³Habitats Directive (n 59) art 6(4).

⁷⁴Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (2007) <https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf> (Guidance Document); G Van Hoorick, 'Compensatory Measures in European Nature Conservation Law' (2014) 10 Utrecht Law Review 161.

⁷⁵Case C-521/12, *Briels and Other v Minister van Infrastructuur en Milieu*, ECLI:EU:C:2014:330, paras 29 and 36.

⁷⁶Case C-239/04, *Commission v Portugal*, ECLI:EU:C:2006:665, paras 34–40.

⁷⁷*Briels and Other v Minister van Infrastructuur en Milieu* (n 75) para 29, see also *ibid.* paras 18–32.

⁷⁸*ibid.* paras 32–34.

⁶⁷Environmental Liability Directive (n 65) art 2(11) (emphasis added).

⁶⁸*ibid.* art 6(2)(c), Annex 2(1), art 2(14).

⁶⁹Case C-1/03 *Van de Walle v Texaco Belgium SA*, ECLI:EU:C:2004:490; Case C-188/07, *Commune de Mesquer*, ECLI:EU:C:2008:359; C-129/16, *Türkevei Tejtermelő Kft.*, ECLI:EU:C:2017:547.

⁷⁰*Van de Walle v Texaco Belgium SA* (n 69) para 59.

⁷¹Case C-188/07, *Commune de Mesquer*, ECLI:EU:C:2008:359 paras 63 and 89.

⁷²Case C-297/19, *Naturschutzbund Deutschland - Landesverband Schleswig-Holstein e.V. v Kreis Nordfriesland*, ECLI:EU:C:2020:533, paras 66 and 78.

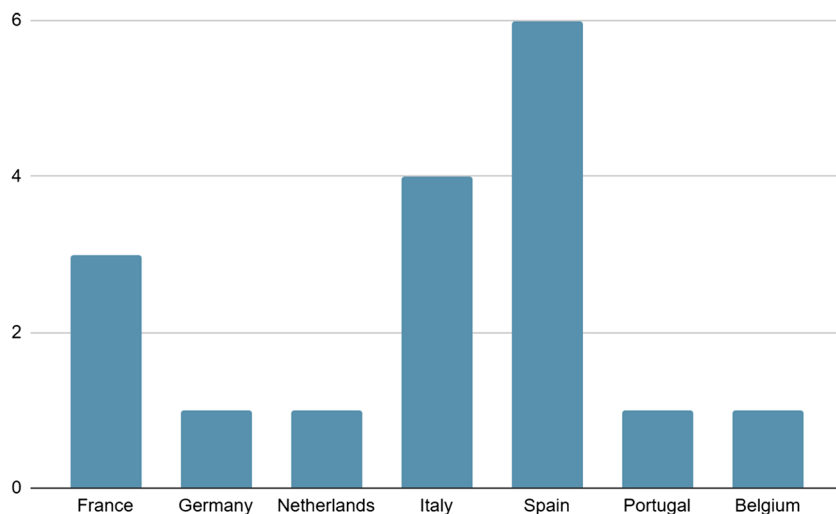


FIGURE 3 Cases collected from national courts of seven European Union (EU) Member States that use the word 'restoration' or related terms.

of the site, in order to protect the overall coherence of Natura 2000. Although neither the Habitats Directive itself nor the analysed Court decisions specify a reference or baseline, the Guidance Document on Article 6(4) of the Habitats Directive states that compensatory measures should be established in accordance with 'reference conditions that are defined after the characterization of the biological integrity of the site likely to be lost or deteriorated'.⁷⁹ The Habitats Directive and the analysed cases place the duty of ensuring compensatory measures on the Member State, though the Guidance Document suggests that the project promoter may be required to bear some or all of the cost, in line with the polluter pays principle.⁸⁰

3.4 | National courts

Through the methodology described in Section 3.1, we identified 16 cases addressing ecological restoration across the seven Member States searched (see Figure 3).⁸¹ The limited number of results is partially connected to limitations in availability of, and access to, case law described above, but it can also indicate that restoration actions have only been considered sporadically in national courts of EU Member States, reflecting the situation at EU level.

The search at national courts showed an even higher complexity and inconsistency in the use of 'restoration' and related terms. The inconsistencies relate to the language itself. For instance, in French, the terms 'compensation' and 'réparation' can be used interchangeably and refer to monetary indemnity to the victim as a consequence of a damage. In addition, 'compensation environnementale' can be translated as offsetting, aiming to cover the negative impacts of an activity on an area by protecting, rehabilitating or restoring another area. The term 'restoration' is rarely used as the expression 'réparation en nature', to be translated as 'reparation in nature' is favoured.

However, there is no clear definition provided in the legal framework. In this situation, the courts can refer to the 'remise en état', meaning the 'reinstatement' indicating a baseline corresponding to the state of the ecosystem prior to the damage. In German, 'rehabilitation', 'restoration' and 'remediation' are all translated as 'Sanierung', and in one case, the word referring to the improvement of the quality of an ecosystem was 'Aufwertung', which can be translated as 'upgrading', which is not used in other languages.

Most of the cases analysed at the national level use restoration in the sense of remediation of environmental damage derived from water pollution,⁸² soil contamination⁸³ and utilization of natural resources above the permitted amounts or outside permitted areas.⁸⁴ In some cases, restoration is used as a sanction for illegal conduct in natural areas (i.e. to build without all required environmental permits).⁸⁵ In one case, restoration was analysed as part of biodiversity offsets in the context of urban planning.⁸⁶ In another case, the court ordered the payment of the costs of reforestation after a forest fire caused by gross negligence affected several hectares.⁸⁷

Some cases are particularly interesting for defining restoration from a legal perspective. In Case 4 BN 6/21 in Germany, the court analysed whether the restoration (in sense of compensation/offset)

⁸²France, Cour de cassation, Chambre criminelle, Arrêt N. 10-82.938 (25 September 2012); France, Cour de cassation, Chambre criminelle, Arrêt No. 13-87.650 (22 March 2016); Spain, Juzgado de lo Penal de Santander, Sentencia, Procedimiento penal abreviado SJP 95/2013 (29 November 2013); Spain, Tribunal Supremo, Sala de lo Penal, Sentencia 941/2016, Recurso de Casación STS5464/2016 (15 December 2016).

⁸³Netherlands, Raad van State Uitspraak 202004651/1/R1 (14 July 2021); Belgium, Court of Appeal of Mons, ARR.20171205.1 (5 December 2017).

⁸⁴Italy, Council of the State, Judgement No. 02092/2018 REG.PROV.COLL./ Appeal No. 08642/2016 REG.RIC. (30 November 2017); Spain, Audiencia Provincial de Madrid, Sentencia 3/2012, Procedimiento penal abreviado SAP M 341/2012 (13 January 2012); Spain, Audiencia Provincial de León, Sentencia 204/2015, Procedimiento Civil SAP LE 319/2015; STS 2616/2016 (4 April 2015); Spain, Audiencia Provincial de León, Sentencia 209/2021 de la Audiencia Provincial de León SAP LE 795/2021 (18 May 2021).

⁸⁵Italy, Council of State, Judgement No. 03840/2021 REG.PROV.COLL./ Appeals No. 08754/2018 REG.RIC. (6 May 2021); Italy, Council of State, Judgement No. 00628/2020 REG.PROV.COLL./ Appeals No. 00437/2014 REG.RIC. and No. 01025/2014 REG.RIC (30 September 2020).

⁸⁶Germany, Bundesverwaltungsgericht, 4th Senate, Case 4 BN 6/21 (16 September 2021).

⁸⁷Spain, Audiencia Provincial de Barcelona, Sentencia 334/2008, Apelación penal SAP B 10340/2008 (5 November 2011).

⁷⁹Guidance Document (n 74) 15.

⁸⁰ibid.

⁸¹The case law database used for Germany covers only cases from September 2012. The case law search for all countries was finalized in October 2021.

measures need to *result* in an improvement of the status of the ecosystem or whether the *intention* to improve an ecosystem suffices. The court found that the established measures must be suitable for actually upgrading the areas and *it must be possible to guarantee* the higher-quality condition created by the compensatory measure in the long term.⁸⁸

In Spain, the Criminal Court of Santander stated that restoration has a reparative effect, which should place special emphasis on the recovery. If possible, restoration actions should aim for the total recovery of the affected stretch, i.e. to restore it or re-establish it to the state prior to the criminal intervention and in the same circumstances, species, number of specimens and characteristics it had before. In other words, the objective seems to be full recovery, where possible; and the baseline is the situation prior to the facts that resulted in a damage. Importantly, restoration measures should not simply replace one specimen for another, in an attempt to repopulate the affected ecosystem, but the stretch needs to be repopulated with the same populations having in mind their repopulation ability. In this case, pollutants were pumped into a river in Spain. The court included an extensive description of the difficulties of repopulating the affected stretch with trout, and ordered the formulation of a repopulation plan, the banning of fishing in the affected stretch, among other measures to restore the area. Finally, the court also referred to the need to monitor the results and evolution in the fish populations, by conducting regular samplings, and estimated a recovery time of 3 years; the court went so far as to mention the number of fish that needed to be regenerated.⁸⁹

In one case, the development of unpermitted sculptures in an abandoned mine area, located within an ‘area of natural and environmental value’ created a positive impact on the ecosystem and the landscape at large. In the 1990s, a community of artists settled in an abandoned mine area and used wastes from the mine to build sculptures. They also undertook revegetation of the area. The community did not acquire the required permits to settle in the area, nor to build the sculptures or to revegetate the area. The claimant, a neighbour of the area, requested the competent authorities to order the demolition of the sculptures and the ‘restoration’ of the area. The court rejected the request and interpreted the artistic works as a form of environmental requalification, stressing that the project involved works of high artistic value that supported the recovery of a degraded area, in which the various components—sculptures and creative interventions—were perfectly placed in the landscape context.⁹⁰

4 | CONCLUSION

There is an urgent need to scale up ecological restoration. This will require concerted and coordinated action on the part of national and

international policymakers, civil society and the private sector, supported and held accountable by a consistent and well-informed judicial system. The present study shows discrepancies in the understanding and use of the term ‘restoration’ and related terms by courts at the international, EU and national levels that might impede restoration efforts.

Courts and legal actors do not use the term ‘restoration’ in the same way practitioners and scientists do. Practitioners’ definitions of ‘restoration’ themselves vary in terms of scope, objectives and baseline or reference scenario. In courts, restoration is often used interchangeably with ‘rehabilitation’, ‘remediation’ and even ‘conservation’.

In both practitioner usage and legal cases, definitions of ‘restoration’ can differ in terms of the objective, standards and baselines. In some usages the baseline is the existing degraded system, which must be improved. In others, the goal of restoration is to return the ecosystem to the level of a previous healthy state. In still others, the objective is a reference scenario based on the condition of other healthy ecosystems or a model of what the ecosystem would look like had the degradation never occurred. Another objective might be to maintain net biodiversity or ecosystem service values in the context of past or planned degradation. The term ‘restoration’ might imply a need to achieve a particular result (which may or may not need to be ‘significant’), or just to involve particular activities. These differences appear both in the practitioner discussion and in cases at the national level.

The understanding of ‘restoration’ differs depending on the context of the case. In cases interpreting conservation obligations, it can be considered part of the definition of conservation. In cases on environmental liability, particularly in the pollution context, it is used in the context of remediation, sometimes interchangeably. In cases on approval of infrastructure projects, restoration is a form of compensatory measure. Language plays a role in understanding of ‘restoration’ and associated terms—the terms can have different meanings in different languages. Despite these differences, certain judges recognized that restoration is not a substitute for avoidance or minimization of harm.

Discrepancies in judicial understanding of the concept of restoration may result from a lack of adequate definition of restoration in legal frameworks at the national and international level. The term ‘restoration’ on its own is a very old legal term referring to a remedy following damage. But ‘ecological restoration’ or ‘ecosystem restoration’ is an evolving concept from the scientific world, which only recently has seen discussion and proposal of standardized definitions (see Section 2.1). This might explain the lack of a definition in legal frameworks and the limited attempts to define restoration by courts.

Developing a shared understanding of the meaning of ‘restoration’ (or the different meanings applicable in different contexts) could help improve restoration objectives in a number of ways. It could make court decisions more consistent across jurisdictions and give private and public actors more legal certainty about their obligations. It could enable better measurement and monitoring of achievement of

⁸⁸Germany, Bundesverwaltungsgericht, 4th Senate, Case 4 BN 6/21 (16 September 2021).

⁸⁹Spain, Juzgado de lo Penal de Santander, Sentencia, Procedimiento penal abreviado SJP 95/2013 (29 November 2013) 27–28.

⁹⁰Italy, Council of State, Judgement No. 00628/2020 REG.PROV.COLL/ Appeals No. 00437/2014 REG.RIC. and No. 01025/2014 REG.RIC (30 September 2020) paras 2.1–2.3.

restoration requirements at the project, national and international scale, and inform more appropriate, measurable and achievable commitments and standards. This in turn could make legally mandated restoration more effective at achieving conservation goals.

The legal definition of ecological restoration should be aligned with the most authoritative scientific principles and standards on ecological restoration in order to effectively achieve global goals. This definition must also take into account legal principles and consider the distinction between the objectives of restoration.

Our results support the need for international clarification of the legal understanding of ecological restoration.⁹¹ This is important not only in the context of legal frameworks related to nature conservation, but for any case involving activities or disturbances that could compromise ecosystem integrity, such as infrastructure development or pollution. A legal definition of restoration should lay out which attributes should be considered when restoration is needed or mandatory and which reference or baseline should be used, which may depend on the context.

The proposed EU regulation on nature restoration is a good starting point because it stipulates references and sets out the attributes that should be taken into consideration in measuring the ecosystem condition: physical, chemical, compositional, structural and functional. Revisions of other EU regulations underway could add clarity by defining related terms like remediation, rehabilitation, and compensation/offset.

Adoption of a legal definition of restoration is only the first step: such a definition would need to be implemented. This will require building the capacity of judges and policymakers to understand scientific and practitioner meanings of restoration and developing an interface between scientists and legal actors.

There are a number of pathways to creating this shared understanding of ecological restoration and related terms. One would be through the international development and adoption of a legal definition of terms related to restoration, through an international decision or resolution. This could involve setting up an international working group, either independent or under the auspices of an international body like IUCN or UNEP to elaborate and refine a definition. The definition would then need to be adopted by one or more international regimes, such as the UN General Assembly or the UN Environment Assembly. To ensure a harmonized definition across sectors, it may be important to work towards adopting the definition by a number of different regimes, including multiple treaty bodies of multilateral environmental agreements. Further elaboration of the definition of restoration might involve the development of a guidance document on the legal definition of restoration at the EU level or international level (e.g. by the CBD). Finally, a stand-alone international agreement or declaration on restoration could create a strong legal basis for achieving global restoration goals.

⁹¹See A Cliquet et al, 'Upscaling Ecological Restoration: Toward a New Legal Principle and Protocol on Ecological Restoration in International Law' (2022) 30 *Restoration Ecology* e13560.

ACKNOWLEDGEMENTS

This research was funded by the European Union under Partnership Instrument, grant number PI/2017/388-178-Lot 1 Water Management and Ecological Security.

The authors thank Alexandra Carvalho, Diana Carlos, Pedro Liberato (Portuguese Ministry of Environment and Climatic Action) and ambassador José Augusto Duarte (Portuguese Embassy in Beijing) for support to the implementation of Lot 1–Water Management and Ecological Security project.

CONFLICTS OF INTEREST

No conflict of interest has been declared by the authors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Zenodo at <https://doi.org/10.5281/zenodo.7342787>.

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How to cite this article: Mendes A, Martínez Hernández L, Badoz L, Slobodian L, Rabaça JE. Towards a legal definition of ecological restoration: Reviewing international, European and Member States' case law. *RECIEL*. 2022;1-15. doi:[10.1111/reel.12476](https://doi.org/10.1111/reel.12476)