



Biodiversity Offset Mechanisms and Compensation for Loss from Exceptional to Popular: Rediscovering Environmental Law

Jerneja Penca

To cite this article: Jerneja Penca (15 Jul 2024): Biodiversity Offset Mechanisms and Compensation for Loss from Exceptional to Popular: Rediscovering Environmental Law, Journal of International Wildlife Law & Policy, DOI: [10.1080/13880292.2024.2375862](https://doi.org/10.1080/13880292.2024.2375862)

To link to this article: <https://doi.org/10.1080/13880292.2024.2375862>



© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.



Published online: 15 Jul 2024.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

Biodiversity Offset Mechanisms and Compensation for Loss from Exceptional to Popular: Rediscovering Environmental Law

Jerneja Penca

Science and Research Centre Koper, Mediterranean Institute for Environmental Studies, Koper, Slovenia

ABSTRACT

The use of compensatory mechanisms for biodiversity conservation, also known as biodiversity offsets, has increased significantly in recent decades. The Kunming Montreal Global Biodiversity Framework mentions them as an innovative scheme in support of substantially and progressively increasing the level of financial resources for biodiversity conservation. This article traces the origin of compensatory mechanisms in international environmental law and their development in transnational biodiversity governance. The article points to the shifts in the application of the biodiversity offsets: from the context of wetlands to other habitats and ecosystems; from its use in intergovernmental conventions to an increasing number of transnational (business) networks; and from an instrument of last resort to a source of additional funding for biodiversity conservation. In the evolution, compensatory mechanisms have been decoupled from their original purpose as an exceptional mitigation measure and a strong focus of environmental law on the preventive function. The increased rhetoric of commitment to no net loss, net gain, restoration, and the mitigation hierarchy has not been matched by an improved status of wetlands and other ecosystems. The processes within the biodiversity conventions (Ramsar and CBD) have accepted an ongoing destruction of nature and limited the role of environmental law to minimizing harmful impacts on nature and consolidating the decline, rather than shaping socio-ecological outcomes. An ambiguous position about the spread of compensatory mechanisms has been part and parcel of this; biodiversity conventions have neither endorsed nor distanced themselves from the application, promotion, and justification of compensatory mechanisms. To maintain the integrity of environmental law, the rules that prevent biodiversity loss need to be emphasised and enforced.

CONTACT Jerneja Penca  jerneja.penca@zrs-kp.si  Science and Research Centre Koper, Mediterranean Institute for Environmental Studies, Koper, Slovenia.

© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

1. Introduction

In the contemporary governance landscape, biodiversity offsets are a recognized instrument for conservation of biodiversity. Governments have been integrating requirements that developers must compensate losses of biodiversity into planning processes and environmental regulations, considering such provisions as supportive of responsible land use and contributing to the conservation of ecosystems and species.¹ The private sector has responded to these regulations, and has also developed voluntary biodiversity offset markets as a way of enabling businesses to be more accountable and responsible for their impacts on nature.² The Kunming Montreal Global Biodiversity Framework³ recognized biodiversity offsets as an innovative and additional resource for conservation efforts, which are expected to enhance the effectiveness of biodiversity governance.

As the opportunities for countries and companies to invest in projects with an intended positive impact on nature are increasing globally, there needs to be further consideration of the normative origin and principles of these mechanisms for biodiversity offsets in international environmental law. This links to examination of the origin of the idea of compensation of loss,⁴ and critical thinking about the framing of the impact either as ‘no net loss’, as ‘net gain’ or as ‘nature positive’.⁵ But legal analysis of the rules surrounding the biodiversity markets adds value in that it makes it clear how rules are used and abused, and to what ends. Historical insights into how the rules regarding biodiversity mechanisms originated and developed may not generate the required innovation and excitement that the initiatives are seeking in order to generate the interest of users and funders. However, they may provide important lessons about accountability for when biodiversity offsets do not work. Additionally and from a broader perspective, the examination of the principles of biodiversity offsets offers much-needed reflection about how law is being used (implemented, complied with, and enforced) in the ongoing biodiversity governance.

¹The Biodiversity Consultancy, Government Policies on Biodiversity Offsets, <https://www.thebiodiversityconsultancy.com/fileadmin/uploads/tbc/Documents/Resources/Government-policy-2.pdf>.

²Pollinator Group, State of Voluntary Biodiversity Credit Markets: A Global Review of Biodiversity Credit Schemes, <https://pollinationgroup.com/wp-content/uploads/2023/10/Global-Review-of-Biodiversity-Credit-Schemes-Pollination-October-2023.pdf>.

³Kunming-Montreal Global Biodiversity Framework, adopted by the Convention on Biological Diversity, decision CBD/COP/DEC/15/4, 19 December 2022, Article 19(d).

⁴M Hrabansky, *The Biodiversity Offsets as Market-Based Instruments in Global Governance: Origins, Success and Controversies*, 15 ECOSYSTEM SERVICES 143 (2015); N Droste et al, *A Global Overview of Biodiversity Offsetting Governance*, 316 *Journal of Environmental Management* 115231 (2022).

⁵JW Bull and S Brownlie, *The Transition from No Net Loss to a Net Gain of Biodiversity Is Far from Trivial*, 51 ORYX 53 (2017).

Strengthening the environmental rule of law has been identified as an important way of changing the course of action of biodiversity governance and an inherent element in reversing the decline of biodiversity.⁶ But is environmental law actually operating in a way that allows this expectation?

This article reviews the genesis of biodiversity offsets by tracing their origin to the idea of compensation for loss of wetlands, captured in the provisions of the Ramsar Convention,⁷ and presents biodiversity offsets in an evolutionary perspective through the exchange of the norms from the Ramsar Convention with outside processes and practices. The article considers the Ramsar Convention as constituent in the shifts that occurred with regards to compensatory mechanisms, and reflective of the scope of law in biodiversity governance. In this article, the Ramsar Convention becomes an object of analysis for how biodiversity governance interplays with international environmental law. The former is broader in terms of environmental challenges, actors, principles, and strategies than is the latter,⁸ but both are expected to deliver a radical change in an era of intersecting socio-ecological crisis.

In international environmental law, the 1971 Ramsar Convention is regarded as a remarkable multilateral treaty with a pragmatic approach to the management of wetlands. The Convention has been highly adaptive to external developments to accomplish its goal of ‘wise use’ of wetlands, as ambiguous as this is. Its management approach has reflected the changing knowledge over the past 50 years about wetlands and their value as wildlife habitats and indispensable providers of a rich contribution to people’s livelihoods and well-being.⁹ The growing scientific knowledge has developed in parallel with the changing public perception of wetlands as a ‘nuisance to civilization’s progress’¹⁰ to ‘kidneys of the landscapes’ and ‘nature’s supermarkets.’¹¹ Part and parcel of the interactive relationship of the Convention with the external environment is the arrangement for

⁶ES BRONDIZIO ET AL. (EDS), GLOBAL ASSESSMENT REPORT OF THE INTERGOVERNMENTAL SCIENCE-POLICY PLATFORM ON BIODIVERSITY AND ECOSYSTEM SERVICES (Bonn, IPBES Secretariat, 2019), xxi; UNEP, TRACKING ENVIRONMENTAL RULE OF LAW: CHARTING PROGRESS AND FUTURE DIRECTIONS (UNEP, Nairobi, UNEP, 2023).

⁷Convention on Wetlands of International Importance especially as Waterfowl Habitat, adopted 2 February 1971, entered into force 21 December 1975, 996 UNTS 245 (amended 1982 & 1987).

⁸V Heyvaert and T Etty, *Introducing Transnational Environmental Law*, 1 TRANSNATIONAL ENVIRONMENTAL LAW 1 (2012); V HEYVAERT, TRANSNATIONAL ENVIRONMENTAL REGULATION AND GOVERNANCE: PURPOSE, STRATEGIES, AND PRINCIPLES (Cambridge, Cambridge University Press, 2018), 1–11; Brondizio (note 6), 15–16.

⁹E Maltby and MC Acreman, *Ecosystem Services of Wetlands: Pathfinder for a New Paradigm*, 56 HYDROLOGICAL SCIENCES JOURNAL 1341–1359 (2011).

¹⁰J Ruffolo, The U.S. Supreme Court Limits Federal Regulation of Wetlands: Implications of the SWANCC Decision (Paper 305, California Agencies, 2002), 1, https://digitalcommons.law.ggu.edu/cgi/viewcontent.cgi?article=1301&context=caldocs_agencies.

¹¹WJ MITSCH AND JG GOSSELINK, WETLANDS (5th ed., Wiley, 2015), 3–4.

establishing compensatory mechanisms for loss of wetlands. A specific treaty provision requiring that contracting parties compensate for loss of wetland resources represented a considerable novelty in the context of international environmental law at that time. The operationalization of that provision through the subsequent decades and related processes within the Convention have had far-reaching, paradigmatic implications on biodiversity governance beyond wetlands, at the national, regional, and international levels. Compensatory mechanisms have become a progressively popular tool in view of ever-increasing pressure on biodiversity and conservation areas. They exemplify a rationale for conservation of nature that acknowledges the dominance of economic, technological, and commercial trajectories, and reduces the role of regulation to accepting and mitigating the resulting negative impact. The biodiversity conservation approach that rests on models such as biodiversity offsets seeks to lessen the detrimental impact of the drivers of nature's decline, rather than to assert the law's ability to shape socio-ecological outcomes.

2. Materials and Methods

The objective is to develop an understanding of the way in which international environmental law influences the practice and trajectories of biodiversity conservation, particularly in the context of the calls to reverse the alarming loss of biodiversity and the threat that this poses to nature and human well-being. The 2019 IPBES Global Assessment on Biodiversity and Ecosystem Services identified environmental law as one of five levers or main interventions that can generate transformative change by tackling the underlying indirect drivers of the deterioration of nature.¹² The way in which this lever is being used and the extent to which its potential is justified remain heavily underexplored. The study deployed analysis of legal sources, from treaty provisions of the Ramsar Convention and the Convention on Biological Diversity (CBD)¹³ to subsequent developments in the framework of the conventions' Conferences of the Parties (COPs), peer-reviewed literature, and reports produced by international scientific, business, and policy actors, to generate data that are interpreted and contextualized in this piece. The analysis reflects critically on compensatory mechanisms by outlining the advantages and shortcomings, and situating biodiversity offsets or compensatory mechanisms within the biodiversity and environmental (rather than just wetland) context, at the national and transnational level.

¹²Brondizio (note 6), xxi.

¹³Convention on Biological Diversity, adopted 5 June 1992, entered into force 31 December 1993, 1760 UNTS 69.

The article considers the paradigmatic changes and challenges within international biodiversity and environmental governance, where the mechanism of compensation for biodiversity loss has been consolidated.

3. Results

3.1. Obligation to Compensate for Loss: Evolution of the Ramsar Treaty Provision

The Ramsar Convention is a short, compact treaty that uses words rationally. Placed rather high in the text, one finds Article 4.2, which spells out the consequence of a deletion or restriction of a Ramsar site:

Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

The Article is a follow-up of the right bestowed upon contracting parties in Article 2.5, which gives them the right to delete or restrict a Ramsar site due to ‘urgent national interests.’¹⁴ Article 4.2 requires that, in such cases, the parties compensate for the ecological value lost because of the deletion or reduction of a site. While mitigation measures occur in situ, compensation measures occur ex situ or off-site. Compensation can be implemented by introducing protective measures in the form of establishing a protected area somewhere else, without this area necessarily being linked to the Ramsar site, that is, to the wetlands listed under Article 2 of the Convention. The size of the replacement area should be of ‘an adequate portion,’ which is likely to mean comparable in size to the forgone Ramsar site. According to the Convention, a potential alternative to the creation of a new protected area elsewhere is to extend the boundaries of the wetland in the direction that does not interfere with the reason for restricting that specific Ramsar site.

An interesting development occurred in a subsequent resolution of the parties. This expands the remit of Article 4.2 and determines that the obligation for compensation also applies to sites that are nominated by parties for inclusion in the Ramsar List but found to not qualify under any of the criteria established¹⁵:

¹⁴The conditions for ‘urgent national interest’ were formulated subsequently. Ramsar Convention, Resolution VIII.20: General Guidance for Interpreting “Urgent National Interests” under Article 2.5 of the Convention and Considering Compensation under Article 4.2 (2002).

¹⁵Ramsar Convention, Resolution 5.3: Procedure for Initial Designation of Sites for the List of Wetlands of International Importance (1993). The criteria for inclusion were determined in Recommendation 4.2.

When, following consultation between the Convention Bureau and the Contracting Party concerned, it is agreed that a site failed at the time of designation to qualify under any of the criteria, and that there is no possibility of extension, enhancement, or restoration of its functions or values, it shall instruct the Convention Bureau to remove the site from the List and shall apply the provisions for compensation, as provided in Article 4.2 of the Convention.

The Convention does not prescribe that the replacement sites are to be included in the List, but only that they should be nature reserves. This specific requirement for compensation conflates the two ‘tiers’ of wetlands created under the Convention—those relating to Article 2.1, which are Ramsar Wetlands of International Importance, and those that are guided by Article 4.1 as ‘conventional’ nature reserves.¹⁶

Nevertheless, Article 4.2 does introduce a significant safeguard for wetlands under threat of being lost and an effective hierarchy of intervention measures in those instances. The Convention text anticipated that the interest of conserving nature may be overruled by other interests. The idea for compensation was considered in the early drafts of the treaty and was among the nine key reasons for an international treaty on the subject.¹⁷ As such, the treaty was forward-looking in setting up a mechanism to defend the purpose of the treaty, even by accepting that the resulting site might have a lesser ecological value than the original site.

Article 4.2 is an articulation of the so-called mitigation hierarchy. It represents a refinement and application of the principle of prevention, a fundamental principle of environmental law. Prevention dictates tackling the problem as close to the source as possible, thus avoiding harm.¹⁸ The preventative approach, contrary to a curative approach, dictates anticipatory and proactive response to environmental challenges.¹⁹ The mitigation hierarchy channels that duty into nature conservation. The underlying logic is that negative impacts on a wetland (or another biome) should as a priority be avoided.²⁰ If such negative impacts cannot be avoided or

Ramsar Convention, Recommendation 4.2: Criteria for Identifying Wetlands of International Importance (1990). On the requirement to compensate in those cases, see also D Pritchard, *Change in Ecological Character of Wetland Sites—A Review of Ramsar Guidance and Mechanisms* (2014) 90 [C.78], https://www.ramsar.org/sites/default/files/documents/library/ecological_character_report_long_18112914_e.pdf.

¹⁶MJ Bowman, *The Ramsar Convention Comes of Age*, 42 NETHERLANDS INTERNATIONAL LAW REVIEW 1, 21 (1995).

¹⁷GVT Matthews, *The Ramsar Convention on Wetlands: Its History and Development* (Gland, Ramsar Convention Bureau, 1993), <https://www.ramsar.org/sites/default/files/documents/pdf/lib/Matthews-history.pdf>, 13–14, 18.

¹⁸LA DUVIC-PAOLI, *THE PREVENTION PRINCIPLE IN INTERNATIONAL ENVIRONMENTAL LAW* (Cambridge University Press, 2018), 179–232.

¹⁹*Ibid.*, 15–26.

²⁰WNS Arlidge et al., *A Global Mitigation Hierarchy for Nature Conservation*, 68 *BioSCIENCE* 336 (2018).

prevented, measures to minimize or reduce the negative impacts should be put in place on site, such as the introduction of buffer zones, timing of works, and restrictions on use. Finally, if damage nevertheless remains despite the mitigation measures, actions should be taken to compensate for these residual impacts and to offset them. While the preventative approach does not explicitly espouse the ‘compensate’ part, this omission is due to the lack of precision and attention dedicated by the preventive approach,²¹ rather than to a departure by the mitigation hierarchy from the essence of the principle. The Ramsar Convention sets out quite effectively what should happen if the preventative approach fails. From that perspective, the articles of the Ramsar Convention providing for the conservation of wetlands on the List (Article 3.1) and mandating adequate compensation in case that conservation is threatened (Article 4.2) become more closely related than is implied in the treaty text.

3.2. Consolidation of the Mitigation Hierarchy

The idea of compensatory mechanisms was pioneered in domestic approaches to managing natural resources. In the US context, for example, mitigation banking evolved through agency regulations as one way to comply with the 1972 US Federal Water Pollution Control Act.²² It might have been the discussions conducted at the national level that led to the idea of providing mitigation for the loss also at the level of the Ramsar Convention, signed in 1971.²³ Interestingly enough, the concept was limited to the management of wetlands. We cannot speak of its wide dissemination until much later. For instance, the CBD, concluded in 1992, did not explicitly formulate *compensation* as a strategy of choice. However, it could be read indirectly in the obligation of parties to ‘rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies’.²⁴

The remit of the requirement to compensate expanded considerably during subsequent treaty developments. Various Ramsar COPs have widened the scope for compensation, clarified implementational aspects, and

²¹Duvic-Paoli (note 18), 2.

²²J Salzman and JB Ruhl, ‘No Net Loss’: Instrument Choice in Wetlands Protection in J FREEMAN AND CD KOLSTAD (EDS), *MOVING TO MARKETS IN ENVIRONMENTAL REGULATION: LESSONS FROM TWENTY YEARS OF EXPERIENCE* (Oxford University Press, 2006), 354–56.

²³J Penca, *Biodiversity Offsetting in Transnational Governance*, 24(1) *REVIEW OF EUROPEAN, COMPARATIVE AND INTERNATIONAL ENVIRONMENTAL LAW* 93, 94 (2014).

²⁴Article 8.f.

strengthened the preventative approach applied in the treaty provision. Firstly, in 1984, the COP envisaged national measures to mitigate or exclude any adverse effects of wetland transformation, including compensation measures, if modification of wetlands is planned.²⁵ Then, in 1999, the COP established an ‘avoid–mitigate–compensate sequence’ and stated that ‘effective wetland protection involves the conservation of wetlands as a first choice within a three-step mitigation sequence, including avoidance, minimisation, and compensation, the latter only as a last resort.’²⁶ Recalling Article 3.1 of the treaty (requesting promotion, through planning, of conservation of wetlands included in the List), rather than Article 4.2, Resolution VII.24 urged the parties to ‘take all practicable measures for compensating any loss of wetland functions, attributes and values, both in quality and surface area,’ and to create national rules for compensation of wetland loss, preferably with wetlands of a similar type and in the same local water catchment.²⁷ The Resolution also announced an inter-institutional effort to issue criteria and guidelines for the compensation of wetland habitats in the case of unavoidable losses and submit them for approval at the next COP. A further set of resolutions in 2008 referred to the mitigation hierarchy or a three-stage sequence of avoiding, mitigating (or minimizing), and compensating for wetland losses.²⁸ These were strong signals to recognize and reiterate that restoration cannot replace the loss of natural wetlands.²⁹

By the early 2000s, a comprehensive approach to wetlands, including the follow-up provisions for damage to wetlands, was consolidated globally. Multiple countries throughout the Ramsar regions introduced legal and policy arrangements to implement the mitigation hierarchy, applying either to wetlands specifically or to biodiversity management more generally.³⁰ Environmental impact assessment (EIA) represents the key instrument

²⁵Ramsar Convention, Recommendation 2.3: Action Points for Priority Attention (1984).

²⁶Ramsar Convention, Resolution VII.24: Compensation for Lost Wetland Habitats and Other Functions (1999).

²⁷Ibid, [12].

²⁸Ramsar Convention, Resolution X.12: Principles for Partnerships between the Ramsar Convention and the Business Sector (2008); Ramsar Convention, Resolution X.19: Wetlands and River Basin Management: Consolidated Scientific and Technical Guidance (2008); Ramsar Convention, Resolution X.25: Wetlands and “Biofuels” (2008); Ramsar Convention, Resolution X.26: Wetlands and Extractive Industries (2008).

²⁹Ramsar Convention, Resolution 4.1: Interpretation of Article 10 bis Paragraph 6 of the Convention (1990); Ramsar Convention, Resolution VII.17: Restoration as an Element for National Planning and Wise Use (1999) [10]; Ramsar Convention, Resolution VIII.16: Principles and Guidelines for Wetland Restoration (2002) [10].

³⁰RC Gardner et al., *Avoiding, Mitigating, and Compensating for Loss and Degradation of Wetlands in National Laws and Policies*, Ramsar Scientific and Technical Briefing Note no. 3 (Gland, Ramsar Convention Secretariat, 2012), <https://www.ramsar.org/sites/default/files/documents/library/bn3.pdf>.

facilitating consideration of the impacts of development and planning adequate mitigation responses.³¹ EIAs are implemented in practically all countries of the world and are likely to be the most widespread environmental management tool.³²

While fostering dissemination of the mitigation hierarchy across national legislation, the Convention also took steps to align various national approaches. The work on the criteria and guidelines for the compensation of wetland habitats in the case of unavoidable losses (anticipated in 1999 for adoption in 2002) was finally completed in 2012 through the adoption of the Integrated Framework and Guidelines for Avoiding, Mitigating and Compensating for Wetland Losses.³³ The Framework is a 29-page document, setting out principles and steps to support parties in designing appropriate responses to wetland loss and degradation, as well as guiding them through mitigation and compensation for wetland losses. The Framework has become a reference point for the management of wetland and, more broadly, biodiversity losses due to its comprehensive scope, timing, and intention to be communicated inter-institutionally—it was communicated to the Secretariat of the CBD as a contribution to the CBD’s voluntary guidelines on EIAs and strategic environmental assessments.³⁴ The document is explicit in reiterating the imperative of avoiding wetland losses (or degradation) as the primary step in any wetland management approach. However, in face of the trend of progressive loss of wetlands in both scope and condition (which counters the purpose of the Ramsar Convention), the concept of no net loss represents a legitimate approach to wetland management. No net loss allows impacts on the scope or ecological character of wetlands, but incorporates compensation as a key element. The Framework argues that no net loss is built into the text of the Convention and encouraged by it, and thus may be part of any party’s implementation of the Convention-wide wise use obligation, beyond Article 4.2.³⁵

³¹Ramsar Convention, Resolution VIII.20: General Guidance for Interpreting “Urgent National Interests” under Article 2.5 of the Convention and Considering Compensation under Article 4.2 (2002).

³²T Yang and R Percival, *The Emergence of Global Environmental Law*, 36 *ECOLOGY LAW QUARTERLY* 615, 627 (2009); N Affolder, *Contagious Environmental Lawmaking*, 31 *JOURNAL OF ENVIRONMENTAL LAW* 187 (2019).

³³Ramsar Convention, Resolution XI.9: An Integrated Framework and Guidelines for Avoiding, Mitigating and Compensating for Wetland Losses (2012).

³⁴*Ibid.*, 19.

³⁵*Ibid.*, 28–30.

3.3. Controversies of a Policy Tool

The documents adopted in the framework of the Ramsar Convention do not fully reveal the controversy over the concept of compensatory mechanisms, although they were invoked in some of the Ramsar COP discussions regarding the wording of decisions.³⁶ Compensatory mechanisms are replete with conceptual and implementational challenges, which are better captured by the academic literature.³⁷ The concerns range over ethical, social, technical, and governance aspects of biodiversity trading.

Specifically, ethical and social concerns relate to the questions of how virtuous is it to accept loss of nature and value it for further repayment; how to define, measure, and exchange nature across time and space, given its strong relationship with culture and society; whom such transactions harm or benefit; how citizens' (and particularly affected communities') values and socio-economic benefits are taken into account; how multiple benefits of a specific habitat are measured and monitored; and how to ensure transparency, justice, and effectiveness of activities. Some of these fundamental questions are reduced to a set of technical issues. These relate to the questions of what the units for measuring biodiversity are; how baselines or reference points for measuring progress are selected; how equivalence of the replacement and longevity of the positive impact is ensured over time; and how multiple uncertainties related to the offsets are managed.³⁸

In the multitude of complexities, technical challenges might give an impression of being more easily addressed than social and ethical concerns.³⁹ But procedural and substantive approaches, such as the development of credible standards, robust methodologies, and compliance and enforcement mechanisms, are a choice for a certain ethical position already.⁴⁰ Ethical divisions over whether it is right to treat nature as an exchangeable value or not are divisive, and in fact reflect a fundamental value judgement or ideology. Far from a mere technical matter, offsetting is a highly political issue and a contentious policy measure. It has not

³⁶'Mexico opposed reference to 'no net loss,' with Argentina expressing concern on offsets and compensation.' See, e.g., *Summary of the Eleventh Conference of the Parties to the Ramsar Convention on Wetlands 6–13 July 2012*, 17(39) EARTH NEGOTIATIONS BULLETIN 7–8 (16 July 2012).

³⁷See, e.g., M Maron et al., *Taming a Wicked Problem: Resolving Controversies in Biodiversity Offsetting*, 66 *BIO SCIENCE* 489 (2016); Penca (note 23).

³⁸JW Bull et al., *Biodiversity Offsets in Theory and Practice*, 47 *ORYX* 369 (2013).

³⁹Maron (note 37).

⁴⁰J Penca, *Marketing the Market: The Ideology of Market Mechanisms for Biodiversity Conservation*, 2 *TRANSNATIONAL ENVIRONMENTAL LAW* 235 (2013); E Apostolopoulou and WM Adams, *Biodiversity Offsetting and Conservation: Reframing Nature to Save It*, 51 *ORYX* 23 (2017).

been recognized as such, when practical considerations relating to the implementation of compensatory mechanisms overruled the more fundamental sceptical views and concerns over these measures.

The dilemmas become salient and tangible in the context of the Ramsar Convention. If Ramsar sites are representative, rare, or unique wetland types or have international importance for conservation of biodiversity,⁴¹ should there not be an absolute ban on activities harming their integrity? The idea of commensurability between wetlands and the feasibility of changing one wetland for another is challenging, given that wetlands play an important role in their local contexts. It seems particularly questionable whether a deletion of a Ramsar site can be effectively replaced by the expansion or creation of a wetland elsewhere.

The Ramsar Convention process has provided some surprisingly clear-cut answers to these dilemmas. On the one hand, it has consistently stressed that restoration or creation of wetlands cannot replace the loss or degradation of natural wetlands.⁴² On a practical level, a restriction of a Ramsar site has occurred only on two occasions, and on both, the restriction was followed up by provisions of compensation.⁴³ The possibility of deleting a Ramsar site has never played out. The only sites ever deleted from the Ramsar List were not deleted due to urgent national interests but instead ‘had been designated prior to the adoption of the Criteria and were then found not to fulfil any of them.’ To compensate for that, ‘three new sites were designated in compensation.’⁴⁴

A critical milestone in legitimating compensatory mechanisms, not only in the context of wetlands but more broadly, is the endorsement of biodiversity offsets by the International Union for Conservation of Nature (IUCN). In a report published in 2004, the IUCN moved from recognizing

⁴¹Ramsar Convention, Recommendation 1.4: [Criteria for identifying wetlands of international importance] (1980). See also C De Klemm and I Créteaux, *The Legal Development of the Ramsar Convention* (Gland, Ramsar Convention Bureau, 1995), https://www.ramsar.org/sites/default/files/documents/library/the_legal_development_of_the_ramsar_convention_0.pdf.

⁴²Ramsar Convention (note 26). See also note 29.

⁴³In 2010, the Åkersvika wetland delat, Norway, was reduced in size due to a road enlargement, and new areas were added to compensate for areas excluded, in line with the Article 4.2. and a Ramsar Advisory Mission (no.64). In 1987, Belgium announced it would reduce the size of the Lower Scheldt river site, and while not using the term of ‘urgent national interest’ and not formally invoking Article 4.2., it proposed a compensation bigger in size than the area reduced. In 1997, Australia considered a reduction of listed sites Port Phillip Bay and Bellarine Peninsula, but later withdrew that proposal. See Ramsar Convention, Agenda item 12, Analysis and Recommendations of IUCN’s Environmental Law Centre (Decision SC24-10) on Revisions to Ramsar Sites Boundaries, Interpretation of Articles 2.5 and 4.2 (Resolution VII.23, paragraphs 9, 10, 11 & 13), 25th Meeting of the Standing Committee, DOC. SC25-8, <https://www.ramsar.org/sites/default/files/documents/tmp/pdf/sc/25/SC25-08.pdf>.

⁴⁴Ramsar Convention, *An Introduction to the Convention on Wetlands* (previously *The Ramsar Convention Manual*) (Ramsar Convention Secretariat, 2016), <https://abs.igc.by/wp-content/uploads/2016/04/Introduction-to-the-Convention-on-Wetlands-Ramsar-Handbooks-5th-Edition-2016.pdf>, 42.

the concerns and risks involved in the implementation of biodiversity offsets to setting out credible and transparent standards, methodologies, and guidelines for developing pilot projects.⁴⁵ The adoption of the report was complemented by a broad process, which opened up international environmental negotiations and treaty processes to the private sector.⁴⁶ From the perspective of the Ramsar Convention, the mentioned report helped to consolidate the acceptability of compensatory mechanisms as a feasible conservation strategy and allowed their expansion. The Ramsar Convention can thus be considered as being ahead of its time for entrenching compensatory mechanisms in its design. The treaty anticipated that unavoidable pressures on biodiversity would continue and that practical adjustments were likely to have better prospects for successful conservation than insisting on a non-restriction approach to wetlands.

3.4. Practice of Compensatory Mechanisms

Compensatory mechanisms have gained prominence globally and found their way into practical arrangements to offset the residual impacts of wetland loss—that is, to compensate losses after measures have sought to prevent and minimize the negative impacts. Compensatory mechanisms for wetlands have preceded the development of compensatory mechanisms for ecosystems beyond wetlands, but have recently been developing closely with them.

The basic governance level at which compensatory mechanisms are organized is that of countries. As per the guidance by the Ramsar COP,⁴⁷ most parties have integrated the rules for compensation of wetland loss into their national policies concerning land and water planning, and now have provisions for offsetting the damage done to wetlands and other ecosystems in national laws and strategies.⁴⁸ The latest available aggregated database (dating to 2016) lists 69 countries with a known national policy of biodiversity offsets, partly overlapping with the European Union (EU)-wide requirement to 27 member states for compensation to sites protected under the Natura 2000 network and a further five countries with

⁴⁵K ten Kate, J Bishop and R Bayon, *Biodiversity Offsets: Views, Experience, and the Business Case* (IUCN and Insight Investment, 2004), <https://www.iucn.org/sites/dev/files/import/downloads/bdoffsets.pdf>.

⁴⁶AJ Bled, *Business to the Rescue: Private Sector Actors and Global Environmental Regimes' Legitimacy*, 9 INTERNATIONAL ENVIRONMENTAL AGREEMENTS: POLITICS, LAW AND ECONOMICS 153–71 (2009); KI MacDonald, *The Devil Is in the (Bio)Diversity: Private Sector 'Engagement' and the Restructuring of Biodiversity Conservation*, 42 ANTIPODE 513 (2010).

⁴⁷Ramsar Convention, Resolution XI.9: An Integrated Framework and Guidelines for Avoiding, Mitigating and Compensating for Wetland Losses (2012).

⁴⁸Gardner (note 30), 3–8.

sub-national rules.⁴⁹ The requirements are well distributed across the globe; middle- or low-income countries are just as well represented as richer countries, and there are no blank spots among the regions.⁵⁰ Wetlands are among the most traded types of ecosystems and the most studied habitats among the peer review literature on offsets.⁵¹

But national, subnational, or regional legislation frameworks do not portray the full picture. Biodiversity offsets are often undertaken on a voluntary basis by businesses as a follow-on from their social and environmental commitments, particularly in the heavy-impact sectors, such as extractive industries, water, and urban development,⁵² and increasingly in other businesses as part of the nascent environmental stewardship paradigm.⁵³ (Interestingly, no similar practice has developed for agricultural business, which is a significant source of pollution for wetlands.) Businesses may opt for voluntary commitments for various reasons: for ethical or reputational purposes, to pre-empt regulation, to reduce operational risk exposure, to take advantage of new business development opportunities, or as a result of the requirements by investors or lenders, such as development banks.⁵⁴ Compensation is required under the Equator Principles, a voluntary set of standards for financial institutions for determining, assessing, and managing social and environmental risk in project financing with capital costs exceeding USD 10 million.⁵⁵ About 169 countries in total are subject to these requirements by financial institutions.⁵⁶ However, despite widespread financial incentives, most offset projects arise due to regulatory requirements.⁵⁷

In terms of response options, these are wetland restoration (promoting a return to original, pre-disturbance conditions and improving wetland

⁴⁹Maron (note 37).

⁵⁰A Villarroya, AC Barros and J Kisecker, *Policy Development for Environmental Licensing and Biodiversity Offsets in Latin America*, 9 PLOS ONE (2014); S Gelcich et al., *Achieving Biodiversity Benefits with Offsets: Research Gaps, Challenges, and Needs*, 46 AMBIO 185–87 (2017).

⁵¹Gelcich (note 50), 186.

⁵²N Doswald et al., *Biodiversity Offsets: Voluntary and Compliance Regimes. A Review of Existing Schemes, Initiatives and Guidance for Financial Institutions* (UNEP-WCMC and UNEP FI, 2012), https://www.unepfi.org/fileadmin/documents/Biodiversity_Offsets-Voluntary_and_Compliance_Regimes.pdf, 9.

⁵³Pollinator Group (note 2).

⁵⁴Doswald (note 52), 14–16.

⁵⁵Ibid., 10.

⁵⁶Maron (note 37), 2.

⁵⁷JW Bull and N Strange, *The Global Extent of Biodiversity Offset Implementation Under No Net Loss Policies*, 1 NATURE SUSTAINABILITY 790 (2018).

functions)⁵⁸ and wetland creation (creation of wetlands on land that has never been wetland).⁵⁹ The Ramsar Convention stresses the significance of formulating goals, objectives, and performance standards (also dubbed 'success criteria') for individual projects, while allowing the specific compensation measures to be determined by national legislation related to EIAs, and land and water planning.⁶⁰ It is important to note that while ecosystem functions and properties are the primary goals of compensatory endeavours, their implementation can be merged with various socio-cultural or socio-economic benefits. Indeed, compensatory projects have contributed to local cultural and relational values (spiritual enrichment, recreation, ecotourism, aesthetics, formal education, environmental awareness and appreciation, and cultural heritage).⁶¹ Instances of wetland compensation in South Africa have been strongly combined with the goal of poverty alleviation.⁶² The development of compensatory mechanisms as well as ancillary services can also offer opportunities for skills development, such as monitoring, legal, insurance, registry, and technical support services, which all contribute to economic development and local employment, and skills development for species identification, conservation management, and sociocultural knowledge.⁶³

In terms of legal forms of implementation, the three main options are one-off offsets, in-lieu fees, or habitat banking.⁶⁴ One-off offsets are carried out by the developer or by a subcontractor, for example, a conservation non-governmental organization (NGO), with the developer assuming financial and legal liability, and with verification typically undertaken by a government agency or an accredited third party.⁶⁵ In-lieu fees require the developer to pay a fee to the offset provider, which takes on the financial

⁵⁸Ramsar Convention, Resolution VIII.16: Principles and Guidelines for Wetland Restoration (2002).

⁵⁹Ramsar Convention, Resolution XI.9: An Integrated Framework and Guidelines for Avoiding, Mitigating and Compensating for Wetland Losses (2012), [84].

⁶⁰*Ibid.*, [82].

⁶¹R Fish et al., *Making Space for Cultural Ecosystem Services: Insights from a Study of the UK Nature Improvement Initiative*, 21 *ECOSYSTEM SERVICES* 329 (2016); B Fischer, RK Turner and P Morling, *Defining and Classifying Ecosystem Services for Decision Making*, 68 *ECOLOGICAL ECONOMICS* 643 (2009); B Clarke et al., *Integrating Cultural Ecosystem Services Valuation Into Coastal Wetlands Restoration: A Case Study from South Australia*, 116 *ENVIRONMENTAL SCIENCE & POLICY* 220 (2021).

⁶²IIED, South Africa-Working for Wetlands(WfWet), https://watershedmarkets.org/casestudies/South_Africa_Working_for_Wetlands.html.

⁶³A Bovarnick, C Knight and J Stephenson, *Habitat Banking in Latin America and the Caribbean: A Feasibility Assessment* (United Nations Development Programme, 2010), <https://www.cbd.int/financial/offsets/g-offsethabitatbanklac-undp.pdf>.

⁶⁴OECD, *Biodiversity Offsets: Effective Design and Implementation* (OECD Publishing, 2016), <https://doi.org/10.1787/9789264222519-en>, 50–53.

⁶⁵*Ibid.*, 50–53.

and legal responsibility for the offset.⁶⁶ Habitat banking relates to a repository where credits from actions with beneficial biodiversity outcomes can be purchased by the developer or permittee to offset the debit from the environmental damage they would create.⁶⁷ As under the in-lieu fee arrangement, financial and legal liability are transferred from the developer to the provider, which can be a public or private entity.

Habitat banks (founded on ‘biodiversity credits’, ‘tokens’, etc.) have attracted considerable attention in scholarship and policy due to their innovative character in the context of cost-effective instruments or market mechanisms for biodiversity protection.⁶⁸ Wetland offsets pioneered the idea for more permanent tradable conservation units. On the one hand, the instrument holds potential for further reducing loss of habitats and stimulating private investment into habitat restoration, particularly when compensation for loss becomes widely required as part of development projects or extractive industries, thus generating sufficient demand for credits. In some places, a strong demand exists on the side of developers and organizations for restoration projects.⁶⁹ Habitat banking provides readily accessible restoration opportunities to such demand.

On the other hand, as the most complex policy tool among compensatory mechanisms, habitat banking also amplifies the concerns and risks around compensatory mechanisms. In habitat banking, it is particularly difficult to ensure that the ecosystem, which is replacing the forgone one, is equivalent in quality. Establishing an adequate metric (a ‘unit’ of habitat destroyed or species affected) is a socio-ecological challenge, lacking standardization and tool design.⁷⁰ A particular concern with habitat banking is the temporal loss of wetlands because credits can be released before ecological benefits start to take effect.⁷¹

Despite these concerns, habitat banks do not exist widely. The United States, Canada, and Australia have piloted wetland mitigation banking

⁶⁶Ibid, 53.

⁶⁷Ibid, 50–53.

⁶⁸EFTEC et al., *The Use of Market-Based Instruments for Biodiversity Protection—The Case of Habitat Banking—Technical Report* (EFTEC, IIEP, 2010), https://ec.europa.eu/environment/enveco/pdf/eftec_habitat_technical_report.pdf; Bovarnick (note 63).

⁶⁹PWC, *Habitat Banking—Country Profiles*, <https://pwc.blogs.com/files/country-summaries--undp-habitat-banking-report.pdf>.

⁷⁰SJ Chiavacci and EJ Pindilli, *Trends in Biodiversity and Habitat Quantification Tools Used FOR Market-Based Conservation in the United States*, 34 CONSERVATION BIOLOGY 125 (2020).

⁷¹H Levrel, P Scemama and A-C Vaissiere, *Should We Be Wary of Mitigation Banking? Evidence Regarding The Risks Associated With This Wetland Offset Arrangement In Florida*, 135 ECOLOGICAL ECONOMICS 136 (2017).

models specifically.⁷² More general habitat banks seem to be most widespread in the United States, particularly in Florida,⁷³ and to a more limited extent in the European countries (Germany, France, Italy, UK, Spain)⁷⁴ and Latin American and Caribbean countries.⁷⁵ Habitat banks have also been explored at the transnational level, meaning the implementation of the offsets could take place in a country other than that in which the damage occurs.⁷⁶ A lead here is the Business and Biodiversity Offset Program (BBOP), a collaborative programme of over 40 companies, financial institutions, governments, and civil society organizations, whose efforts have been recognized by a Ramsar resolution.⁷⁷ For the most part, wetland and biodiversity banks are being explored as a potential and nascent, rather than a full-fledged, policy tool.

3.5. Impact of Compensatory Mechanisms

As the practice of biodiversity offsetting becomes increasingly more widespread and complex, key concerns relate to its impact. There is a disconnect between the use of biodiversity offsetting around the world and evaluations of the impact of this policy tool. The empirical research that exists has pointed to some of the real risks. On the governance end, countries may be advancing quite detailed offset policies while lacking strong requirements regarding impact avoidance.⁷⁸ Concerns have been raised over the process and lack of inclusiveness, even in well-resourced countries.⁷⁹ Furthermore, implementation and enforcement of such transactions are often subject to weak governance frameworks, insufficient

⁷²S Burgin, 'Mitigation Banks' for Wetland Conservation: A Major Success or an Unmitigated Disaster?, (2010) 18 WETLANDS ECOLOGY AND MANAGEMENT 4 (2010); KW Cox and A Grose (eds), Wetland Mitigation in Canada: A Framework for Application, Sustaining Wetlands Issues Paper 1 (Secretariat to the North American Wetlands Conservation Council, 2000), <https://nawcc.wetlandnetwork.ca/Wetland%20Mitigation%202000-1.pdf>.

⁷³J Poudel, D Zhang and B Simon, *Habitat Conservation Banking Trends in the United States*, 28 BIODIVERSITY AND CONSERVATION 1629 (2019); AC Vaissière and H Levrel, *Biodiversity Offset Markets: What Are They Really? An Empirical Approach to Wetland Mitigation Banking*, 110 ECOLOGICAL ECONOMICS 81 (2015).

⁷⁴EFTEC (note 68); S Maestre-Andrés et al., *Habitat Banking at a Standstill: The Case of Spain*, 109 ENVIRONMENTAL SCIENCE & POLICY 54–63 (2020); MMJ Gorissen, C Martijn van der Heide and JHJ Schaminée, *Habitat Banking and Its Challenges in a Densely Populated Country: The Case of The Netherlands*, 12 SUSTAINABILITY 3756 (2020).

⁷⁵Bovarnick (note 63).

⁷⁶Penca (note 23); Penca (note 40).

⁷⁷Ramsar Convention, Resolution X.12: Principles for Partnerships between the Ramsar Convention and the Business Sector (2008).

⁷⁸Villarroya, Barros and Kisesecher (note 50).

⁷⁹Maestre-Andrés (note 74).

monitoring, and poorly defined liabilities,⁸⁰ when regulatory responses throughout the process play a hugely important role in mitigating the risks.⁸¹

On the practical level, there is a real risk of temporal loss of wetlands and spatial mismatch due to the (growing) distance between impact sites and compensation sites.⁸² Some of the biodiversity offsets have failed. They have missed the target of counterbalancing the ecological loss.⁸³ They were found to displace people and negatively affect livelihoods.⁸⁴ While evidence is not conclusive, some of it points to inappropriate practices in attempting to reach the impressive-sounding environmental targets.⁸⁵

With or without established compensatory mechanisms, biodiversity is declining steadily worldwide across different biomes, productive land, species, genetic diversity and the benefits people obtain from it.⁸⁶ If we just focus on wetlands, the *Global Wetland Outlook's* latest edition (2021) reports on the continuing deterioration of wetland extent and condition globally, and with 35% losses of natural wetlands since 1970, where data are available.⁸⁷ The loss of natural wetlands was not compensated by the creation of human-made wetlands, such as rice paddy and reservoirs.⁸⁸ Over the longer period of three centuries, wetland ecosystems have lost 85 per cent of coverage, primarily from drainage and land conversion.⁸⁹

4. Discussion: Compensatory Mechanisms within Failing Global Biodiversity Governance

Compensatory mechanisms for wetlands are among the policy approaches of contemporary biodiversity governance. They are also fundamentally questioned as the appropriate strategy for furthering sustainability. A number

⁸⁰F Quétier and S Lavorel, *Assessing Ecological Equivalence in Biodiversity Offset Schemes: Key Issues and Solution*, 144 *BIOLOGICAL CONSERVATION* 2991 (2011).

⁸¹Levrel, Scemama and Vaissiere (note 71).

⁸²*Ibid.*

⁸³DB Lindenmayer et al., *The Anatomy of a Failed Offset*, 210 *BIOLOGICAL CONSERVATION* 286 (2017).

⁸⁴LJ Sonter et al., *Biodiversity Offsets May Miss Opportunities to Mitigate Impacts on Ecosystem Services*, 16 *FRONTIERS IN ECOLOGY AND ENVIRONMENT* 143 (2018).

⁸⁵Levrel, Scemama and Vaissiere (note 71); Maestre-Andrés (note 4); Gorissen, van der Heide and Schaminée (note 74).

⁸⁶Brondizio (note 6).

⁸⁷M Courouble et al., *Global Wetland Outlook: Special Edition 2021* (Ramsar Convention Secretariat, 2021), <https://www.global-wetland-outlook.ramsar.org/report-1>, 21.

⁸⁸*Ibid.*, 21.

⁸⁹UNEP, *SDG Report Special Edition* (Nairobi, UNEP, 2023), 25.

of critics point to how compensatory mechanisms, alongside other mitigation measures, provide green credentials to those who perpetuate biodiversity loss and legitimise the practices that miss the important targets.⁹⁰ These critics show how, by building on the same principles that are responsible for putting socio-ecological systems in a perilous state, compensatory mechanisms do little to challenge unsustainable trajectories. While trying to mitigate the impact of unsustainable activities as a short-term tactic, from a longer-term perspective they facilitate environmental destruction.

The idea of compensation for loss was introduced by the Ramsar Convention somewhat experimentally and probably without anticipation as to its subsequent development and application to other terrestrial habitats. It was deployed as a pragmatic approach to the ongoing conflict between the economically profitable activities and conservation.⁹¹ Wetland management and research have often been influential in the paradigm shift for biodiversity governance.⁹² The spread of compensatory mechanisms in regimes other than wetlands attests to that. In that regard, the existence and spread of compensatory mechanisms is reflective of biodiversity governance being embedded in discourses, institutions, and other structures of power and domination that support, rather than alter, the existing unsustainable course of action that results in declining biodiversity.⁹³ These structures have prevented more transformative actions and deeper systemic changes in the direction of sustainability.

Knowledge production has played a role in this. The indispensable role of biodiversity in sustaining life is understood better today than in was in the past. Science and awareness of the value of ecosystems for humans, or of the interconnectedness between nature and social components, have been developing only gradually. Ecosystems' benefits for people were categorized, quantified, and valued at the end of 1990s.⁹⁴ Valuation of

⁹⁰Apostolopoulou and Adams (note 40); P Le Billion, *Crisis Conservation and Green Extraction: Biodiversity Offsets as Spaces of Double Exception*, 28 *JOURNAL OF POLITICAL ECOLOGY* 854 (2021); 1; B Neimark and B Wilson, *Re-Mining the Collections: From Bioprospecting to Biodiversity Offsetting in Madagascar*, 66 *GEOFORUM* 1 (2015); B Büscher et al, *Towards a Synthesized Critique of Neoliberal Biodiversity Conservation*, 23 *CAPITALISM, NATURE, SOCIALISM* 4 (2012).

⁹¹M Virah-Sawmy, J Ebeling and R Taplin, *Mining and Biodiversity Offsets: A Transparent and Science-Based Approach to Measure 'No-Net-Loss'*, 143 *JOURNAL OF ENVIRONMENTAL MANAGEMENT* 61 (2014); W M Adams, *Sleeping with the Enemy? Biodiversity Conservation, Corporations and the Green Economy*, 24 *JOURNAL OF POLITICAL ECOLOGY* 243 (2017).

⁹²E Maltby and MC Acreman, *Ecosystem Services of Wetlands: Pathfinder for a New Paradigm*, 56 *HYDROLOGICAL SCIENCES JOURNAL* 1341 (2011).

⁹³MTJ Kok et al., *Enabling Transformative Biodiversity Governance in the Post-2020 Era*, in IJ VISSEREN-HAMAKERS AND MTJ KOK (EDS), *TRANSFORMING BIODIVERSITY GOVERNANCE* (Cambridge University Press, 2022), 341; A Agrawal et al., *From Environmental Governance to Governance for Sustainability*, 5 *One Earth* 615 (2022).

⁹⁴R Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 (6630) *NATURE* 253 (1997); C DAILY (ED), *NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS* (Island Press, 1997); EB

‘ecosystem services’ was, for the first time, applied at the global level with the Millennium Ecosystem Assessment in 2005.⁹⁵ In parallel, research has pointed to unprecedented losses of biodiversity, compromising the health of ecosystems and their future productivity, as well as health and well-being of humans.⁹⁶ The recognition of a close connectivity across terrestrial, inland waters, and marine systems, and the consideration of people as an intrinsic part of ecosystems, rather than separate from them, had important implications for a more integrative treatment and management of nature.⁹⁷

In response to these advances of scientific knowledge, policy sought to devise increasingly integrative, resilience-focused responses that attempt to mainstream biodiversity conservation in everyday decisions, in addition to insisting on multiple fenced, siloed protected areas. Alongside strictly protected areas, consideration of habitats, resources, and livelihoods outside designated areas have gained prominence, while imposing strict limitations and prohibiting interference have proven to be politically unfeasible interventions.⁹⁸ Thus, the rationale developed to essentially permit negative impacts on habitats, including wetlands, but require action to counterbalance these impacts. The current approach is to reconcile conservation with threats from economic development and unsustainable use. To that end, nature conservation governance re-oriented towards taking note of continuing alerts over the degradation of nature, and combined these with propositions of a positive narrative and a hope for change. In this paradigmatic orientation of contemporary biodiversity governance, the mitigation hierarchy and compensatory mechanisms or biodiversity offsets have come to act as normative orientation to reverse the trends of biodiversity decline, but effectively as isolated and ineffective steps.

From the perspective of biodiversity governance, it was better to consolidate these mechanisms and the mitigation hierarchy than to do nothing. They became an integral part of the governmental policies and private sector strategies of the 21st century. The EU 2020 Biodiversity Strategy

Barbier, M Acreman and D Knowler, *Economic Valuation of Wetlands: A Guide for Policy Makers and Planners* (Ramsar Convention Bureau, 1997); NATIONAL ACADEMY OF SCIENCES USA, *VALUING ECOSYSTEM SERVICES: TOWARD BETTER ENVIRONMENTAL DECISION-MAKING* (National Academies Press, 2004).

⁹⁵UNEP, *MILLENNIUM ECOSYSTEM ASSESSMENT: ECOSYSTEMS AND HUMAN WELL-BEING: SYNTHESIS* (Nairobi, UNEP, 2005); TEEB, *The Economics of Ecosystems and Biodiversity, Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*, <http://www.teebweb.org/publications/teeb-study-reports/synthesis>.

⁹⁶S Diaz et al., *Biodiversity Loss Threatens Human Well-Being*, 4 PLoS BIOLOGY 1300 (2004); B Cardinale et al., *Biodiversity Loss and its Impact on Humanity*, 486(7401) NATURE 59 (2012).

⁹⁷E Östrom, *A General Framework for Analysing Sustainability of Social–Ecological Systems*, 325 SCIENCE 419 (2009); S Diaz et al., *Assessing Nature’s Contributions to People*, 259(6373) SCIENCE 270 (2018).

⁹⁸JN Pretty and MP Pimbert, *Beyond Conservation Ideology and the Wilderness*, 19 *Natural Resources Forum* 1, 5–14 (1995).

(2011–2020), for example, aimed at no net loss and provisioned for compensatory mechanisms, including offsets, to play a crucial role in it.⁹⁹ More than 80 countries require some form of no net loss,¹⁰⁰ albeit with offsets being variously understood, and far from homogeneous in implementation.¹⁰¹ Many businesses have formulated relevant corporate statements and strategies.¹⁰² They range from no net loss to net gain or net positive gain, or a combination of them. For example, the BBOP aims to apply offsets in a way to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function, and people's use and cultural values associated with biodiversity.¹⁰³

While there is widespread recognition of the existence of mitigation hierarchy, there is an even stronger acceptance that progressing through the hierarchy is acceptable, and the steps beyond avoidance or harm are normalized. These are the reasons that the goals of no net loss or net gain do not yield results. They are too isolated in scope¹⁰⁴ and too focused on short-term policy horizons.¹⁰⁵ Policies on no net loss, even when mandatory, at best lead to a *promise* of long-term improvement, rather than to actual conservation gains and to *relative*, rather than absolute, no net loss.¹⁰⁶ No net loss may continue to be reiterated as a signpost, but it actually entrenches ongoing biodiversity loss. The failure of no net loss is not due to the under-development of operational rules for compensatory mechanisms, their limited application in countries, or lack of

⁹⁹European Commission (EC), *Our Life Insurance, Our Natural Capital: An EU Biodiversity Strategy to 2020*, COM/2011/0244 final (2011).

¹⁰⁰M Maron et al., *The Many Meanings of No Net Loss in Environmental Policy*, 19 NATURE SUSTAINABILITY 19 (2018); JW Bull et al., *Seeking Convergence on the Key Concepts in 'No Net Loss' Policy*, 53 JOURNAL OF APPLIED ECOLOGY 1686 (2016).

¹⁰¹Bull and Strange (note 57).

¹⁰²HJ Rainey et al., *A Review of Corporate Goals of No Net Loss and Net Positive Impact on Biodiversity*, 49 ORYX 232 (2015).

¹⁰³Business and Biodiversity Offsets Programme (BBOP), *To No Net Loss and Beyond: An Overview of the Business and Biodiversity Offsets Programme (BBOP)*, www.forest-trends.org/biodiversityoffsetprogram/guidelines/Overview_II.pdf.

¹⁰⁴G Tucker et al., *Conclusions: Lessons from Biodiversity Offsetting Experiences in Europe*, in W WENDE ET AL. (EDS), *BIODIVERSITY OFFSETS* (Springer, 2018).

¹⁰⁵FLP Damiens, A Backstrom and A Gordon, *Governing for "No Net Loss" of Biodiversity over the Long Term: Challenges and Pathways Forward*, 4 ONE EARTH 60 (2021); G Tucker et al., *Conclusions: Lessons from Biodiversity Offsetting Experiences in Europe*, in W WENDE ET AL. (EDS), *BIODIVERSITY OFFSETS* (Springer, 2018), 245.

¹⁰⁶TA Gardner et al., *Biodiversity Offsets and the Challenge of Achieving No Net Loss*, 27 CONSERVATION BIOLOGY 1254 (2013); Maron (note 100); JS Simmonds et al., *Moving from Biodiversity Offsets to a Target-Based Approach for Ecological Compensation*, 1 CONSERVATION LETTERS e12695 (2020); S zu Ermgassen et al., *The Role of "No Net Loss" Policies in Conserving Biodiversity Threatened by the Global Infrastructure Boom*, 1 ONE EARTH 305 (2019).

enforcement. It is due to weak application of law that insists on prevention. It is due to the fact that law does not defeat the subordination of biodiversity to the unsustainable trajectories and pressures—the economic, developmental and political pressures. Environmental law is too weak to shape the system's basic rules, but also insufficiently invoked as critically different from the endorsements of ongoing loss that are developing in biodiversity governance arenas.

Without a doubt, the existence of the operational model behind compensatory mechanisms further entrenches the biodiversity conservation governance in ways that does not change the trend of biodiversity decline. It distracts the focus from the need for an overhaul of rules in ways that would reverse biodiversity depletion. The most recent re-definition of the same conservation paradigm is the promotion of *restoration* of ecosystems. The idea relates to initiating or accelerating the recovery of an ecosystem from a degraded state with the view to regaining its ecological functionality and improving the productivity and capacity of ecosystems to meet the needs of society.¹⁰⁷ As a governance objective, it gained prominence in 2011 with the Bonn Challenge, launched by the Government of Germany and IUCN.¹⁰⁸ It was recognized as facilitating the implementation of many existing international commitments (including those of fighting climate change, enhancing food security, providing clean water, protecting biodiversity, alleviating poverty, and improving human well-being)¹⁰⁹ and conventions and processes (including the UN Framework Convention on Climate Change, the UN Convention to Combat Desertification, and Sustainable Development Goals, particularly its Target 15.3 on land degradation neutrality).¹¹⁰ Political support for ecosystem restoration culminated with the launch of the UN Decade on Ecosystem Restoration (2021–2030), with the purpose of scaling up efforts to prevent, halt, and reverse the degradation of ecosystems worldwide and raise awareness of the importance of successful ecosystem restoration.¹¹¹ Interestingly, the

¹⁰⁷IPBES, The IPBES Assessment Report On Land Degradation And Restoration (IPBES, 2018); UNEP, New UN Decade on Ecosystem Restoration Offers Unparalleled Opportunity for Job Creation, Food Security and Addressing Climate Change Opportunity, <https://www.unenvironment.org/news-and-stories/press-release/new-un-decade-ecosystem-restoration-offers-unparalleled-opportunity>.

¹⁰⁸IUCN, The Bonn Challenge, <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/bonn-challenge>.

¹⁰⁹MARN (Ministerio de Medio Ambiente y Recursos Naturales), UN Decade of Ecosystem Restoration 2021–2030. Initiative Proposed by El Salvador System (SICA). Concept Note (Ministerio de Medio Ambiente y Recursos Naturales, El Salvador with the Support of Countries from the Central American Integration, 2019).

¹¹⁰UNGA Resolution 73/284, United Nations Decade on Ecosystem Restoration (2021–2030).

¹¹¹Ibid; see also the EU Proposal for Regulation on Nature restoration, 2022/0195 (COD), 22.6.2022, https://environment.ec.europa.eu/publications/nature-restoration-law_en, proposing legally binding

Ramsar Convention proposed restoration as an element of national planning for wetland conservation and wise use in 1999, considerably earlier than the concept rose to global prominence.¹¹²

The restoration goals may be ambitious and potentially far-reaching, but their impact on halting biodiversity loss depends on the ability of states to bite the bullet of changing societal values, behaviours, and organization patterns, which are not aligned with sustainability.¹¹³ The direct and indirect drivers, or *root causes*, of biodiversity decline originate in sectors other than biodiversity conservation.¹¹⁴ They are found in extensive changes in land and sea use, direct overexploitation of organisms, climate change, pollution, and invasion of alien species, all of which are underpinned by production and consumption patterns, human population dynamics and trends, trade, technological innovations, and local through global governance. If restoration is to succeed as a policy paradigm, the efforts need to be directed not only at improving *rules* regarding restoration and their enforcement, but also at the regulating *underlying causes* for degradation of ecosystems so that active restoration as a policy approach becomes less needed.

Promising regulatory measures thus include addressing direct or indirect drivers of biodiversity loss, such as abolishing harmful rules and incentives, and integrating sustainability-aligned values into the design of new rules.¹¹⁵ Promising legal interventions are to follow up these rules with implementation, compliance and enforcement.¹¹⁶ The same logics of re-inventing the rules framework in the societal system and committing to it are expected by the private sector.¹¹⁷ The task then is an active re-thinking and co-creation of new solutions to address the socio-ecological problem of biodiversity decline.

targets to restore degraded EU ecosystems, in particular those with the most potential to remove and store carbon and to prevent and reduce the impact of natural disasters.

¹¹²Ramsar Convention, Resolution VII.17, note 16. See also Ramsar Convention, Resolution VIII.16: Principles and Guidelines for Wetland Restoration (2002).

¹¹³U Pascual et al. (eds), Summary for Policymakers of the Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES Secretariat 2022).

¹¹⁴Brondizio (note 6).

¹¹⁵IPBES (note 110).

¹¹⁶UNEP, Environmental Rule of Law: Tracking Progress and Charting Future Directions (Nairobi, UNEP, 2023).

¹¹⁷S Burch and J Di Bella, *Business Models for the Anthropocene: Accelerating Sustainability Transformations in the Private Sector*, 16 SUSTAINABILITY SCIENCE 1963 (2021).

5. Conclusion: Rediscovering Environmental Law

Contemporary biodiversity governance has consolidated around finding responses to the constant and intensifying pressures on the environment. Despite reinforced rhetoric on the need for a major change,¹¹⁸ actors and processes are tacitly accepting the decline of precious biomes and refraining from enacting more radically different visions for co-habitation on our planet. The historical insight and analytical focus on environment law, as deployed in this article, helps to rediscover the use and potential of normative tools vis-à-vis the empirical observations of global biodiversity governance. It reminds us of the integrity of environmental law, and helps to uncover the reasons for its dismissal and selective deployment by actors in societies.

The existence of compensatory mechanisms originates in the Ramsar Convention provision that requires a replacement for any wetlands lost in cases that are exceptional and strictly defined. The states-led, consensus-based process in the Ramsar Convention has further built a framework for compensatory mechanisms, which is science-based, detailed and unequivocal about avoidance of negative impact on wetlands being an absolute priority over compensation. The process within the Convention was always adamant about compensation being the last resort in effective wetland conservation and management, should other options fail. But as the ideas of compensation and mitigation hierarchy spread beyond the limited context of the Ramsar Sites and wetlands, to private fora and biodiversity more broadly, the focus on prevention got lost. This little-noticed instance of selective use of international environmental law in biodiversity governance¹¹⁹ popularized the idea of compensation for loss while normalizing the loss of resources in the global biodiversity regime involving a multiplicity of actors.

Promoting compensatory mechanisms in the context of the no net loss paradigm in the era of ongoing decline of wetlands and other ecosystems is ill-situated and misleading. The mismatch between the original and the current concept is obvious and relevant to the thinking of environmental law in designing biodiversity governance. Environmental law should distance itself from the use, promotion, and justification of compensatory mechanisms and re-focus on the preventive aspects. Designing rules that prevent the decline of biodiversity and enforcing those laws is an urgent priority. Avoidance of harm, rather than its mitigation, needs to become

¹¹⁸UNEP, *Global Environment Outlook-6* (2019); IPBES 2019, note 13; UNEP, *Making Peace with Nature* (2021); UN, *Sustainable Development Goals Report Special Edition* (2023).

¹¹⁹Penca (note 23).

the dominant value, practice, and goal. The international environmental law enacted through principles and conventions, such as the Ramsar one, needs to be invoked, and its integrity preserved and scaled. In the face of ever-increasing pressures on biodiversity, what is needed is not the reshaping of law and rules to match and legitimize business as usual, but the re-instatement of law and its application in ways that change values, power relations, and organizational patterns.

Javna Agencija za Raziskovalno Dejavnost RS; Javna Agencija za Raziskovalno Dejavnost RS;

Acknowledgments

The production of this article was supported by the Slovenian Research Agency (code J5-2562 and P5-0453) and draws on work undertaken for further publication by the author. The author thanks Royal C. Gardner, Richard Caddell and Erin Okuno for their comments on a previous draft of this article.

Declaration of Interest

The author reports there are no competing interests to declare.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

Javna Agencija za Raziskovalno Dejavnost RS; Javna Agencija za Raziskovalno Dejavnost RS.