MORE ECOLOGY OR MORE ECONOMY IN INTERNATIONAL CONVENTIONS ON BIODIVERSITY?

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https://doi.org/10.69893/gjle.2025.000081

ABSTRACT

International biodiversity governance has progressively evolved from a predominantly ecological and conservation-oriented approach toward a more integrated framework that incorporates economic reasoning. This article argues that such an evolution is not merely terminological, but reflects a deeper transformation in the way biodiversity is conceptualized and governed at the international level. The study examines whether, and to what extent, international biodiversity conventions and related policy initiatives have incorporated economic considerations alongside traditional conservation objectives. Using a text analysis methodology, the article analyzes the language of key international conventions adopted since the 1970s, distinguishing between early conservation agreements, state-based conventions, and instruments developed within the framework of the Convention on Biological Diversity. This analysis is complemented by an examination of the conceptual frameworks adopted by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and the European Union Biodiversity Strategy. The findings show a growing emphasis on ecosystems, ecosystem services, and human well-being, which emerges progressively across the examined instruments and culminates in the Kunming-Montreal Global Biodiversity Framework. From a

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Acknowledgment

This article benefited from the comments of the participants of two international conferences:

a. *8th International Conference on Law and Economic Analysis of Ethics, Inclusiveness and Sustainability (28th February-2nd March 2025, GNLU Centre for Law and Economics – Gujarat- India) and*
b. *Lifewatch and ERIC Workshop: Biodiversity and Ecosystem Responses to Climate Change (12–13 June 2025 – Lecce - Italy)*

***Funding**: Project funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.4—Call for tender No. 3138 of 16 December 2021, rectified by Decree n.3175 of 18 December 2021 of Italian Ministry of University and Research funded by the European Union—Next Generation EU [Project code CN_00000033, Concession Decree No. 1034 of 17 June 2022 adopted by the Italian Ministry of University and Research, CUP F87G22000290001, Project title "National Biodiversity Future Center—NBFC"].*

law-and-economics perspective, this study argues that economic instruments—such as taxes, subsidies, tradable permits, and payments for ecosystem services—play a crucial role in translating biodiversity commitments into effective and actionable policy measures. The article concludes that future biodiversity governance is likely to rely increasingly on economic approaches to complement legal obligations and enhance their practical effectiveness.

Keywords*: Biodiversity, Law and economics, Ecosystem services, Economic instruments, International environmental law.*

1. INTRODUCTION

There is growing evidence of a worldwide decline in biodiversity. Research has demonstrated that biodiversity is closely tied to the proper functioning of ecosystems.[3] Consequently, reductions in biodiversity are likely to undermine ecosystem productivity and stability. For this reason, preserving biodiversity is crucial and can be achieved, for instance, by strengthening natural mechanisms such as resource partitioning through human initiatives like establishing biodiversity hotspots and parks - or by reducing human-driven activities that cause significant biodiversity loss, including land-use change, invasive species introductions, and climate change (Lenzi et al., 2023).

The concept of biodiversity has evolved significantly since its inception, reflecting advancements in scientific understanding, ecological awareness, and societal values. From the initial affirmation of the importance of the aspect of "species richness and variety" and their simple counts (Tangley, 1985) to the more sophisticated definition of the "ecological dimension" (Díaz & Malhi, 2022). Moreover, other aspects have been considered, such as the "genetic dimension" (Jörger & Schrödl, 2013) and the "cultural dimension" (Hill et al., 2011). Against this background, this article adopts a law-and-economics perspective to examine how international biodiversity governance has progressively incorporated economic reasoning and incentive-based instruments alongside traditional conservation approaches.

Over the past decade, there has been a notable shift in focus towards ecosystem services and human well-being. The Convention on Biological Diversity (CBD) at Art. 2 defines biological diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". Notably, this definition explicitly includes ecosystems, whereas many other definitions exclude them - likely because ecosystems comprise both living and nonliving components (such as water, minerals, and other physical factors) that do not fall under taxonomic biodiversity (Petersson & Stoett, 2022).

"Biological diversity, or biodiversity for short, means the diversity of life in all its forms. It is not uncommon though to regard biodiversity to be the number of species of organisms that inhabit Earth". This definition of biodiversity is provided in "Economics of Biodiversity", an

[3] Researchers have conducted controlled laboratory experiments to examine whether alterations in specific components of biodiversity, such as species richness, influence key aspects of ecosystem functioning. Their findings indicate that ecosystem stability is determined by species richness, community composition, and genetic diversity. Naeem, S. et al. (2009).

independent, global review that Her Majesty's Treasury (UK) commissioned to Sir Partha Dasgupta, an economist and Professor Emeritus at Cambridge University (Dasgupta, 2021). This document establishes the increasingly frequent use of the economic approach to the definition of global biodiversity governance that will be investigated in this article (Schumacher, 2022).

Particularly, we explore the increasing affirmation of the concept of biodiversity in environmental conventions and other international initiatives since the 70s through the analysis of their text and conceptual framework. For this purpose, we apply a text analysis methodology to detect the most frequent words in three groups of conventions (Conventions in the 70s; Conventions by Nations; Conventions on Biological Diversity). In the following, we consider the conceptual framework of a different type of initiatives (The Global Assessment of Biodiversity and Ecosystem Services and The Biodiversity EU Strategy). In this last group we analyze their conceptual framework and we observe the increasing role of the economic approach. Finally, we consider the relationship between ecology and economy in the Kunming-Montreal Global Biodiversity Framework that determines the use of positive economic incentives for the conservation and sustainable use of biodiversity. As a conclusion, the analysis of the relationship between ecology and economy in the definition of biodiversity helps to find a more practical approach to the conservation and protection of biodiversity through real actions. Together with growing attention from international institutions, the economic approach will likely play an essential role in the future conservation of "biodiversity".

2. LITERATURE REVIEW

a. Biodiversity and International Environmental Law

The concept of biodiversity has progressively evolved within international environmental law from a narrow ecological focus on species conservation toward a broader and more integrated understanding that encompasses ecosystems, genetic resources, and human well-being. Early international conventions adopted in the 1970s—such as the Ramsar Convention on Wetlands and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—were primarily oriented toward the protection of specific natural resources or species categories. These instruments reflected an ecological preservation approach, largely detached from economic considerations and focused on regulatory restrictions rather than incentive-based mechanisms.

The adoption of the Convention on Biological Diversity (CBD) in 1992 marked a turning point in global biodiversity governance. The CBD introduced a comprehensive definition of

biological diversity, explicitly including ecosystems and recognizing the interdependence between conservation, sustainable use, and the fair and equitable sharing of benefits arising from genetic resources. Scholars have emphasized that the CBD represents a shift from sectoral conservation efforts toward an integrated governance framework capable of addressing biodiversity loss at multiple levels (Petersson & Stoett, 2022).

Subsequent protocols adopted under the CBD framework, such as the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit-Sharing, further expanded the legal architecture of biodiversity governance. These instruments refined the regulatory treatment of biotechnology risks and benefit-sharing mechanisms, respectively, reflecting the growing complexity of biodiversity-related challenges in a globalized economy.

Despite these advances, the literature highlights persistent gaps in the effectiveness of international biodiversity law, particularly in terms of implementation and compliance. Legal scholars note that binding commitments alone have often proven insufficient to halt biodiversity loss, especially in the absence of adequate economic incentives and institutional capacity (Kok & Ludwig, 2022).

b. Ecosystem Services, Human Well-Being, and Valuation

Parallel to developments in international environmental law, from an ecological and economic perspective, the role of ecosystem services in supporting human well-being has been increasingly emphasized. The Millennium Ecosystem Assessment (MEA, 2005) played a foundational role in framing biodiversity not merely as an intrinsic ecological value but as a provider of essential services such as food production, climate regulation, water purification, and cultural benefits. Subsequent studies have deepened this perspective by empirically demonstrating the link between biodiversity loss and declines in ecosystem functioning and resilience (Cardinale et al., 2012; Loreau et al., 2021). This body of literature underscores that biodiversity loss entails not only ecological risks but also significant economic and social costs.

Economic valuation of ecosystem services has therefore become a central theme in biodiversity-related research (Helm & Hepburn, 2012). While scholars acknowledge methodological challenges and ethical concerns associated with monetizing nature, valuation approaches are widely recognized as instrumental in informing policy decisions and integrating biodiversity considerations into economic planning (de Groot et al., 2010; Dasgupta, 2021).

c. Law and Economics Approaches to Biodiversity Governance

The law and economics literature provides a complementary analytical lens by focusing on incentives, behavior, and institutional design. From this perspective, biodiversity loss is

understood as a consequence of market failures, including negative externalities, public goods characteristics, and information asymmetries.

Traditional command-and-control regulation has been criticized for its limited flexibility and high enforcement costs. In contrast, economic instruments—such as taxes, subsidies, tradable permits, and payments for ecosystem services—are designed to internalize environmental externalities by altering price signals faced by economic actors (Porrini, 2019).

Recent contributions emphasizes that incentive-based instruments can achieve biodiversity conservation objectives more cost-effectively, particularly when combined with robust legal frameworks and governance structures (Deutz et al., 2020; Reyes-García et al., 2025). The growing integration of economic tools within international biodiversity governance reflects this analytical shift (OECD, 2025).

While this strand of literature has significantly advanced the understanding of biodiversity governance from an economic perspective, it remains limited in explaining how economic reasoning is concretely embedded within the language and structure of international legal instruments. This article addresses this gap by linking economic analysis to a systematic textual examination of biodiversity-related conventions.

d. Research Gap and Contribution of the Present Study

While existing literature has extensively examined biodiversity governance from legal, ecological, and economic perspectives, fewer studies systematically analyze how the language and conceptual framing of international biodiversity instruments reflect a gradual transition from an ecological to an economic approach. Moreover, limited attention has been paid to the role of conceptual frameworks—such as those developed by IPBES and the European Union—in operationalizing the link between biodiversity conservation and economic incentives.

This article contributes to the literature by combining textual analysis of international biodiversity conventions with a law-and-economics interpretation of emerging conceptual frameworks. By doing so, it sheds light on the increasing prominence of economic reasoning in global biodiversity governance and its implications for future conservation strategies.

3. CONCEPTUAL FRAMEWORK: A LAW AND ECONOMICS PERSPECTIVE ON BIODIVERSITY

This study adopts a law and economics conceptual framework to analyze the evolving role of biodiversity within international environmental governance. The framework is grounded in the assumption that legal instruments influence environmental outcomes primarily by shaping economic incentives and behavioral responses (Faure & Skogh, 2003; Porrini, 2017). In this direction, the conceptual framework adopted in this paper does not aim to develop a formal

economic model. Rather, it serves as an analytical tool to interpret how legal instruments shape economic incentives and behavioral responses in the context of biodiversity governance.

At the core of the framework lies the interaction between legal rules, economic incentives, and behavioral outcomes. International conventions and policy initiatives—such as the CBD, the Kunming-Montreal Global Biodiversity Framework, and regional strategies—establish legal obligations, standards, and policy objectives. These legal instruments, however, do not operate in isolation. Their effectiveness depends on how they translate into incentives that affect the decisions of states, firms, and individuals.

From an economic perspective, biodiversity loss is driven by externalities, where the social costs of environmental degradation are not fully borne by those who cause it (Giglio et al., 2024). Incentive-based instruments aim to correct these market failures by internalizing environmental costs or rewarding conservation-friendly behavior. Taxes, fees, subsidies, tradable permits, and payments for ecosystem services represent mechanisms through which legal frameworks can influence economic behavior (Ring et al., 2010).

The framework also incorporates institutional and governance variables, including enforcement capacity, compliance mechanisms, and stakeholder participation. These factors mediate the relationship between legal norms and actual outcomes. Weak institutions or inadequate enforcement may undermine even well-designed incentive schemes, whereas strong governance structures can enhance their effectiveness (Clement et al., 2015).

Finally, the framework links behavioral responses to biodiversity and welfare outcomes. Changes in land use, resource exploitation, and investment decisions affect ecosystem integrity and the provision of ecosystem services, which in turn influence human well-being and economic sustainability. By explicitly mapping these relationships, the conceptual framework provides an analytical foundation for understanding the growing integration of economic approaches within international biodiversity governance.

4. ANALYSIS OF THE CONTENT OF BIODIVERSITY INTERNATIONAL CONVENTIONS

The objective of this section is to analyze the lexical content of the international conventions that have been issued on the subject of biodiversity. First of all, we will try to highlight what these conventions focus on through the analysis of the words and expressions that are used most frequently.

To implement the right text mining methodology, a three steps research procedure has been followed:

1. The identification of the goal of the analysis: the goal of the analysis has been identified as considering the frequency of specific words or expressions in convention texts;
2. The choice of the method to be used to meet this goal: a "word counting" program has been chosen;
3. The selection of a sampling set that accurately represents the research object: a sampling set composed by selected conventions have been identified on the base of the ones generally indicated in the literature about "biodiversity".

a. Methodology

To detect the frequency of words and expressions in the selected international conventions we implemented in its most basic form a text analysis, essentially "counting the words" and calculating their frequency in the text.

We used https://wordcounter.net/ which is a simple user interface that features a prominent word and character count, even large text areas, with various controls and a sidebar that promises detailed text analysis. So, the text analysis consists in specifying individual lexical items (words, phrases) under investigation and observing patterns.

In detail, we analyzed the most common single word and expression with two words. We then detected the context in which the word has been used (just a mention, definition, explicit use of the concept). The analysis was limited only to nouns (excluding for example expressions like "any" or "shall").

b. The sample

The sample is composed by selected documents that are international conventions, with the exception of only one document only (The Environment Protection and Biodiversity Conservation Act – EPBC) that is a national act. We decided to include this last documents to consider the contribution of a very important geographical area (Australia).

We grouped the selected documents as follows:

The first group, named "Conventions in the 70s", includes:

1. the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (RCW);
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
3. Convention on the Conservation of Migratory Species of Wild Animals (CMS).

The second group, named "Conventions by Nations", includes:

4. The United Nations Convention on the Law of the Sea (UNCLOS);

5. The African Convention on the Conservation of Nature and Natural Resources (ALGIERS);
6. The Environment Protection and Biodiversity Conservation Act (EPBC)2

The third group, named "Conventions on Biological Diversity", includes:

7. The Convention on Biological Diversity (CBD);
8. Cartagena Protocol on Biosafety;
9. Nagoya Protocol on Access and Benefit-sharing.

By selecting this type of documents we are aware of reducing the analysis to multilateral international agreements only and excluding non-state and subnational initiatives that has recently became very relevant (Kok and Ludwig, 2022).

c. The analysis

First group: Conventions in the 70s

As a first group of Conventions, we considered the ones issued in the 70s.

The Ramsar **Convention on Wetlands of International Importance especially as Waterfowl Habitat** (RCW) aims to conserve wetlands and their biodiversity. It promotes the sustainable use of wetland resources and recognizes the ecological importance of these areas. The Contracting Parties to the RCW are now 172 (https://www.ramsar.org/).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was established to regulate global trade in wild animals and plants, ensuring that such activities do not endanger their survival. The initiative originated from a resolution adopted in 1963 during a meeting of the International Union for Conservation of Nature (IUCN). After negotiations, the Convention was formally agreed upon by representatives of 80 nations in Washington, D.C., on 3 March 1973, and it came into effect on 1 July 1975. Today, CITES counts 184 member states (https://www.cites.org/).

Few years later, in 1979, the **Convention on the Conservation of Migratory Species of Wild Animals** (CMS) aims to conserve migratory species and their habitats, promoting international cooperation to protect species that migrate across borders. The Contracting Parties are now 133 (https://www.cms.int/).

Convention	**Text Length**	**Most frequent and significant words**	**Most frequent expressions (2 words)**
Ramsar Convention on Wetlands of International	2232	Contracting 54 (6%) Parties 41 (4%)	Contracting Parties 39 (8%) Flora Fauna 6 (1%)

Importance especially as Waterfowl Habitat (RCW) – 1971		Westland 35 (4%) Convention 29 (3%)	Westland Flora 5 (1%)
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – 1973	6982	Convention 85 (3%) Species 81 (3%) State 74 (3%)	Present Convention 53 (4%) Management Authority 47 (3%) Species Included 38 (3%)
Convention on the Conservation of Migratory Species of Wild Animals (CMS) – 1979	4660	Species 101 (6%) Parties 87 (5%) Migratory 75 (4%)	Migratory Species 75 (9%) Conference Parties 39 (5%) Conservation Status 15 (2%)

Table 1: Text analysis of the first group of conventions

Source: Authors' elaboration on the text of the conventions

From the text analysis, in terms of the length, these Conventions were originally not very long: they mainly contain general statements to define specifically fields in terms of natural resources. The lexical choice is characterized by the use of words that outline the specificity of the conventions (Contracting, Parties, State) and the object of the Conventions (Westland Species, Migratory, Westland Flora).

We can derive that these conventions are characterized by the aim to promote the conservations of some kinds of natural resources and in this sense they are more ecological oriented. Even if these conventions do not explicitly talk about biodiversity, they present a well-defined target in terms of protection of a certain kind of natural resources for which it is considered necessary to preserve.

- **Second group of Conventions by Nations**

We considered then another group of documents characterized by an agreement between specific groups of countries.

Adopted in 1982, the **United Nations Convention on the Law of the Sea** (UNCLOS) is an international treaty under the United Nations that establishes a comprehensive legal framework for all marine and maritime activities. It sets out a regime of law and order for the world's oceans and seas, defining rules for their use and the exploitation of their resources. The Convention also serves as the foundation for the further development of specific areas of

maritime law. As of October 2024, 169 sovereign states and the European Union are parties to UNCLOS (https://www.unclos.org/).

The African Convention on the Conservation of Nature and Natural Resources, also referred to as the Algiers Convention, represents a comprehensive regional framework for safeguarding biodiversity and natural resources across Africa. Initially adopted in 1968, it was considered the most progressive regional agreement of its time, exerting a major influence on the evolution of environmental law on the continent. Nevertheless, the rapid advancements in international environmental law over the following twenty-five years highlighted the need to revise and expand the treaty's provisions. This revision, conducted under the authority of the African Union, was officially endorsed by the Heads of State and Government in July 2003 at the Maputo summit (https://au.int/en/treaties/african-convention-conservation-nature-and-natural-resources).

Enacted in 1999, the **Environment Protection and Biodiversity Conservation Act** (EPBC Act) is Australia's primary environmental law. It establishes a legal framework for protecting and managing certain plants, animals, habitats, and places- including heritage sites, marine areas, and unique wetlands. Together with its regulations, the EPBC Act serves as Australia's central national environmental legislation, providing mechanisms to safeguard and manage both nationally and internationally significant biodiversity and ecosystems (https://www.dcceew.gov.au/environment/epbc).

Convention	**Text Length**	**Most frequent and significant words**	**Most frequent expressions (2 words)**
United Nations Convention on the Law of the Sea (UNCLOS) – 1982	73963	States 633 (3%) State 587 (3%) Authority 370 (2%)	Coastal States 187(3%) States Parties 141 (2%) Territorial Sea 118 (2%)
African Convention on the Conservation of Nature and Natural Resources (ALGIERS) – 1968/2003	8924	Convention 138 (5%) Parties 117 (4%) Resources 97 (3%) Natural 97 (3%) African 57 (2%)	Natural Resources 68 (6%) Conservation Nature 41 (4%) African Convention 40 (4%)
Environment Protection and	162726	Conservation 1332 (3%)	Environmental Protection 613 (3%)

Biodiversity Conservation Act (EPBC) – 1999		Heritage 1173 (2%) Commonwealth 1039 (2%)	Conservation Act 603 (3%) Protection Biodiversity 601 (3%)

Table 2: Text analysis of the second group of conventions

Source: Authors' elaboration on the text of the conventions

From the analysis of the text length, it is evident that the documents of this group are longer than the previous ones, and they are very much oriented towards defining a regime of biodiversity protection in specific geographical areas. In fact, the most frequent words are: States, Parties, Authority, Coastal States Territorial Sea. In the text of EPBC the expression "Protection Biodiversity" is one of the most relevant.

In efforts to halt and reverse biodiversity loss, such conventions play a crucial role in conservation, each designed to address the specific ecological and socio-economic challenges of its region. By fostering cooperation among countries to conserve natural resources, these conventions are generally more elaborate and complex, representing an advancement compared to those of the previous group.

- **The Convention on Biological Diversity**

The **Convention on Biological Diversity (CBD)** was adopted in 1992 at the Earth Summit in Rio de Janeiro with the aim to conserve biodiversity, promote sustainable use of its components and ensure fair sharing of benefits arising from genetic resources (https://www.cbd.int/).

The **Cartagena Protocol on Biosafety** is a supplementary agreement to the CBD, adopted in 2000, it focuses on the safe transfer, handling, and use of living modified organisms to protect biodiversity from potential risks associated with biotechnology.

The **Nagoya Protocol on Access and Benefit-sharing** was adopted in 2010 with the aim to share the benefits arising from the utilization of genetic resources in a fair and equitable way. It provides a framework for access to genetic resources and traditional knowledge.

Convention	**Text Length**	**Most frequent and significant words**	**Most frequent expressions (2 words)**
Convention on Biological Diversity (CBD) - 1992	9962	Convention 140 (4%) Parties 139 (4%) Biological 131 (4%) Diversity 119 (3%)	Biological Diversity 117 (8%) Convention Biological 45 (3%) Conservation Sustainable 28 (2%) Conservation Biological 25 (2%)

Cartagena Protocol on Biosafety - 2000	9631	Protocol 165 (4%) Parties 124 (3%) Living 108 (3%) Modified 107 (3%)	Living Modified 106 (6%) Modified Organism 54 (3%) Biological Diversity 41 (2%) Protocol, Biosafety 40 (2%)
Nagoya Protocol on Access and Benefit-sharing – 2010	8184	Resources 123 (4%) Parties 123 (4%) Genetic 110 (3%) Access 107 (3%)	Genetic Resources 105 (6%) Benefit Sharing 77 (4%) Biological Diversity 33 (2%) Indigenous Local 33 (2%)

Table 3: Text analysis of the third group of conventions

Source: Authors' elaboration on the text of the conventions

From the analysis of the text, it is evident that this Group of Conventions is homogenous in terms of length and content within the CBD framework. They are very much oriented than the previous ones in defining in technical terms the specific biological characteristics (Biological Diversity, Modified Organism) but also defining targets (Conservation Sustainable, Benefit Sharing).

By the lexical analysis, we can say that the work carried out within the CBD framework in the first twenty years of activity (1990-2010) is mostly oriented towards the scientific definition of biodiversity from a biological point of view.

In the following years, however, there was a profound change and broadening of the perspective which went from being scientific to becoming multidisciplinary. This is clearly evident in sentences like the following: "The Convention recognizes that biological diversity is about more than plants, animals and microorganisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live" (Secretariat of the Convention on Biological Diversity, "How the Convention on Biological Diversity promotes nature and human well-being," 2020).

Subsequently, The Kunming-Montreal Global Biodiversity Framework (GBF) was adopted during the fifteenth Conference of the Parties (COP 15), after four years of consultations and negotiations. Building on the Convention's earlier Strategic Plans and aligned with the Sustainable Development Goals, this landmark framework provides a comprehensive roadmap to achieve the long-term vision of living in harmony with nature by 2050, which will be further examined in section 4.

5. BEYOND THE BIODIVERSITY CONVENTIONS: THE IBPES PLATFORM AND THE BIODIVERSITY EU STRATEGY

In this section we are going to analyze two initiatives that are peculiar in the use of a different kind of environmental agreements rather than conventions. These two are not formally conventions, but they are the expression of a different kind of initiatives in terms of biodiversity as we will see in the following.

a. IPBES

The first one is the so called IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). IPBES is an intergovernmental organization established in Panama City, on 21 April 2012 by 94 Governments to improve the interface between science and policy on issues of biodiversity and ecosystem services. It is intended to serve a similar role to the Intergovernmental Panel on Climate Change, but with a specific focus on nature and its contributions to people.

The primary objective of IPBES is to provide governments, the private sector, and civil society with scientifically credible, independent, and up-to-date assessments of existing knowledge to inform evidence-based policy and action at local, national, regional, and global levels. Central to IPBES's work is its conceptual framework on biodiversity and ecosystem services, which supports analytical activities, guides the development and evolution of its work program, and aims to catalyze transformative change in addressing the drivers of biodiversity loss and ecosystem degradation.

This conceptual framework identifies six interlinked elements of a social-ecological system that function across multiple scales in time and space: 1) Nature; 2) Nature's contributions to people; 3) Anthropogenic assets; 4) Institutions, governance systems, and other indirect drivers of change; 5) Direct drivers of change; 6) Good quality of life.

These components and their interrelations are detailed in the framework adopted by IPBES and further elaborated in a scientific publication (Díaz et al., 2015). As illustrated in Figure 1, the framework provides a simplified model of the complex interactions between natural systems and human societies. By identifying the most relevant elements and their interconnections, the framework offers a foundation for assessments, knowledge generation, and capacity-building efforts that support the platform's overarching goal.

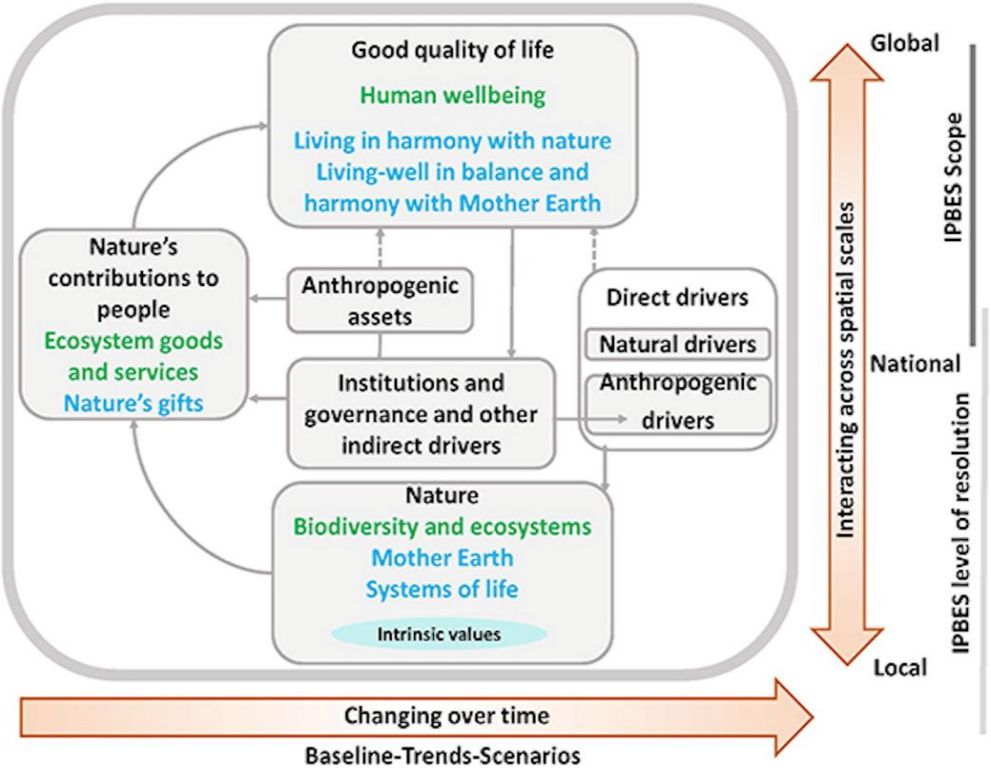

Figure 1 - The IPBES Conceptual Framework

Source: Diaz et al. 2015

Within the IPBES Conceptual Framework, the central panel uses boxes and arrows to represent the key elements of nature and society that form the core focus of the Platform. Each box includes black headlines that identify broad, inclusive categories intended to be meaningful for all stakeholders. The labels incorporate scientific categories (shown in green) as well as analogous or equivalent categories from other knowledge systems (shown in blue).

Human-centered (anthropocentric) values of nature are reflected in the boxes labeled "nature", "nature's contributions to people", and "good quality of life", as well as in the arrows linking them. In contrast, "nature's intrinsic values", illustrated by a blue oval at the base of the nature box, are considered independent of human experience and therefore are not included in these connections. The thick colored arrows along the bottom and right edges of the panel highlight that interactions among these elements evolve over time (horizontal arrow) and take place across different spatial scales (vertical arrow). The vertical lines adjacent to the spatial scale arrow indicate that while IPBES assessments primarily address supranational to global scales, they also draw upon processes and relationships occurring at national and subnational levels.

A defining innovation of the framework is its transparent, participatory development process, which explicitly integrates a wide range of scientific disciplines, stakeholders, and knowledge systems, including indigenous and local knowledge. In this way, the framework serves as a

shared foundation—broad, inclusive, and general—that enables collaboration among diverse actors and supports collective efforts toward achieving the Platform's overarching goals.
IPBES has also introduced a renewed definition of biodiversity for the intergovernmental arena, drawing substantially from the CBD's formulation. It defines biodiversity as: "The variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are a part. This includes variation in genetic, phenotypic, phylogenetic, and functional traits, as well as changes in abundance and distribution over time and space, within and among species, biological communities, and ecosystems". This definition underscores the focus on living components, aiming to uphold the intent of the CBD's original definition while aligning more closely with contemporary ecological theory.

i. The EU Biodiversity Strategy

In 2011, the European Commission adopted the EU Biodiversity Strategy, aimed at implementing a set of measures to halt the loss of biodiversity and ecosystem services within the Union by 2020. This strategy reflects the commitments undertaken by EU member states under the framework of the Convention on Biological Diversity (CBD) in 2010.
The originality of this European initiative consists in the formulation of a document based on a series of specific strategies to achieve six well-defined targets:

1. Protecting Species and Habitats: By 2020, the conservation status of species and habitats protected under EU nature legislation should show significant progress, with 50% more species and twice as many habitats achieving secure or improved status.
2. Maintaining and Restoring Ecosystems: Ecosystems and the services they provide must be safeguarded and improved by creating green infrastructure and restoring at least 15% of degraded ecosystems.
3. Promoting Sustainable Agriculture and Forestry: By 2020, measurable improvements must be achieved in the conservation of species and habitats that depend on or are affected by agricultural and forestry practices, along with an enhancement of related ecosystem services.
4. Ensuring Sustainable Fishing and Healthier Seas: By 2015, fishing activities should become sustainable, and by 2020, fish stocks must be healthy, European seas must show improved conditions, and fishing practices should no longer cause significant harm to species or ecosystems.

5. Combating Invasive Alien Species: By 2020, invasive alien species must be identified, priority species controlled or eradicated, and measures implemented to prevent the introduction of new species that pose a threat to European biodiversity.
6. Halting Global Biodiversity Loss: The EU should strengthen its efforts to contribute to halting biodiversity loss on a global scale by 2020.

The overarching objective of the strategy is to reverse biodiversity loss and accelerate the EU's transition toward a resource-efficient and green economy. This will be achieved by protecting and restoring biodiversity and ecosystem services, enhancing the positive impacts of agriculture, forestry, and fisheries, reducing the main pressures on EU biodiversity, and stepping up the EU's global efforts to conserve biodiversity.[4]

As we can see in Figure 2, also for the EU Biodiversity Strategy a conceptual framework has been developed in the literature (Maes et al., 2016).

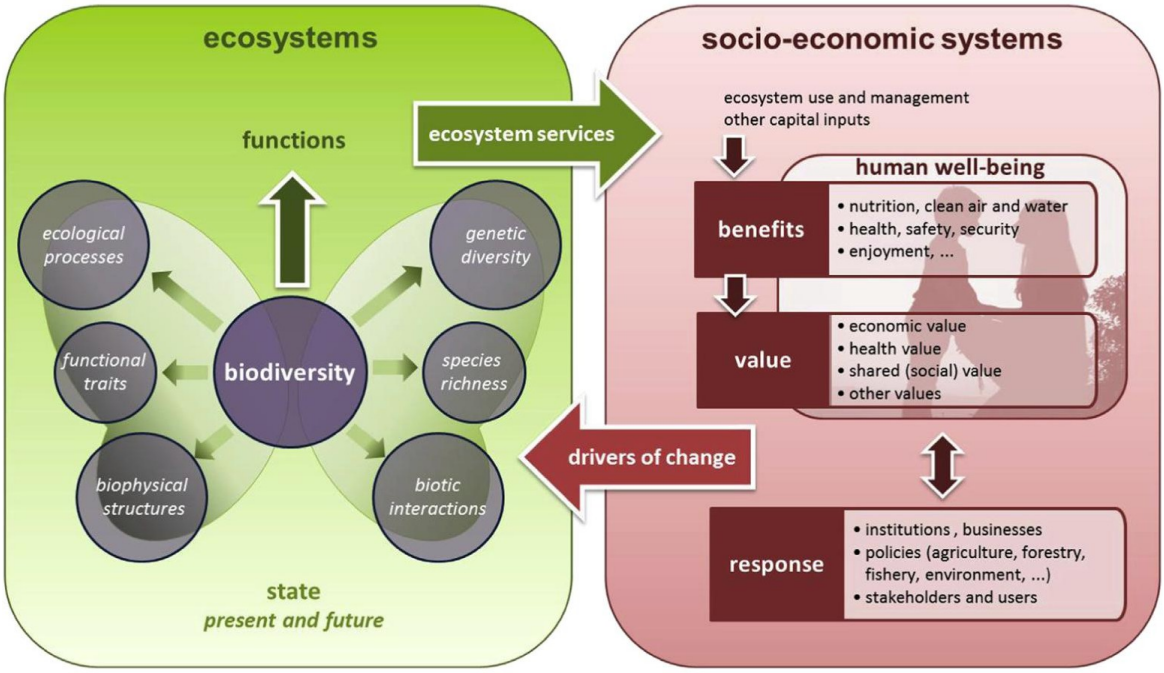

Figure 2 - The Conceptual Framework for EU Biodiversity Strategy to 2020

Source: Maes et al. 2016

[4] In 2015, a mid-term evaluation of the EU Biodiversity Strategy 2020 was carried out. The resulting report highlights areas requiring increased efforts to achieve the EU's biodiversity targets by 2020. It emphasizes that concrete action on the ground, supported by sufficient financial resources, can effectively safeguard and restore nature while preserving the benefits it delivers. The report firmly opposes any revision of the existing Directives and instead advocates for strengthening their implementation, with consideration for economic, social, and cultural needs. Furthermore, it underscores the necessity of expanding financial tools dedicated to biodiversity protection and enhancing the connection between existing funding sources.

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In this simplified version, the conceptual framework connects socio-economic systems with ecosystems through the flow of ecosystem services, as well as through drivers of change. These drivers place pressure on ecosystems and their biodiversity, either as a direct result of using these services or as indirect impacts of human activities more broadly (MEA, 2005).

The EU Biodiversity Strategy aims to protect the status of all species and habitats under EU nature legislation and to achieve measurable and significant improvements in their conservation. To support this goal, assessments of habitats and species will be enhanced. Additionally, ecosystems and their services will be safeguarded and improved through the establishment of green infrastructure and the restoration of degraded ecosystems.

Integration across key sectors such as agriculture, forestry, and fisheries will be prioritized, with specific targets and actions to promote their positive contributions to biodiversity conservation and sustainable use. Ecosystem-based approaches will also be incorporated into climate change mitigation and adaptation strategies. These approaches provide cost-effective alternatives to technological solutions and deliver multiple benefits beyond biodiversity protection. Furthermore, pathways of invasive alien species will be identified to prevent their introduction and spread.

The EU Biodiversity Strategy emphasizes the ecosystem concept, which highlights the interactions between communities of living organisms and their environments. Biodiversity plays a fundamental role in supporting ecosystem functions (Cardinale et al., 2012; Mace et al., 2012). This concept establishes a connection between the habitats and species safeguarded by the EU Habitats Directive (European Union, 1992) and the spatial provision of ecosystem services, assigning specific roles to service providers according to their respective contributions. This is especially pertinent for protected habitats, which cover nearly half of the EU's terrestrial area. Ecosystem functions refer to the inherent capacity of ecosystems to generate services (de Groot et al., 2010). In this framework, ecosystem services represent the actual flow of benefits that meet societal demands, including goods derived from ecosystems. As Loreau et al. (2021) observe "Biodiversity can buffer ecosystem functioning against the disruptive effects of environmental fluctuations".

The governance of coupled socio-economic–ecological systems is a core element of the framework. Institutions, stakeholders, and users of ecosystem services influence ecosystems through both direct and indirect drivers of change (Kenward et al., 2011). Natural resource management policies (e.g., agriculture) seek to steer these drivers to achieve desired ecosystem outcomes. At the same time, many other policies—such as those on energy or territorial

cohesion—also shape these drivers, and thus affect ecosystems even if biodiversity is not their explicit focus.

After a few years an even more ambitious initiative was launched by the European Union, the EU Biodiversity Strategy for 2030, a long-term plan to protect nature and reverse the degradation of ecosystems. It aims to restore Europe's biodiversity by 2030 and contributes to the post-2020 global biodiversity goals. The new Strategy seeks to designate protected areas covering at least 30% of both terrestrial and marine environments in Europe. It also aims to restore degraded ecosystems across the continent by promoting sustainable agricultural practices, reversing the decline of pollinator populations, and rehabilitating a minimum of 25,000 km of EU rivers to a free-flowing state.

As outlined in Hermoso et al. (2022), this document is characterized by the idea to correct the limit of the previous version of the EU strategy by: 1) coordinating the EU Member States; 2) integrating biodiversity conservation into socio-economic sectors, iii) finding adequate and sufficient funds, and iv) improving governance and stakeholder participation.

In this new European initiative, it is widely acknowledged that future biodiversity conservation will depend on the expansion and improved management of protected area networks, the mobilization of additional funding sources—including private sector contributions—and the development of more effective co-governance models. Nonetheless, identifying sustainable solutions to reconcile conservation with competing socio-economic objectives, as well as addressing inconsistencies among sectoral policies, will be essential.

6. THE RISING OF THE ECONOMIC APPROACH TO "BIODIVERSITY"

The Kunming-Montreal Global Biodiversity Framework (KMGBF), adopted within the CBD framework in December 2022, sets out four long-term goals to 2050 and 23 action-orientated targets that are intended to achieve the mission of the Framework, which is to halt and reverse biodiversity loss and put nature on a path to recovery by 2030.

Target 18 of the Kunming-Montreal Global Biodiversity Framework calls for governments to scale up positive incentives for the conservation and sustainable use of biodiversity.[5] The novelty is the official mention to the use of economic incentives that plays a crucial role in the achievement of the Target.

[5] Target 18. "Reduce Harmful Incentives by at Least $500 Billion per Year, and Scale Up Positive Incentives for Biodiversity Identify by 2025, and eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity, in a proportionate, just, fair, effective and equitable way, while substantially and progressively reducing them by at least 500 billion United States dollars per year by 2030, starting with the most harmful incentives, and scale up positive incentives for the conservation and sustainable use of biodiversity".

Positive incentives for biodiversity encompass the so called "incentive-based" instruments that provide economic incentives to conserve and sustainably use biodiversity: they include taxes, fees, environmentally-motivated subsidies, tradable permit schemes, payments for ecosystem services, and biodiversity offsets (De Masi & Porrini, 2021). The peculiarity of these instruments is to provide price signals to both producers and consumers to behave in a more environmentally-sustainable way. Compared to more traditional regulatory, such as command-and-control instruments, economic instruments provide continuous incentives to help achieve a given environmental objective in a more cost-effective way (Porrini, 2019).

Positive incentives are essential for integrating biodiversity considerations across various sectors, including changes in land and sea use, overexploitation of natural resources, and pollution. By promoting the recognition of the real value of biodiversity and ecosystem services in economic choices, these incentives can help mobilize private funding and investment in support of biodiversity. Moreover, these incentives are able to generate revenue from biodiversity-relevant taxes and fees that is, in cases, also earmarked to help finance biodiversity conservation and sustainable use. Looking for example at biodiversity-positive taxes, they provide economic incentives to promote the conservation and sustainable use of biodiversity, including taxes on pesticides, fertilizers, forest products, and timber harvests. These taxes are grounded in the polluter-pays principle, imposing additional costs on the use of natural resources or the emission of pollutants to account for the negative environmental externalities they generate. This economic approach encourages producers and consumers to adopt more environmentally sustainable practices (Deutz et al., 2020).

The OECD Environmental Policy Committee gathers both quantitative and qualitative data on environmental policy instruments through its Policy Instruments for the Environment (PINE) database, with data currently spanning 146 countries worldwide. This 2024 update of Tracking Economic Instruments and Finance for Biodiversity presents data on the biodiversity-relevant economic instruments on currently available data in PINE, as shown in Figure 3.

According to the OECD PINE database, 70 countries currently apply biodiversity-positive taxes. While the number of such taxes grew steadily from 1980, their adoption has slowed since around 2015. As of 2024, these countries have implemented a total of 227 biodiversity-positive taxes.

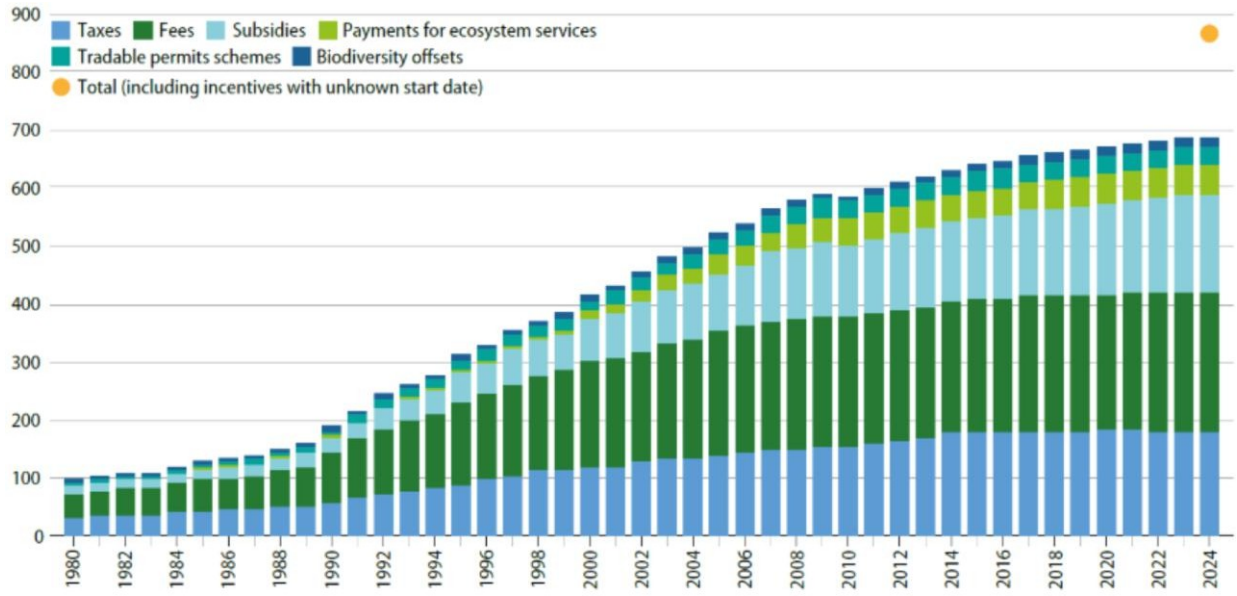

Figure 3 - Number of Active Biodiversity-Positive Incentives 1980-2024

Source: OECD PINE database, accessed November 2024

Biodiversity-positive fees (or charges) function in a similar way. Examples include entrance fees for national parks, hunting and fishing license fees, charges for land-based sewage discharges or groundwater abstraction, and fines for biodiversity-related non-compliance. Currently, 75 countries have biodiversity-positive fees in place depicts the trend in the number of countries with biodiversity-positive fees over 1980-2024. The number of active biodiversity-positive fees is 301 and the trend is increasing, as shown in Figure 3.

Tradable permits relevant to biodiversity include instruments such as individual transferable quotas (ITQs) for fisheries, tradable development rights, and tradable hunting rights. These tools establish a total cap on the exploitation of a natural resource and then distribute individual permits to users, which can be exchanged. Permit allocation can occur through grandfathering—assigning permits free of charge to current resource users, often indefinitely - or through auctions. When auctioned, tradable permits can also provide a source of revenue.

Currently, 25 countries have biodiversity-positive tradable permits, with a total of 34 schemes. According to the PINE data, in 2024, ITQs for fisheries are the main type of biodiversity-positive tradable permit schemes.

Biodiversity offsets are defined as quantifiable conservation results achieved through actions aimed at compensating for significant remaining negative impacts on biodiversity caused by project development, once suitable prevention and mitigation measures have been implemented. They are applicable to a wide range of sectors (e.g. mining, wind power, property development) and can be used to compensate for impacts on a variety of ecosystems.

Biodiversity offset schemes operate with an overall objective of no net loss of biodiversity, with some schemes adopting a more ambitious objective of a net gain in biodiversity. By imposing additional costs on developers whose activities have adverse impacts on biodiversity, biodiversity offsets are thus in line with the polluter pays approach.

Since 2022, the PINE database also allows for the reporting of information on biodiversity offset schemes, thereby providing a platform where data on biodiversity offset schemes can be collected in a structured and harmonized way across countries. While comprehensive data on biodiversity offsets is not yet available, the PINE database contains 9 countries with biodiversity offsets programs in 2024, covering a total of 17 active biodiversity offset schemes. While recent data on finance mobilized by biodiversity offsets is not yet available, previous studies have estimated that the finance mobilized by biodiversity offset schemes was in the order of USD 6.3-9.2 billion per year (Deutz et al., 2020).

Biodiversity-positive subsidies can be defined as environmentally beneficial if it reduces directly or indirectly the use of something that has a proven, specific negative impact on the environment. Biodiversity-positive subsidies include, for example, grants or loans to help finance sustainable forest management and reforestation, organic or pesticide-free agriculture, and land conservation.

There are currently 34 countries that have biodiversity- positive subsidies with a total of 240 biodiversity-positive subsidies, as reported in the PINE database.

Payments for ecosystem services (PES) are described as: (1) voluntary agreements, (2) between those who benefit from ecosystem services and (3) those who manage or provide them, (4) contingent on compliance with agreed-upon natural resource management practices, (5) aimed at producing benefits beyond the site of service provision (Wunder, 2015). PES operate on the principle that the user or beneficiary bears the cost.

Since 2022, the PINE database also allows for the collection of information on PES programs, thereby providing a platform where data on PES schemes can be collected in a structured and harmonized way across countries. While comprehensive data on PES programs is not yet available, the PINE database contains 28 countries with active PES programs in 2024, covering a total of 51 PES programs.

7. CONCLUSION

By combining a textual analysis of international biodiversity conventions with a law-and-economics interpretation of emerging policy frameworks, this study highlights the gradual development of global initiatives and frameworks aimed at conserving biodiversity and

ecosystem services. Early conventions from the 1970s primarily focused on safeguarding specific natural resources with an ecological orientation but did not explicitly address biodiversity as a concept. Over time, these agreements evolved into more comprehensive instruments, particularly with the introduction of the Convention on Biological Diversity (CBD) and subsequent frameworks like the Kunming-Montreal Global Biodiversity Framework (KMGBF).

The CBD has progressively broadened its focus, moving beyond scientific definitions of biodiversity to embrace a multidisciplinary approach that includes social, economic, and cultural dimensions. The KMGBF, adopted in 2022, outlines strategies to halt and reverse biodiversity loss by 2030, emphasizing economic incentives and the integration of biodiversity considerations into wider economic sectors. This evolution reflects an increasing awareness of the intricate connections between natural systems and human well-being. Economic tools such as biodiversity-positive taxes, subsidies, and payments for ecosystem services (PES) have become pivotal in advancing conservation efforts. These mechanisms not only promote sustainable practices but also generate essential financial resources to combat environmental degradation. Their role is vital in driving sustainability and engaging the private sector in biodiversity objectives.

In parallel, initiatives like the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have strengthened the link between ecology and economy. IPBES provides governments and stakeholders with critical insights to inform decision-making, emphasizing the interplay between socio-economic systems and ecosystems. Its conceptual framework advocates for integrated, cross-disciplinary approaches to biodiversity management. Achieving global biodiversity goals requires ongoing commitment, innovation, and collaboration across all sectors. Recognizing biodiversity's value, not only for ecological purposes but also for its economic value, offers hope for the future. By aligning policies, scientific research, and financial strategies, it is possible to halt biodiversity loss, restore ecosystems, and secure a sustainable future.

In summary, the evolution of biodiversity governance, exemplified by the CBD, the Kunming-Montreal Framework, and regional initiatives like the EU Biodiversity Strategy, demonstrates a significant transition from a solely scientific focus to a holistic, multidisciplinary approach. Understanding the interconnectedness of biodiversity, ecosystem services, and human well-being is central to shaping sustainable environmental policies.

The increased reliance on economic mechanisms, such as incentives, taxes, and ecosystem service payments, provides innovative and cost-effective means of mainstreaming conservation

efforts across diverse sectors. These tools align financial and policy frameworks to effectively preserve biodiversity and promote ecosystem restoration.

Looking forward, the success of these frameworks will depend on robust international cooperation, effective governance, and expanded implementation of positive incentives. The collaboration between science, policy, and finance will be crucial in reversing biodiversity loss and fostering a future where nature and humanity thrive together.

REFERENCES

Cardinale, B. J., Duffy, J. E., Gonzalez, A., Hooper, D. U., Perrings, C., Venail, P., & Naeem, S. (2012). Biodiversity loss and its impact on humanity. *Nature, 486*(7401), 59–67. https://doi.org/10.1038/nature11148

Clement, S., Moore, S. A., Lockwood, M., & Morrison, T. H. (2015). A diagnostic framework for biodiversity conservation institutions. *Pacific Conservation Biology, 21*(4), 277–290. https://doi.org/10.1071/PC15032

Dasgupta, P. (2021). *The economics of biodiversity: The Dasgupta Review* (Abridged version). HM Treasury. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

de Groot, R. S., Alkemade, R., Braat, L., Hein, L., & Willemen, L. (2010). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity, 7*(3), 260–272. https://doi.org/10.1016/j.ecocom.2009.10.006

De Masi, F., & Porrini, D. (2021). Climate change remedies. In A. Marciano & G. B. Ramello (Eds.), *Encyclopedia of law and economics*. Springer. https://doi.org/10.1007/978-1-4614-7883-6_616-2

Deutz, A., Heal, G. M., Niu, R., Swanson, E., Townshend, T., Zhu, L, Tobin-de la Puente, J. (2020). *Financing nature: Closing the global biodiversity financing gap*. The Paulson Institute, The Nature Conservancy, & Cornell Atkinson Center for Sustainability.

Díaz, S., & Malhi, Y. (2022). Biodiversity: Concepts, patterns, trends, and perspectives. *Annual Review of Environment and Resources, 47*, 31–63. https://doi.org/10.1146/annurev-environ-120120-054300

Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Larigauderie, A.,… Zlatanova, D. (2015). The IPBES conceptual framework—Connecting nature and people. *Current Opinion in Environmental Sustainability, 14*, 1–16. https://doi.org/10.1016/j.cosust.2014.11.002

European Union. (1992). *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EU Habitats Directive)*.

Faure, M., & Skogh, G. (2003). T*he economic analysis of environmental policy and law – an introduction*. Edward Elgar, Cheltenham.

Giglio S., Kuchler T., Stroebel J., & Wang, O. (2024). The Economics of Biodiversity Loss, *NBER Working Paper* 32678 (2024), https://doi.org/10.3386/w32678.

Helm, D., & Hepburn, C. (2012). The economic analysis of biodiversity: An assessment. *Oxford Review of Economic Policy, 28*(1), 1–21. https://doi.org/10.1093/oxrep/grs014

Hill, R., Wallington, T. Robinson, C.J., Westcott, D.A., Stevenson, B., J. Davies and F. Walsh (2011). *Biodiversity planning—capturing multiple values in decision-making. A Framework for Research 2011-2015*. Marine and Tropical Sciences Research Facility (MTSRF) Transition Project Final Report. Reef and Rainforest Research Centre Limited, Cairns CSIRO Publishing.

Jörger, K. M., & Schrödl, M. (2013). How to describe a cryptic species? Practical challenges of molecular taxonomy. *Frontiers in Zoology, 10*, Article 59. https://doi.org/10.1186/1742-9994-10-59

Kenward, R. E., Whittingham, M. J., Arampatzis, S., Manos, B. D., Hahn, T., Terry, A.,… Leader-Williams, N. (2011). Identifying governance strategies that effectively support ecosystem services, resource sustainability, and biodiversity. *Proceedings of the National Academy of Sciences, 108*(13), 5308–5312. https://doi.org/10.1073/pnas.1007933108

Kok, M. T. J., & Ludwig, K. (2022). Understanding international non-state and subnational actors for biodiversity and their possible contributions to the post-2020 CBD global biodiversity framework. *International Environmental Agreements: Politics, Law and Economics, 22*(1), 1–25. https://doi.org/10.1007/s10784-021-09547-2

Lenzi, D., Balvanera, P., Arias-Arévalo, P., Eser, U., Guibrunet, L., Martin, A., Muraca, B., & Pascual, U. (2023). Justice, sustainability, and the diverse values of nature: Why they matter for biodiversity conservation. *Current Opinion in Environmental Sustainability, 64*, Article 101353. https://doi.org/10.1016/j.cosust.2023.101353

Loreau, M., Isbell, F., Gonzalez, A., Dee, L. E., Cowles, J., Schmid, B., & Reich, P. B. (2021). Biodiversity as insurance: From concept to measurement and application. *Biological Reviews, 96*(5), 2333–2354. https://doi.org/10.1111/brv.12756

Mace, G. M., Norris, K., & Fitter, A. H. (2012). Biodiversity and ecosystem services: A multilayered relationship. *Trends in Ecology & Evolution, 27*(1), 19–26. https://doi.org/10.1016/j.tree.2011.08.006

Maes, J., et al. (2016). An indicator framework for assessing ecosystem services in support of the EU Biodiversity Strategy to 2020. *Ecosystem Services, 17*, 14–23. https://doi.org/10.1016/j.ecoser.2015.10.023

Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Biodiversity synthesis*. World Resources Institute.

Naeem, S., Bunker, D. E., Hector, A., Loreau, M., & Perrings, C. (Eds.). (2009). *Biodiversity, ecosystem functioning, and human wellbeing: An ecological and economic perspective*. Oxford University Press.

Organisation for Economic Co-operation and Development (OECD). (2025). Scaling up biodiversity-positive incentives. OECD Publishing. https://doi.org/10.1787/19b859ce-en

Petersson, M., & Stoett, P. (2022). Lessons learnt in global biodiversity governance. *International Environmental Agreements: Politics, Law and Economics, 22*(2), 333–352. https://doi.org/10.1007/s10784-022-09565-8

Porrini, D. (2017). Environmental Policy (Choice). In: Marciano, A., Ramello, G. (Eds.). *Encyclopedia of Law and Economics*. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-7883-6_614-1

Porrini, D. (2019). Defining the efficient relation between different climate change policies. *International Journal of Global Environmental Issues, 18*(3), 236–248. https://doi.org/10.1504/IJGENVI.2019.102777

Reyes-García, V., Pandit, R., Benessaiah, K., Agrawal, A., Garibaldi, L. A., Ifejika Speranza, C., O'Brien, K., Parrique, T., & Villasante, S. (2025). Transforming the economic landscape for global sustainability. *Ecology and Society, 30*(3). https://doi.org/10.5751/ES-16262-300302

Ring, I., Drechsler, M., van Teeffelen, A.J., Irawan, S., Venter, O., (2010), Biodiversity conservation and climate mitigation: what role can economic instruments play? *Current. Opinion in Environmental Sustainability, 2*, 50-58

Schumacher, I. (2022). The economics of biodiversity: Building on the Dasgupta Review. *Environmental and Resource Economics, 83*(4), 909–910. https://doi.org/10.1007/s10640-022-00732-8

Tangley, L. (1985). A new plan to conserve the Earth's biota. *BioScience, 35*(6), 334–341. https://doi.org/10.1093/bioscience/35.6.334

Wunder, S. (2015). Revisiting the concept of payments for ecosystem services. *Ecological Economics, 117*, 234–243. https://doi.org/10.1016/j.ecolecon.2014.08.016

ABBREVIATIONS

ALGIERS	African Convention on the Conservation of Nature and Natural Resources
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
EPBC	Environment Protection and Biodiversity Conservation Act
GBF	Kunming-Montreal Global Biodiversity Framework
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
ITQs	Individual Transferable Quotas
IUCN	The International Union of Conservation of Nature
PINE	Policy Instruments for the Environment
RCW	Ramsar Convention on Wetlands
UNCLOS	United Nations Convention on the Law of the Sea