

Report on biodiversity and related concepts perceptions

Deliverable number: D1.1

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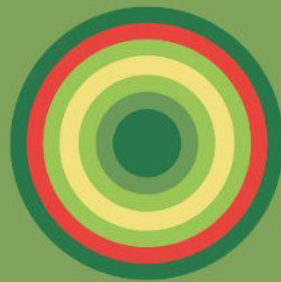
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PLANET4B

BETTER DECISIONS FOR BIODIVERSITY AND PEOPLE



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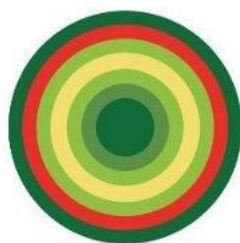
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The report will be the result of a systematic analysis of recent academic and grey literature, including images and posters, and print and digital media, and will identify the relationships between different social groups' worldviews, values, ideologies, politics their discourses on biodiversity, its communication and achieved impacts.

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List of abbreviations and acronyms

Acronym	Definition
AT	Austria
CG	CzechGlobe – Global Change Research Institute of the Czech Academy of Sciences
CH	Switzerland
CU	University of Coventry
DHA	Discourse Historical Analysis
ESSRG	Environmental Social Science Research Group
FAZ	Frankfurter Allgemeine Zeitung
FDP	Freisinnig-Demokratische Partei
FiBL	Research Institute of Organic Agriculture
FPÖ	Freiheitliche Partei Österreichs
FT	Financial Times
HN	Hospodarske noviny
IFZ	Interdisciplinary Research Centre for Technology, Work and Culture
IT	Italy
MDG	Miljøpartiet de Grønne
MLU	Martin Luther University of Halle-Wittenberg
M5S	Movimento 5 Stelle
NGO	Non-governmental organisation
NINA	Norwegian Institute for Nature Research
NO	Norway
NZZ	Neue Zürcher Zeitung
ÖVP	Österreichische Volkspartei
RSPB	Royal Society for the Protection of Birds
RU	Radboud University
SLS	Stiftung Landschaftsschutz Schweiz
SP	Sozialdemokratische Partei der Schweiz
SPÖ	Sozialdemokratische Partei Österreichs
SVP	Schweizerische Volkspartei
SZ	Süddeutsche Zeitung
TA	Tages Anzeiger
UNIPI	University of Pisa
WBSCD	World Business Council for Sustainable Development
WEF	World Economic Forum
WWF	World Wide Fund for Nature

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Executive summary

- This report provides insight into the biodiversity discourse by biodiversity-relevant actor groups in Europe
- The absence of a common understanding of biodiversity allows actor groups to choose rhetoric strategically
- Biodiversity discourse is used strategically to persuade, gather custom or support, or justify action or inaction
- Anthropocentric values are mostly used when arguing both for and against biodiversity conservation
- The biodiversity discourse is dominated by rhetoric of warning, persuading, calling for action, accusing, and informing
- The rhetoric used in biodiversity discourse differs between countries
- Knowledge of societal discourses are valuable to tailor interventions to promote biodiversity, such as those in PLANET4B case studies

1 Introduction

“Don’t know what biodiversity is? You can’t. Perhaps biodiversity is an appropriate term. The confusion it conveys reveals our pathetic weakness in thinking we can define, know, and control a nature that will always dance just beyond our grasp.”
(David Takacs, 1996, p. 341)

The meaning we assign to the world around us influences the way we behave and treat things. Therefore, it is of great importance to better understand how society views and understands fundamental challenges of our time, such as biodiversity loss. This knowledge will help to make social, political, or economic interventions more effective in preserving and enhancing biodiversity and also help communicate adequately about the issue of biodiversity loss.

What is biodiversity?

The term: ‘biodiversity’ is attributed to Walter G. Rosen who coined the term in 1986 at the conference of The National Forum on Biodiversity. It was an attempt to attract attention to the mass decline of species and destruction of natural ecosystems by humans (Jetzkowitz et al., 2012, Töpfer, 2019). Rosen intended to create room for ‘emotion and spirit’ in the scientific concept of ‘biological diversity’, so used a play on words by removing the ‘logical’ and merging the parts; thus ending up with the term ‘biodiversity’ (Rosen 1992, in Takacs 1996). Nowadays, the definitions given to the term are less emotionally loaded. For example, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem services (IPBES) 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 attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities and ecosystems.”*

However, since 1986 the term biodiversity has massively gained prominence in public, policy and science. Biodiversity has become a rather fuzzy term; being used in various contexts and relations, serving as an umbrella term for anything related to nature conservation or nature protection (Töpfer, 2019), or even as a *“scientized synonym*

for nature” (Takacs, 1996, p. 106). Whether such vagueness is powerful can be debated. Certainly, it has supported the term in becoming prominent (Töpfer, 2019).

What is a discourse?

The issue of biodiversity loss, like most environmental issues, is complex, with many associated factors including habitat destruction and degradation, agricultural intensification, climate change, urbanization, pollution, and introduced species and interconnected with all facets of modern life (Wagner, 2020). In order to deal with such issues, humans build their own understanding of the situation and try to make meaning of things (Dryzek, 2005). These meanings are socially constructed and also expressed in language as a discourse. A discourse contains “*representations and systems of meaning*” (Howarth, 2010, p. 311), is intersubjective, and reproduced and transformed by those who subscribe to it. Therefore, discourses are highly dependent on the context and subjective experiences of their meaning-making actors (Dryzek, 2005). Analysing discourses provides insight into how a group of people understand a certain issue and reveals a common worldview, the values and often beliefs that are attached to the problem, and potential solutions (Adger et al., 2002; Dryzek, 2005, Dryzek, 2013). Thereby discourses can coordinate the actions of large groups of people who subscribe to a shared understanding of the world.

Why do discourses matter?

Discourses matter because they embody power relations by implying values and thereby can support or suppress the interests of actors (Foucault, 1980). Proponents of discourses strive to make their understanding of a phenomenon the dominant story or the only true story, the latter being known as discursive hegemony (Hajer, 1995). When discourses become dominant, their understood power relations manifest in the real world through structuration and institutionalisation. Structuration describes the process when a certain phenomenon, and how it relates to the world, is repeatedly conceptualized in the same way (e.g. the reference of biodiversity as ecosystem services). Institutionalisation happens when understandings are further manifested in laws, policies, or institutions (Hajer, 2006). The availability of discourses in society influences our perception of what is possible and acceptable (Spash and Aslaksen, 2015). The analysis of dominant and alternative discourses in society help to understand why certain measures are taken and fostered or not.

1.1 Overview of the deliverable

Aim

With this analysis of the societal discourse on biodiversity, we aim to gain an understanding of how different social groups perceive and communicate about biodiversity, the worldview this implies, and how perceptions, communication, and worldviews intersect with values. In order to do so, we start by reviewing the existing academic literature on biodiversity discourses and identify the main discourses and implied values (section 2). Based on this we conduct discourse analysis using a Discourse-Historical Approach (the approach described in detail in subsection 1.2) on materials produced by four different biodiversity-relevant actor groups in Europe (news outlets, political parties, environmental NGOs, and business and industry leaders). The exact procedure for the analysis within each of these groups is described in the respective sections (3-6). Ultimately, the results of the different sub-analyses are discussed jointly, and the discourses within actor groups are discussed in relation to the scientific literature identified in the systematic review (section 7). We investigate

whether the term biodiversity is understood in the wider community and whether lack of understanding may leave the term open to use, or perhaps abuse, by actor groups to further their agenda. We hypothesise that the language used in the biodiversity discourse can be chosen by actor groups strategically with the intention of persuading an audience to take action or inaction, with influences on biodiversity outcomes, or to justify or explain their own action or inaction.

When considering societal discourse on biodiversity, it is important to remember that Europe is not homogenous but rather contains a wide variety of cultures who may understand, and use, the term 'biodiversity' differently. With consideration of the resource constraints of PLANET4B, we differentiate our analysis between European countries. Project partners from Italy, U.K., Switzerland, Czech Republic, The Netherlands, Hungary, Germany, Norway, and Austria each collected data that enabled the analysis of the discourse used by news outlets. Financial resources and the associated time restrictions did not allow data on political parties and environmental NGOs to be collected from every partner country, so these analyses are restricted to Italy, Switzerland, Norway and Austria for the analysis of the publications from political parties; and to the U.K., Switzerland, and Norway for the analysis of publications by NGOs.

The specific focus on the four actor groups in different national contexts enables us to deepen our knowledge of the PLANET4B target groups (civil society, policy makers, and business representatives), which will be used to inform the next steps within the project, and contribute to the Expected Outcome 1: "Conceptual understanding of how the terms biodiversity, ecosystem services and nature-based solutions are perceived by and communicated to the key target groups". In this study, we chose to focus on biodiversity, rather than ecosystem services and nature based solutions, because these are anthropocentric ways of evaluating biodiversity (along with intrinsic and science-centric). In that way, gaining an understanding of how biodiversity is perceived, valued, and communicated inherently includes an understanding of the roles of these anthropocentric perspectives.

This report covers extensive research work in four identified actor groups: news outlets, political parties, environmental NGOs, and business and industry leaders along with a review of academic literature on the topic of the biodiversity discourse. It is therefore extensive. However, we anticipate that some readers will only be interested in the discourse among specific actor groups, so each section is structured as a stand-alone text. We have therefore included methodological information for each of these groups in their respective sections, which may lead to some repetition.

1.2 Theoretical background: discourse historical approach

This study applies a discourse historical approach (DHA), which provides a structured way of identifying the values and rhetoric functions that are expressed within the texts that are analysed (Reisigl, 2017). Firstly, we use the DHA to identify the plurality of values of biodiversity. The DHA facilitates the identification of the argumentative or strategic use of language by actor groups, which we refer to as "rhetoric function" (Lönngren & van Poeck, 2010), and how the actor groups enlist values to enhance the functions. Finally, we use the DHA to guide the selection of actor groups from which the documents were sourced: namely academia, news outlets, environmental NGOs, business and industry, and political parties.

Plural values of biodiversity as part of dominant discourses

Anthropocentric discourse – instrumental values to humans

DHA includes a strong interest in how rhetoric is used to perform a range of functions, particularly with respect to tropes, genre theory (e.g., regarding press releases), and persuasion (including argumentation) (Reisigl, 2017), to promote individual or institutional, but always anthropocentric agendas. The anthropocentric discourse is often paired with the concept of 'ecosystem services' to refer to the benefits that humans receive from biodiversity, such as pollination or carbon sequestration (Muradian & Gomez-Baggethun, 2021). The frequency of this connection leads to the hypothesis that participants in the anthropocentric discourse around biodiversity frame their valuation of biodiversity in terms of the contribution it can make to people.

Ecocentric discourse – intrinsic values

DHA is also characterised by an interest in understanding discrimination (Reisigl, 2017), which can be understood as the representation of the voiceless, or disenfranchised, within the societal discourse. In the case of this study, this represents the natural world, or ecosystem, and we hypothesise that a range of actors perceive biodiversity to have intrinsic values and assume the role of speaking on its behalf.

Science-centric discourse – instrumental values for knowledge generation

The DHA is located within the area of critical discourse studies by including critique in discovery, justification, and the application of science (Reisigl, 2017). Similar to other critical discourse approaches, DHA emphasises the practice-related quality, the context dependence, and the constructed as well as constructive character of discourses. This approach contests the idea of an objective and neutral science and rejects the idea that it can be value-free (McCormick, 2007). However, discourses around biodiversity have been identified that promote science-centric values, which are commonly portrayed as factual and beyond critique (Blicharska & Grandin, 2015; Howard et al., 2018; Mitchell, 2016; Valiveronen & Hellsten, 2002). We hypothesise that participation in this science-centric discourse on biodiversity leads to biodiversity being valued in terms of its potential contribution to scientific endeavour.

Understanding functions of rhetoric in biodiversity discourse

The rhetoric function of an action or object refers to the point that it makes in the context of an argument or public discourse exchange (Bliss, 2023). We follow the lead of Lönngren and van Poeck (2010) by viewing rhetoric as discourse which is argumentative or strategic and which seeks to persuade. In other words, we hypothesise that rhetoric about biodiversity encompasses the ways that individuals or groups use the concept of biodiversity to further their agendas. This hypothesis also applies to those who understand biodiversity as having intrinsic values and seek to give voice to the voiceless in that they may use rhetoric functions to promote an altruistic agenda. For example, an environmental NGO might use *warning* rhetoric around biodiversity to elicit financial support for their activities, a newspaper might use an *informative* rhetoric around biodiversity to motivate people to subscribe to the newspaper, or a political party might use *accusatory* rhetoric around biodiversity to point out the failings of a political opponent.

We use this understanding as a guide for identifying what function the biodiversity concept performs. This means that the identification of rhetoric functions must be inductive and data driven. We acknowledge that there is a degree of subjectivity in this approach to the identification of rhetoric functions, but this is addressed, as much as

possible, by considering the uses of rhetoric in previous study of biodiversity discourse that is summarised in the academic literature review in section 2.

Identifying actor groups to understand biodiversity discourse

Choosing actor groups for in-depth analysis was based on the 'fields of interest' in DHA, as outlined by Reisigl (2017), with the final selection guided by the perceived relevance as a reflection of societal interest and/or the potential influence on the societal discourse on biodiversity. Reisigl's (2017) fields of interest include:

- Discourse in the media, which we address by analysing the use of discourses by news outlets in Italy, U.K., Switzerland, Czech Republic, The Netherlands, Austria, Hungary, Germany, and Norway.
- Discourse and politics/policy/polity, which we address by analysing the use of discourses by political parties in Italy, Switzerland, and Austria.
- Discourse and identity, which we address by analysing the discourses used in publications by environmental NGOs in Switzerland, Norway, and the U.K, and the discourses used by business and industry leaders (for the sake of brevity, hereafter referred to as 'business') in their contributions to the World Economic Forum and the World Business Council on Sustainable Development.

We acknowledge that there are other fields of interest (Reisigl, 2017), such as 'discourse and technical language', and 'discourse and history', that were not included in this analysis. However, the selected actor groups were deemed to be most relevant to how the concept of biodiversity is used, or abused, in society.

1.3 Operationalizing the discourse historical approach

DHA in this research was operationalized by analysing published documents from academia, news outlets, political parties, NGOs and the business sector. Details about the collection of articles in each sector are explained in the relevant sections (2-6). The systematic review of academic literature creates a typology of the different types of discourses, some with their sub-discourses, related to biodiversity. The results from the remaining four actor groups are structured similarly as follows (see also Table 1):

- **Biodiversity definition:** A subsection was added to the analysis of publications from news outlets to indicate whether the term 'biodiversity' was defined in the article. Such a definition would support an 'information' function that is particularly relevant to news outlets, but which is less relevant to the other actor groups.
- **Values:** What is the value of biodiversity? We identify the value domains held by members of the actor groups and distinguish between 1) anthropocentric (nature as a resource to be managed for social welfare) 2) science-centred, (scientific discourse that views nature as an object for research) 3) ecocentric (nature has intrinsic value) (adapted from Lee et al. 2021).
- **Rhetoric function:** What is the purpose of the actor groups when referring to biodiversity in their publications? We describe the range of rhetoric functions used by the actor groups. The rhetoric functions that were identified in the analysis include: informing, persuading, accusing, entertaining, othering, raising hope, warning, and calling for action.
- **External actors:** Who are the key actors, external to the actor group, with a role in contributing to or overcoming the biodiversity crisis? We identify the external actors who are nominated by members of the actor groups and distinguish

between the following external actors: business, scientists, NGOs, government and politics, citizens and the general public, and finance. The “political parties” section does not include an analysis of external actors because of the apparent view by political parties that actions are the exclusive realm of politics, with external parties reacting rather than acting.

- Knowledge bases and ideological justifications for actions: The political parties see themselves as the key actors, who control the behaviour of others with the application of policy, so we have added a subsection to identify the knowledge bases and ideological justification for actions by the political parties. We distinguish between actions that impact biodiversity related to agriculture and food, forests and other greenspaces, greenhouse gas emissions, environmental damage from mismanagement, and trade.
- Calls for action: The political parties and the environmental NGOs have an additional subsection, labelled “Calls for action”, because of the prominence of such calls in their discourse. These calls outline policy measures or other actions to promote biodiversity, which are further classified into ‘carrots’, ‘sticks’ and ‘sermons’. According to Bemelmans-Videc et al. (2011), **sticks** refer to regulatory measures such as laws, regulations, requirements. **Carrots** refer to economic or market interventions such as taxes, incentives, subsidies and licences. **Sermons** refer to informative measures such as strategies, plans, standards and voluntary agreements.

Table 1. Overview of the conducted analysis the four actor groups.

	News outlets	Political parties	Environmental NGOs	Business and industry leaders
Biodiversity definition	X			
Values	X	X	X	X
Rhetoric function	X	X	X	X
External actors	X		X	X
Knowledge bases and ideological justifications		X		
Calls for action		X	X	

2 Academic literature review

Authors: Ghezal Sabir, Mirjam Schleiffer, Yennie Bredin, Robert Home

In this section we aimed to understand the current level of knowledge on biodiversity discourse in the academic literature by systematically reviewing published academic papers that have analysed the discourse on biodiversity: using either academic papers (review papers) or other documents.

2.1 Method

We conducted the systematic literature review based on the approach described by Siddaway et al. (2019). The reporting of this systematic review was guided by the standards of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement. Based on Siddaway et al., (2019) we followed the key stages of Scoping, Planning, Identification, Screening, Eligibility, Study Quality. The guiding research question for the literature review was:

Which biodiversity discourses have been identified in the academic literature and how can they be characterized?

To identify the relevant literature, we defined initial search terms and validated them by using five benchmark articles that were nominated by project partners as being seminal: Berry et al. (2018); Drury et al. (2022); Gustafsson (2013); Oluasson and Ugglå (2021); Takala et al. (2022). If these five articles were not all included in the returns of a literature search, the terms were broadened until they were. In this way, the articles were used to verify the search terms. The final search criteria are listed in Table 2.

Table 2. Search terms for the literature search.

Discourse		Biodiversity
discourse* (topic) OR rhetoric* (topic) OR discours* (topic) OR Q-method* (topic) OR Q-sort* (topic)	AND	biodiversity (topic) OR ipbes (topic) OR "Intergovernmental Science-Policy Platform" (topic)

In addition, we defined inclusion and exclusion criteria. We focussed on studies that conducted a discourse analysis or analysed the narrative or rhetoric of biodiversity or related themes. Studies which are not about biodiversity (e.g. about education or medicine) and studies where no discourse analysis was conducted were excluded as “off topic”. We excluded studies analysing very broad topics only remotely related to biodiversity, such as sustainability as “too broad”. Studies analysing the biodiversity discourse in very local contexts, with no relevance and conclusion for the larger context, were excluded as “too specific”.

With the search terms described above we conducted searches in the scientific databases Web of Science and Scopus. Search results were imported to Mendeley citation manager. Then the references were uploaded into RAYYAN and duplicates were eliminated. The overall process is depicted in Figure 2 according to the PRISMA guidelines. Two reviewers evaluated the inclusion and exclusion of the articles based on the abstract of the articles and the criteria defined above. The conflicts in evaluations of 91 articles were resolved by a third reviewer based on majority vote. All

rejection decisions were tagged with an exclusion criterion. Ultimately 75 articles were selected for the review.

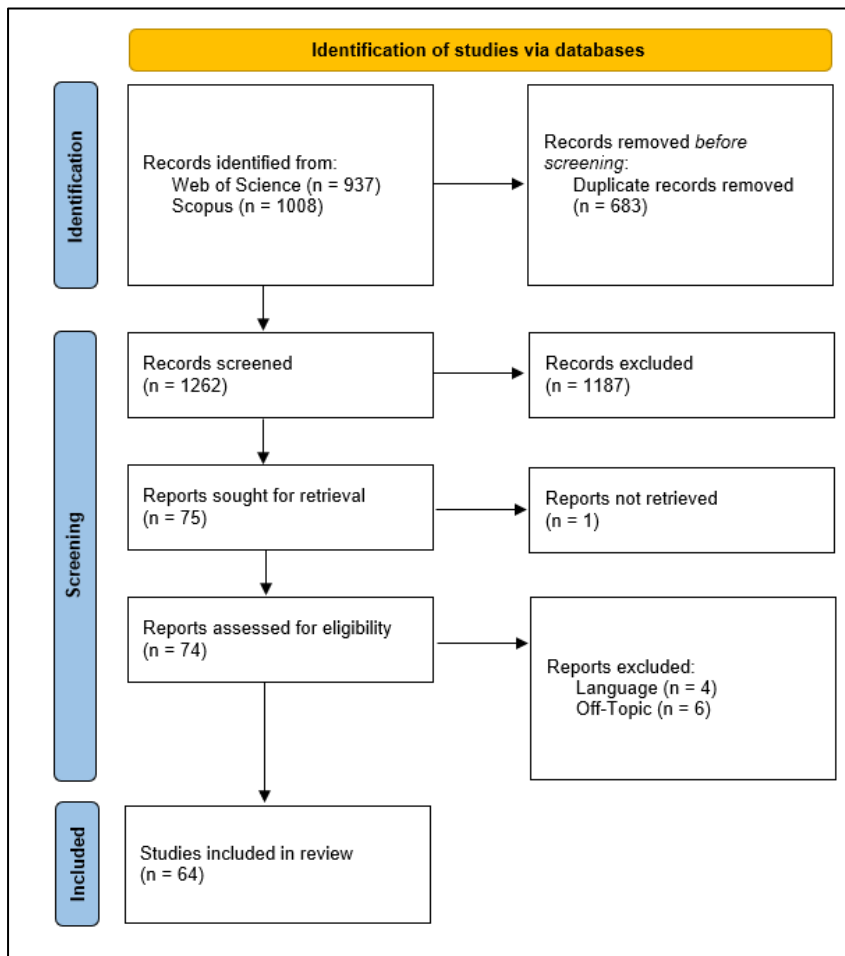


Figure 1. Overview of the identification of relevant studies using PRISMA approach to reporting (template based on Page et al., 2021).

To extract potentially relevant information to answer our research questions, we used the software MaxQDA. Inductive coding was applied to compare the biodiversity discourses identified, changes in discourse over time, and recommendations on how biodiversity discourses can be changed or influenced. In addition, for each paper, we recorded the following information using the variables function: Research period, actor groups analysed, materials analysed, and the region of the world where the study took place. During the detailed analysis of the papers, an additional four articles were excluded due to being in a language other than English and a further six were excluded due to being too distant from the topic. The full list of analysed articles can be found in Annex 2.

2.2 Results

Figures 3, 4 and 5 provide an overview of the articles analysed and their coverage regarding the type of actor groups that were included in the articles. For example, if an article contained information about biodiversity in the mining industry, it was grouped under 'Business'. Articles that presented the biodiversity discourse in Europe were mostly from Scandinavian countries and UK.

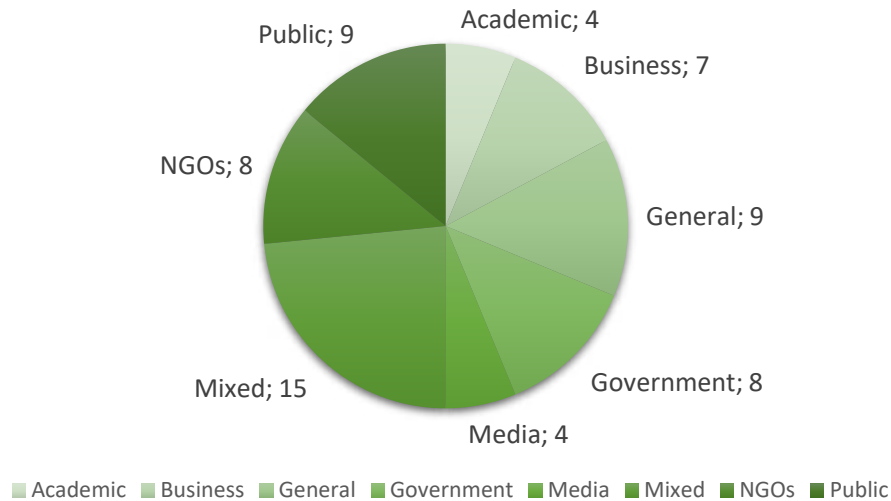


Figure 2. Overview of whose biodiversity discourse was studied in the analysed academic articles (n = 64). When a paper studied the biodiversity discourse of more than one actor group the category “Mixed” was assigned.

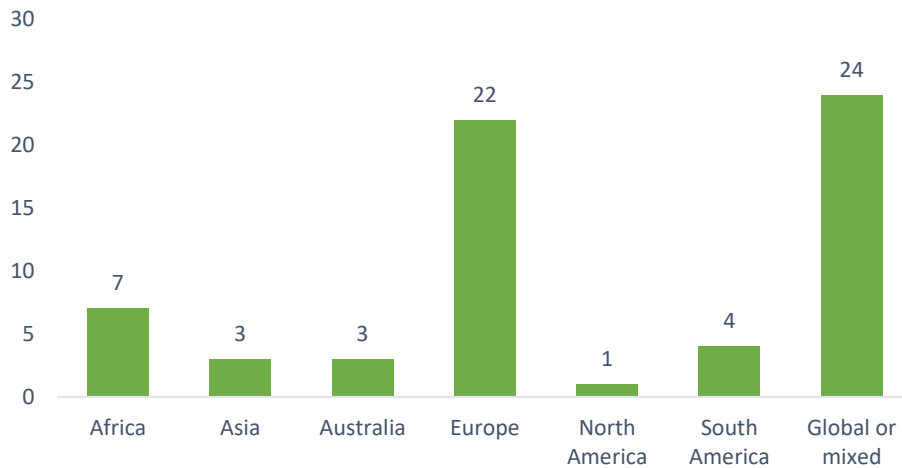


Figure 3. Overview of geographical areas where biodiversity discourse was studied in the analysed articles (n =64).

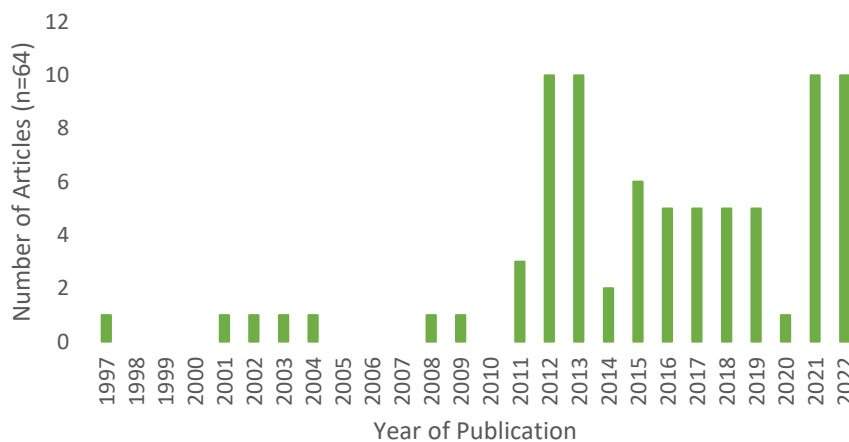


Figure 4. Analysed academic articles on biodiversity discourse placed according to their publication year.

The analysis of the retrieved academic articles revealed nine different types of biodiversity discourses; some with their sub-discourses. These discourses and their sub-discourses are depicted in Figure 6 below, while Table 3 provides a description of the discourses.

There appeared to be a value-based range of discourses, illustrated graphically in Figure 6, from totally “uninvolved”, a term suggested by Takala et al. (2022a, pp. 5-8), and separate from biodiversity, through viewing nature as a repository of resources to be utilized by humans, up to viewing nature as above humanity encompassing all creatures regardless of what properties they possess. There are also discourses that expand across a number of these views and some, such as transcendence, that are conceptually quite distinct and detached from this range of views.

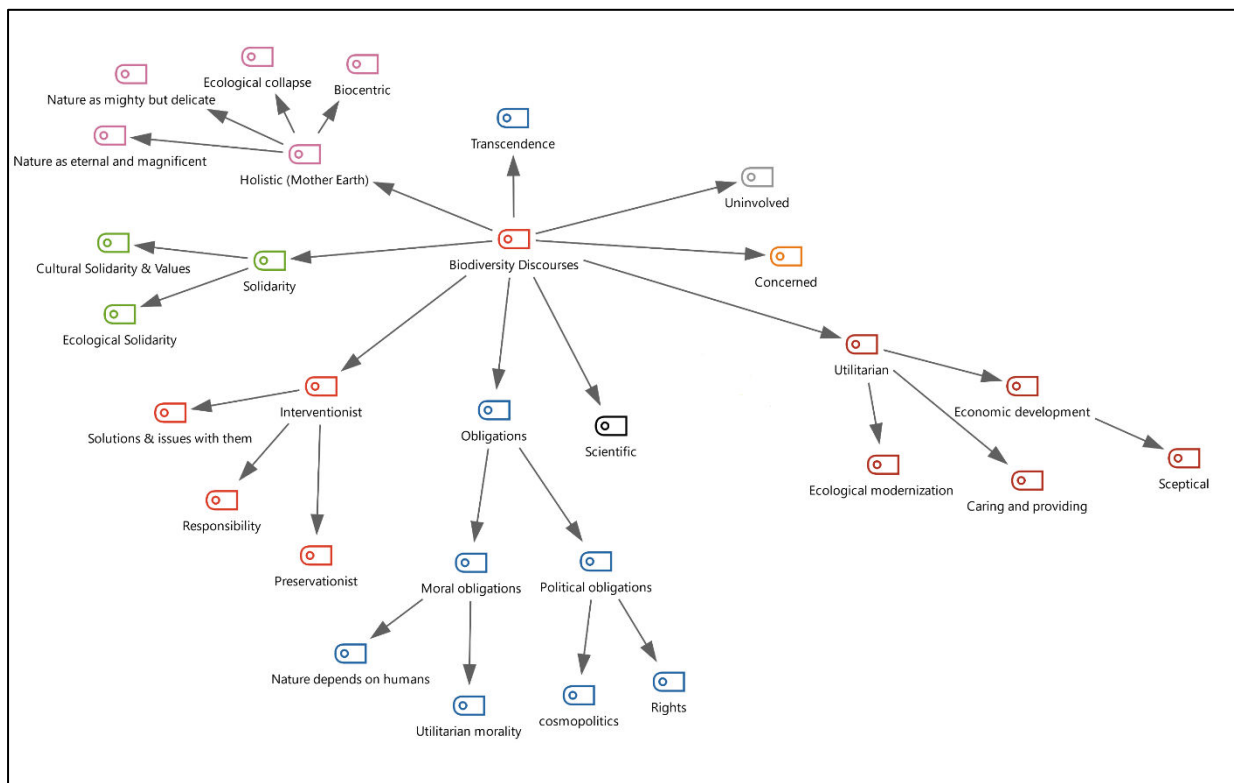


Figure 6. Main biodiversity-related discourses and their sub-discourses in academic literature.

Table 3. Types of discourses and their popularity within the analysed academic articles.

Discourse type	Brief Description	Nr. of articles referring to discourse type (*)
Utilitarian		
Utilitarian	<p>Anthropocentric discourse focused on the utility of biodiversity and ecosystem services' provision for the benefit of humans.</p> <p>Examples:</p> <p><i>“nature as a resource to be managed for social welfare”</i> (Lee et al., 2021, p. 2);</p> <p><i>“regulating or supporting [services] as defined in the Millennium Ecosystem Assessment. Examples: pollination, pest control,</i></p>	28

	<i>seed dispersal [, ...] climatic regulation service [, p]rotection against invasive species [, and so on]" (Howard et al., 2018, p. 1568)</i>	
Economic development	<p><i>"Economic development [discourse...] sees biodiversity as an incoherent sum of natural resources to be extracted, and is reluctant to further biodiversity conservation" (Chalaye, 2022, p. 2).</i></p> <p>Example:</p> <p><i>"when diving into 'non-environmental' policies, such as transport or agriculture, economic perspectives are almost hegemonic and reference to biodiversity is often completely absent." (Chalaye, 2022, p. 13);</i></p>	7
Sceptical	<p>Whatever needs to get done for biodiversity is already being done.</p> <p>Example:</p> <p><i>"The sceptical discourse avoids defining the term biodiversity and merely reminds us that high-quality silviculture and forestry ensures that all is well" (Takala et al., 2022, p. 6).</i></p>	3
Nature as caring and providing	Nature is viewed as a nurturing entity that continues providing.	2
Ecological modernization	<p>Nature is viewed as a source of ecological resources that humans utilize efficiently.</p> <p>Examples:</p> <p><i>"[...] nature is represented in terms of its excellence (I make air) and generosity (I gave it all to them)" (Olausson & Uggla, 2021, p. 362)</i></p> <p><i>"nature would be applied and incorporated into existing business models. Emergent concepts in the blend such as 'green development', 'green recovery' and 'nature-based solutions' were commonly used to index this position" (Drury et al., 2022, p. 49)</i></p> <p><i>"The concepts of sustainable development and ecological modernization bear a close resemblance to each other, even though both have been interpreted in various ways. [...] What we have seen at a rhetorical level is a shift in emphasis from conflicts to consensus, to the reconciliation of economic and environmental considerations." (Valiveronen & Hellsten, 2002, p. 238-9)</i></p>	12
Obligations		
Moral and Political obligations	<p>This discourse relates to humans' obligations towards biodiversity. It is divided into two streams:</p> <ol style="list-style-type: none"> 1) Moral obligations: refers to the need to preserve biodiversity out of moral obligation and/or obligations to future generations (e.g. in Blicharska & Grandin, 2013). 2) Political obligation: Humans are politically or legally bound to protect biodiversity. <ol style="list-style-type: none"> a. Cosmopolitics: <i>"A politics rooted in acknowledgement of the multiple, diverse and constantly transforming beings that constitute the cosmos"</i>. (Isabelle Stengers, 2005, in Mitchell, 2016, p. 32) b. Rights: discourse on rights to biodiversity benefits (e.g. knowledge/science) and political 	12

	<p>recognition and power to control in decisions related to biodiversity</p> <p>Examples:</p> <p>Moral obligations:</p> <p><i>“biodiversity conservation was a moral matter”</i> (Blicharska & Grandin, 2015).</p> <p><i>“Time may be ripe for contemporary environmentalism to move from a morality founded on utility to a morality founded on care”</i> (Muradian & Gomez, 2021, p. 6)</p> <p>Political obligations:</p> <p><i>“At the local level the arguments related to legal duties to comply with international and national biodiversity legislation and obligations to comply with national and local biodiversity relevant policies.”</i> (Carmen et al., 2018, p. 1607)</p>	
Nature conservation discourses		
Interventionist	<p>This discourse sees intervention in nature and protected areas by humans as necessary to increase and manage biodiversity. It is focused on actions that have the potential to contribute to addressing the issue of biodiversity loss.</p> <p>Example:</p> <p><i>“Humans were ecosystem engineers that have evolved together with the landscapes that they shape, thus creating niches and habitats that promote higher biodiversity, and cultural and provisioning ES [ecosystem services], especially as represented by traditional sheep husbandry and life styles.”</i> (Bredin et al., 2015, p. 204)</p>	4
Preservationist	<p>This discourse aims to preserve 'untouched' nature via nature conservation and perceives human interference as harmful for the preservation of biodiversity.</p> <p>Example:</p> <p><i>“[...] then associating priority conservation value with biodiversity and specifically species protection: ‘a pristine feel can obviously be possible to re-create in a few decades, while a lost species is gone forever’ [...]. Many opinions thus emphasized the risks of inaction more than the risks of action.”</i> (Steinwall, 2015, p. 8)</p>	11
Responsibility	<p>This discourse is concerned about the agents that are responsible for intervening in the issue of biodiversity.</p> <p>Example:</p> <p><i>“Concerning responsibilities, in the frames of government and civil society the key-role is attributed to business. Although it is recognised that other actors play their part, their role is mainly to support the initiatives taken by the business-community. Businesses themselves do recognise their pivotal role in the protection of biodiversity and are more outspoken about the roles of other actors, in particular governments.”</i> (van den Burg & Bogaardt, 2014, p. 183)</p>	4
Solutions and issues with them	Solutions and potential issues with the solutions to the issue of biodiversity are discussed and debated in this discourse.	2

	<p>Example:</p> <p><i>“Despite the recognition of the importance of integrating biodiversity in EIA [environmental impact assessment...], there is a lack of transparency regarding EIA documentation among development cooperation actors. There is also a lack of systematic consideration of biodiversity issues, as well as a lack of consensus on how to consider, frame and evaluate the quality of biodiversity integration. Moreover, the position of EIA within decision-making and the wider set of processes and tools focusing on biodiversity & development is often not sufficiently clear.”</i> (Huge et al., 2017, p. 100)</p>	
Solidarity		
Cultural solidarity and values	<p>Solidarity or connectedness of humans to nature via culture and identity</p> <p>Example:</p> <p><i>“At the national level this included biodiversity contributing to “our national identity and the distinct character of our local communities” (Natural England 2011). At a local level arguments related to local character and pride were also used, together with the conservation of local industrial heritage.”</i> (Carmen et al., 2018, p.1606)</p>	11
Ecological solidarity	<p>Ecological solidarity, which considers human emancipation and healthy ecosystems as interdependent, and aims to cultivate reciprocal relationships between them (Chalaye, 2022)</p> <p>Examples:</p> <p><i>“The distinguishing statements in P4 had metaphorical language and referred to spirit, meaning and systemic connection with nature [...], which is why we labelled the perspective Connection. The argument that nature and its diversity make our lives meaningful appealed to the P4 respondents because “if we want a healthy environment, we need to stress the inter-connectedness of it all”</i> (Primmer et al., 2017, p. 598)</p> <p><i>“This indicates that the relationship between farming and biodiversity is understood as intertwined. Both production and biodiversity objectives should be considered in a sustainable balancing act (#31) and biodiversity conservation should not just focus on areas that are unsuitable for production (#14).”</i> (Schaal et al., 2022, p. 6)</p>	9
Holistic (Mother earth)		
Holistic (Mother Earth)	<p>This view places humans as part of nature and nature as a caregiver to all creatures that are equally important.</p> <p>Example:</p> <p><i>“In response to the “western view”, Bolivia proposed an alternative framework that of living-well in balance and harmony with Mother Earth. This position mirrors a law which has been adopted in Bolivia, the “Law of the Rights of Mother Earth” which attributes rights to nature (Bolivia, Law 071, 2010).”</i> (Bonie & Hulme, 2015, p. 492)</p>	6
Biocentric	<p>The stance that gives equal intrinsic value to all living things.</p> <p>Example:</p>	1

	<p><i>“Biocentrism argues that all animals and plants possess intrinsic value. In practice this means a biocentric value system requires equal moral consideration to all living things, from a single cell organism to a human being.”</i> (Aggestam, 2015, p. 1054)</p>	
Ecological collapse	<p>The view that nature has intrinsic value and humans’ activities are responsible for ecological collapse.</p> <p>Example:</p> <p><i>“[...] Myers (1993) used the metaphor of a “biotic holocaust” in his article “For Dear Life” to describe the irreversible nature of the environmental crisis. [...] The metaphors of a library and a museum concretize biodiversity loss, and when connected to the powerful image of uncontrolled fire, they call for immediate action.”</i> (Valiverronen & Hellsten, 2002, p. 237)</p>	3
Nature as eternal and magnificent	<p>Nature’s imagery discourse portrays nature as eternal and magnificent.</p> <p>Example:</p> <p><i>“[...] pronounced feature of the campaign is that nature, through strategies of nomination, is constructed in terms of what it is, an eternal, magnificent being, rather than in terms of what it does.”</i> (Olausson & Ugglå, 2021, p. 359)</p>	1
Nature as mighty but delicate	<p>Nature needs to be protected by humans (among others through finance and political will).</p> <p>Example:</p> <p><i>“[...] nature is metaphorically constructed by visual attributes such as thunder storms, calving icebergs and breaking waves, accompanied by the sound of thunder, as well as in verbal statements of what nature is able to accomplish.”</i> (Olausson & Ugglå, 2021, p. 363)</p>	2
Non-grouped discourses		
Scientific Specimen logic	<p>Biodiversity is valued for it is a repository of scientific knowledge.</p> <p><i>“In biodiversity images it is individuals and species that are appreciated in the first place, whereas their interactions with their environment and each other are pushed into the background. This decontextualizing, egalitarian logic [...] is essential for understanding our conceptualization and appreciation of biodiversity.”</i> (Toepfer, 2019, p. 346).</p>	14
Uninvolved	<p><i>“Uninvolved discourse distanced itself from the whole issue [of biodiversity]”</i> (Takala et al., 2022, p. 5).</p> <p>Example:</p> <p><i>“distancing from the reported impacts implies the recognition, albeit indirect, of negative impacts on biodiversity [...]. Nevertheless, these impacts are minimized and seem disconnected from current corporate activities. This distancing can be based on two main approaches: contextualizing the impacts and emphasizing the uncertainties surrounding them.”</i> (Boiral, 2014, p. 761)</p>	6
Concerned	<p>Concerned discourse showed worry about the loss of biodiversity.</p>	8

	<p>Example:</p> <p><i>“In 2019 and 2020, ‘crisis’, which was not used as often in previous years, was increasingly used with ‘biodiversity’”</i> (Ohtani, 2022, p. 371)</p>	
Transcendence	<p>Humanity is not equivalent to Homo Sapiens; thus transcending the biological body.</p> <p>Example:</p> <p><i>“[...] human and artificial intelligence would merge to produce increasingly powerful and resilient minds unhindered by fleshy bodies vulnerable to biological extinction. Bostrom’s prognoses are permeated with the fear of destruction, but also the techno-millennarian yearning for the transcendence of currently-existing ‘humanity’. Indeed, although they may converge and condition one another, the extinction of Homo sapiens and the extinction of ‘humanity’ are not identical phenomena – a point that Bostrom (2013) himself stresses.”</i> (Mitchell, 2016, p. 28)</p>	1
<p>Note: (*) the full list of articles referring to each discourse types can be found in Annex 1</p>		

From Uninvolved to Concerned Discourse

The uninvolved discourse was reported prominently in the case of Finnish forest owners (Takala et al., 2022) entailing removal of agency or responsibility and either did not recognise biodiversity or placed it distantly: feeling unaffected by it. The discourse has been criticised by Valiverronen & Hellsten (2002) for using uninvolved metaphors or linguistic descriptors for biodiversity, such as “web of life”, and by Drury et al., (2022), for using process nouns such as overconsumption or overfishing. This rhetoric has robbed biodiversity issues of their urgency and removed governments, the public or any other actors from being active agents in this regard. Concerned discourse stands in contrast to uninvolved discourse and recognizes biodiversity loss as both a serious issue and a threat. These concerns have been expressed by relating biodiversity protection as a priority for farmland (Schaal et al., 2022), and by viewing loss of biodiversity as the loss of happiness as per the analysis of a politician’s public speech in Norway (Bjærke, 2019). Other popular metaphors used to communicate the issue of biodiversity loss include destruction of the “library of life” (Valiverronen & Hellsten, 2002, pp. 229, 231, 234) or a museum of valuable items. The word “crisis” has been coupled with biodiversity, with the coupling becoming prominent (Ohtani, 2022) as concerned voices have risen to overcome the uninvolved discourse.

The transcendence discourse is uninvolved in the sense that it deems issues of biodiversity to be irrelevant to the essence of humanity, which is understood as human intelligence transcending the biological human. However, critique over loss of language and culture, which has a relationship to biodiversity, has been noted as inevitably influencing humanity in its abstract sense.

Utilitarian Discourse

The utilitarian understanding of biodiversity appeared as a deeply anthropocentric approach by putting human benefit at the centre of the biodiversity discourse. The core of this discourse lies in the idea that natural resources are to be utilized for economic development believed to be of utmost benefit to humans. This discourse is prolific and recurrent and commonly reduces biodiversity to its economic value in terms of its

potential to generate income. This was expressed not only by forest owners in Finland (Takala et al., 2019) but also by nature conservation professionals in Poland (Blicharska & Grandin, 2015). Despite the ubiquity of the economic valuation of biodiversity, ecosystem services are also commonly related to the social and physical well-being of individuals and society, such as providing opportunities for recreational, new drug development or educational material (Berry et al., 2018; Carmen et al., 2018; Howard et al., 2018; Primmer et al., 2017). Nonetheless, it is the economic value of nature that has allowed the issue to gain traction in political decision-making into four types: namely “economic (expressed as natural resource outputs such as agriculture, forestry, commercial hunting and fishing, and tourism), aesthetic, historic, and educational” (Brunet et al., 2020, p. 1661).

The analysis of the articles yielded two sub-categories of the utilitarian discourse: sceptical and economic modernization. The sceptical discourse refers to Chalaye’s (2022) “ecological urgency scepticism” (p. 14) pointing to economic agents’ efforts in denying the urgency of biodiversity conservation, which is echoed by forest owners (Takala et al., 2022). This branch of biodiversity discourse includes proposals that biodiversity conservationists spread erroneous information and claims that protected species are a “nuisance” (Takala et al., 2022) detrimental to the economy, as they constrain the full potential of the market” (Chalaye, 2022). This sceptical discourse has gained support in public opinion (Takala et al., 2022) as utilitarian arguments that value biodiversity in terms of what it can give to people are more attractive for many people than arguments for the intrinsic value of biodiversity, which often call for compromises or restrictions to stop species loss (Troumbis, 2017).

Ecological modernization is an upgraded version of the economic development discourse, and has the term “natural capital” at its core (Chalaye, 2022). Value is allocated to biodiversity based on its potential contribution to production (Chalaye, 2022) so preservation is supported when the future production makes economic sense. The uptake of this discourse in government policies has been pointed out in schemes or approaches that relate to biodiversity protection such as “no net loss” or payment of ecosystem services (Chalaye, 2022), sustainable development goals (Carmen et al., 2018), and increasing yields while reducing risks (Howard et al., 2018).

The utilitarian discourse has been criticised such as amounting to “hegemonic capitalism” (Bonie & Hulme, 2015). Several authors point out that species who currently have no or little economic value, or are considered “ugly” are at risk to be deprived of protection or even eliminated if they are assessed as being harmful to economic outcomes (Kusmanoff et al., 2017; Turnhout et al., 2013). Furthermore, in support of the utilitarian discourse, an efficient artificial alternative to current biodiversity conservation measures will be rapidly adopted in a capitalist market-based political system (Drury et al., 2022).

Another criticism of the utilitarian discourse is the issue of “biopiracy”, which is defined as “the commercial collection, development and patenting of modern medicines from biodiversity and traditional knowledge in the South” (Adger et al., 2001). Biopiracy has been described as yet another form of neo-colonialism where the developed take control of traditional knowledge of biodiversity, making it practically unavailable to the local communities through levying of patents. The biopiracy discourse is prevalent among indigenous people, traditional healers and peasants (Adger et al., 2001) and, although it was not discussed in any other analysed articles, may well grow in the future.

From Scientific to Spiritual Discourse

The scientific discourse revolves around the value of biodiversity for scientific knowledge (Blicharska & Grandin, 2015; Howard et al., 2018; Lee et al., 2021). Although, this discourse is in many ways a facet of utilitarian discourses, the value of knowledge for the sake of knowing is what distinguishes this discourse from the latter. In analysing political speeches, Lee et al. (2021) reveal how nature was viewed as “repository of scientific knowledge” (p. 7) in the context of examining fireflies’ use of energy. Scientific biodiversity discourse has been seen as neutral evidence-based and universal (Turnhout et al., 2013) granting it an advantage in influencing policies. An example for this argument is the Nature Index in Norway (Spash & Aslaksen, 2015). The scientific approach claims to provide “objective truth, separation of facts from values and designation of expert judgement as independent from political process” (Spash & Aslaksen, 2015, p. 247). However, the scientific approach dismisses biodiversity’s normative character (Jetzkowitz et al., 2018) as well as the effect of science on policy formation (Turnhout et al., 2013; Primmer et al., 2017).

A less prominent, yet value-laden view of biodiversity, is the view of nature being holistic and having intrinsic value (Berry et al., 2018; Bonie & Hulme, 2015; Brunet et al., 2020; Carmen et al., 2018; Lee et al., 2021; Spash et al., 2015). This discourse, also referred to as ecocentric (Lee et al., 2021), is represented in Figure 3 by the label Holistic (Mother Earth). This stands in contrast to the scientific and utilitarian discourses as it does not objectify nature and gives value to nature and its biodiversity without being subjected to humans. Buijs et al. (2022) adds relational value, related to the interaction of humans with nature, in addition to the intrinsic value of biodiversity assumed by active citizens. Interestingly, this discourse was more prominent in policy documents compared to scientific discourse as noted by Aggestam (2015) and demonstrated by Anquet & Girard (2022).

The biocentric view also fits in the holistic discourse as it claims value for all living beings; regardless of their morphology or genetic composition (Aggestam, 2015). Non-living things are not valued within this discourse unless they provide habitats or other resources for living beings. Scrutinizing images of nature in a biodiversity campaign, Olausson & Ugglå (2021) argue that the images of nature’s strength, as in the image of crushing waves, portray nature as mighty and eternal, while the harm inflicted upon it by human action portrays nature as delicate. The latter imagery in the campaign ‘others’ humans in relation to nature, which does not fit perfectly within the holistic/mother earth discourse. Nonetheless the value and characteristics attributed to nature in this discourse give nature an aura of spirituality and power on its own.

To stimulate action to halt the loss of biodiversity, alarming terms and metaphors are used. The term ‘ecological collapse’ (Chalaye, 2022; Valiveronen & Hellsten, 2002) gives a sense of urgency to halt the loss of biodiversity. While the uptake by civil society has been effective, it has had little effect on governmental policies: at least in the French political context (Chalaye, 2022). On another note, metaphors such as burning the library of life (Valiveronen & Hellsten, 2002) have been used in the holistic discourse to stimulate biodiversity protective action. Such metaphors assume intrinsic value of nature, but position humans as agents responsible for the collapse and capable of amending, or at least preventing, further biodiversity loss.

Obligations and Solidarity Inspiring Action

In congruence with the spiritual discourse, the intrinsic value of nature obliges humans morally to preserve biodiversity (Mitchell, 2016) as an obligation to future generations (Blicharska & Grandin, 2013). Proponents of the obligations discourse point out that humans are not entitled to make decisions about the life of other beings in nature. Anchored in morality, this discourse also entails religious beliefs and ethics that highlight the obligations to other people (Howard et al., 2018). Gustafsson (2013) points out that the moral obligation towards biodiversity preservation is one of the three most prevalent biodiversity discourses; the other two being nature as an object of knowledge (science-centred) and as a resource for society (anthropocentric). Nature's dependence on humans further highlights the obligation of humans towards biodiversity preservation (Drury et al., 2022). However, this anthropocentric stance has been criticised as supporting the arguments of those who propose that technological advancements, as opposed to natural methods, provide the solutions to halt biodiversity loss (Drury et al., 2022).

Utilitarian morality, on the other hand, refers to the moral obligation towards biodiversity because of the benefits of biodiversity for humans (Muradian & Gomez, 2021). The utilitarian discourse encourages the anthropocentric view of nature as a provider for human needs that we must protect so that it can keep giving. The "othering" of humans is viewed as separating nature from humans, while simultaneously placing humans at the centre of the biodiversity discourse (Olaussan & Ugglå, 2021). This stance that has been likened to the recommendation put forward by a Jesuit priest regarding the treatment of slaves, which was not to hit the slaves when one is angry as this could render a slave useless (Muradian & Gomez, 2021).

Political obligations towards biodiversity stem from the argument of rights of nature and include recognition of the rights of Indigenous populations whose cultural identity and values are closely connected to nature. For governments, institutions, and individuals, policies and actions to preserve biodiversity can be seen as an opportunity to gain popularity and claim national or global leadership (Carmen et al., 2018) or to enhance their reputation (Howard et al., 2018). An interesting proposition in relation to political influence is presented in an article by Mitchell (2016) that describes the effect of bringing living and non-living entities into the political arena, which is termed as "cosmopolitics". Cosmopolitics is defined as "a politics rooted in acknowledgement of the multiple, diverse and constantly transforming beings that constitute the cosmos" (Isabelle Stengers, 2005 in Mitchell, 2016, p. 32). This orientation according to Mitchell (2016) may create an open access and demand for rights, by all beings that are affected by a political decision. The disruptions that this may bring into the political arena is welcomed by this orientation as providing an opportunity for "creative political action" (Mitchell, 2016, p. 33). This discourse, however, is marginal and has not received much attention in the articles analysed for this report.

The discourse of rights of nature and those of Indigenous populations, on the other hand, have a longstanding existence. Indigenous people and local communities have often been called "premodern" or even "enemies of nature", a view still pervasive in parts of Africa (Anquet & Girard, 2022), which is criticised as post-colonial scripts "to justify forced displacements or encroachments upon indigenous territories and lands in the name of economic development." (Anquet & Girard, 2022, p. 281). However, the lack of access to the legal system by these communities is a challenge to bring biodiversity into a legal rights frame. In addition, the disharmony between the utilitarian

and spiritual discourses, with the latter being more prevalent in non-Western countries than the former, described above complicates this further (Muradian & Gomez, 2021).

The solidarity with nature discourse goes along the rights discourse by pointing to the Indigenous people's identity and cultural embeddedness with nature (Anquet & Girard, 2022). The example of a persecuted dingo is presented to showcase the interconnectedness of a species to the lifeways and kinship structures of the Australian aboriginal communities (Mitchell, 2016). Similarly, ecological solidarity "considers human emancipation and healthy ecosystems as interdependent" (Chalaye, 2022, p. 2) with the goal of strengthening this relationship (Chalaye, 2022; Primmer et al., 2017). In this discourse, the social, cultural, and health-bestowing values of biodiversity is emphasised (Chalaye, 2022; Primmer et al., 2017). Cultural heritage values, social relations, cultural diversity, and sense of place were some of these interconnections that were pointed out (Serrano et al., 2019).

What naturally follows these discourses on rights and obligations is the desire to protect biodiversity. A few discourses have been identified in the realm of nature conservation which are relevant here. The main difference between these discourses is the role of humans in nature conservation. The interventionists perceive human interference as necessary to protect and enhance biodiversity. Expressions describing humans as "ecosystem engineers" (Bredin et al., 2015, p. 203), "No Net Loss" and "ecosystem and biodiversity management systems" (van den Burg & Bogaardt, 2014, p. 181) pointing to corporate responsibility towards biodiversity are examples of the language that reveal an interventionist approach.

Identification of the agents responsible for this action is part of this discourse. These agents range from forest owners in the Finnish case (Takala et al., 2019), businesses (van den Burg & Bogaardt, 2014), research (Huge et al., 2017) to cooperative responsibility between business and government (van den Burg & Bogaardt, 2014). The interventionist discourse also included arguments weighing the benefits of interventions and the costs associated with them, although poor baseline biodiversity data, with focus on a list of agricultural animals or focused on specific "iconic" (Huge et al., 2017, p. 96) species, is another issue pointed out in the interventionist discourse. Some argue that the use of business language does not go far enough, while others argue that the use of business language referring to biodiversity as a management issue is inherently problematic (van den Burg & Bogaardt, 2014). For example, the interventionist discourse includes arguments that the public pressure to address biodiversity loss is being ignored by government and business circles (van den Burg & Bogaardt, 2014), while an anti-interventionist discourse proposes that any interference of humans in nature is inherently harmful. The anti-interventionist discourse prevails in the discussion about protected areas or conservation and emphasises the preservation of "untouched" (Berry et al., 2017, p. 1754; Steinwall, 2015, pp. 1,3) nature that should not be "disrupted" (Howard et al., 2015, p. 1568).

3 Biodiversity discourse in news outlets

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3.1 Method

For the analysis of the discourse among European news outlets, we aimed to analyse articles in a broad spectrum of the national press to understand how ‘biodiversity’ is defined, presented, and valued in news outlets and how it is used to motivate or persuade readers of its value and importance. We reviewed our findings through the lens of ideology to consider whether the political stance of the publication influences the values and rhetoric (Reisigl and Wodak, 2009).

Data collection

Newspaper articles were collected from the following nine European countries: Hungary, Austria, Czech Republic, Germany, Switzerland, Italy, the Netherlands, United Kingdom (UK), and Norway. Each of the partners from the respective countries followed a predefined procedure to collect the documents. First of all, five highly circulated national news outlets, that represent a broad scope of ideologies and target demographics were selected. For each news outlet a Google search was conducted for “biodiversity” (translated to the local language) using the following command: “biodiversity site: www.yourNewspaper.com”. In some cases, the search was done for more than two words. For example, for Germany, this was done for “Artenvielfalt” and “Biodiversität” which are often used interchangeably (“Biodiversität OR Artenvielfalt site: www.yourNewspaper.com”). The search was restricted to the year 2022. We screened for articles that cover biodiversity related topics. Articles which reference biodiversity only through the title of an organisation and do not further discuss biodiversity were excluded. The first ten relevant returns were collected in a document and translated to English using the translation tool Deepl.com. All articles were assigned a unique respondent number to allow reference to specific articles in the analysis. For Hungary, only four news outlets were analysed; whilst for the UK six news outlets were analysed. This was due to time limitations (Hungary) or as more news outlets were assessed as relevant (UK) by the contributing partners. Table 4 provides an overview of the analysed new outlets.

In addition, the news outlets were classified according to their political stance. The classification was based on the ideology perception of the EU Political Barometer¹, which is a value in the left-right scale that indicates which parties most frequently referred to the news outlet in their Facebook posts from 2019-2023. Low values mean that left wing parties refer more often to the newspaper, a value close to 10 means that right wing parties cite the newspaper more often (Caravaca et al., 2022). The ideology perception value was then classified into the four political stance groups: left (values below 4), centre (values from 4-6), right (values above 6) and far-right (values above 7). For the news outlets not included in the database and for Switzerland and Norway, we ascribed the political stance based on the Eurotopics database and on the local partners assessment (for Norway).

¹ See also: <https://eupoliticalbarometer.uc3m.es/>

Table 4 – Overview of the selected news outlets and the number of search returns for articles using the word ‘biodiversity’.

Country	Name of news outlet	Ideology Perception	Political stance	Tabloid
Italy	Il Fatto Quotidiano		Left*	
	Il Manifesto		Left*	
	Il sole 24 ore	6.827	Right	
	Corriere della sera	5.469	Center	
	Avvenire	3.366	Left	
UK	BBC	6.604	Right	
	Daily Mail	6.958	Right	Tabloid
	Financial Times (FT)		Center*	
	The Guardian	3.72	Left	
	The Metro	3.034	Left	Tabloid
	The Sun	7.337	Far-right	Tabloid
Switzerland	Tages Anzeiger (TA)		Left*	
	Le Matin		Center*	Tabloid
	Blick		Center*	Tabloid
	Neue Züricher Zeitung (NZZ)		Right*	
	20 Minuten		Center*	Tabloid
Czech Republic	Deník	5.895	Center	
	MF DNES	5.268	Center	
	Hospodarske noviny (HN)	6.057	Right	
	Lidove noviny	6.413	Right	
	Právo		Left*	
The Netherlands	Algemeen Dagblad	5.142	Center	
	De Volkskrant	4.568	Center	
	NRC	5.23	Center	
	Trouw	4.23	Center	
	De Telegraaf		Right*	Tabloid
	Algemeen Dagblad	5.142	Center	
Hungary	Index	8.265	Far-right	
	Magyar Nemzet		Right*	
	Origo		Right*	
	Telex	7.409	Far-right	
Germany	Bild	7.186	Far-right	Tabloid
	Die Zeit	4.42	Center	
	Frankfurter Allgemeine Zeitung (FAZ)	6.394	Right	
	Süddeutsche Zeitung (SZ)	6.22	Right	
	Die Welt	7.187	Far-right	
Norway	Aftenposten		Right ¹⁾	
	Dagbladet		Center ¹⁾	Tabloid
	Klassekampen		Left ¹⁾	
	Nationen		Center ¹⁾	
	VG		Center ¹⁾	Tabloid
Austria	Der Standard	4.367	Center	
	Heute	6.778	Right	Tabloid
	Kleine Zeitung	5.027	Center	
	Kronen Zeitung	5.922	Center	Tabloid
	Kurier	5.3	Center	

Notes: * = attributed based on www.eurotopics.net 1) attributed based on assessment of local partner. All other political stances were attributed based on the EU Political Barometer “Ideology perception”.

Data Analysis

The analysis was guided by the theoretical and methodological concept Discourse-Historical Approach (DHA) to Critical Discourse Analysis (Reisigl and Wodak, 2017). Using the analytical framework outlined by Reisigl (2017), we critique semiotic representations of biodiversity and compare: 1) the definition of biodiversity used, 2)

the value attributed to biodiversity, and 3) the use / rhetoric function of the term 'biodiversity'. We are informed by studies which previously carried out discourse analysis on the use of the term 'biodiversity' in political speeches (Lee et al., 2021) and Canadian media (Brunet et al., 2020).

All news articles per news outlet were analysed using the following coding framework:

- Biodiversity definition: Is the term 'biodiversity' defined in the article?
- Values: What is the value of biodiversity? We distinguish between 1) anthropocentric (nature as a resource to be managed for social welfare) 2) science-centred, (scientific discourse that views nature as an object for research) 3) ecocentric (nature has intrinsic value) (adapted from Lee et al., 2021)
- Rhetoric function: What is the purpose of the actors when talking about biodiversity? We distinguish between the following categories: informing, persuading, accusing, entertaining, othering, raising hope and warning.
- Actors: Who are the key actors and what is their role in contributing to or overcoming the biodiversity crisis? We distinguish between the following actors: business, scientists, NGOs, government and politics, citizens and the general public, finance.

Articles where the full text was not accessible – for example due to a paywall - were excluded from the analysis.

3.2 Results

In total we analysed the biodiversity discourse in 391 articles from 45 different news outlets of nine European countries. Regarding the political stance, we analysed eight news outlets that can be classified as left, 19 as center, 13 as right and five as far-right. The far-right category was created additionally, to provide more insight into the rather large group of news outlets popular among right wing parties. Within the sample we had 12 news outlets that can be categorized as "tabloid" newspapers, often characterised by a sensationalistic reporting style (Gossel, n.d.). Table 5 provides an overview of the conducted analysis and the aggregated results per country. The numbers in the rows for each code indicate how many articles in a country's sample refer to the code. For example, in Italy, 21 articles mention anthropocentric values of biodiversity.

Table 5. Overview of the results of the discourse analysis by country and code.

	Italy	UK	Switzer-land	Czech Republic	Nether-lands	Hungary	Germany	Norway	Austria	Sum*
Search and analysis – How many news outlets and articles using the word ‘biodiversity’ were analysed?										
Number of news outlets	5	6	5	5	5	4	5	5	5	45
Articles analysed	43	60	50	40	50	31	31	37	48	391
Biodiversity – Was biodiversity clearly defined?										
Yes	2	10	3	1	4	0	2	3	1	26 (7 %)
Values – Which values are assigned to biodiversity?										
Anthropocentric	21	28	17	24	9	20	10	28	18	175 (45 %)
Ecocentric	13	16	7	16	12	13	6	24	17	124 (32 %)
Science-centred	4	10	3	6	1	1	2	2	5	34 (9 %)
Rhetoric function – Was the rhetoric										
Informing (only)	9	12	8	18	37	10	9	6	27	139 (35 %)
Persuading	14	12	31	16	1	7	14	17	7	119 (30 %)
Accusing	13	17	20	11	10	13	9	17	7	117 (30 %)
Entertaining	1	0	3	1	0	0	3	2	1	11 (3 %)
Othering	1	0	1	1	0	6	0	8	0	17 (4 %)
Raising hope	14	17	10	14	14	15	2	12	12	110 (28 %)
Warning	12	33	18	22	12	18	8	19	19	161 (41 %)
Actors – How many articles refer to the following actors as being involved with biodiversity issues?										
Business	21	11	24	12	1	11	14	13	8	115 (29 %)
Scientists	19	13	17	25	3	17	19	9	14	136 (35 %)
NGO	27	10	32	10	5	9	12	9	14	128 (33 %)
Government	33	14	42	19	11	13	18	27	14	191 (49 %)
General Public	18	4	17	4	0	5	9	17	8	82 (21 %)
Finance	8	18	7	6	6	9	3	5	1	63 (16 %)
* percentages refer to the share of all articles referring to a certain code										

Table 6 provides an overview of the results categorized according to political stance and format (tabloid or non-tabloid). It shows how often a certain code has been found among the analysed articles of a news outlet. For example, anthropocentric values of biodiversity are mentioned on average in 4.5 articles of news outlets popular among the political right, while in news outlets associated with the left such values are mentioned on average in 3.5 articles.

Table 6 Overview of the results of the discourse analysis of news outlets by political stance and format. The numbers depict how often a code was found, on average, in the analysed articles of news outlets: differentiated according to political stance and format.

	Political stance				Format	
	Far-right	Right	Center	Left	Tabloid	Non-Tabloid
Average number of times that biodiversity is clearly defined in the articles						
Yes	0.0	0.9	0.5	0.5	0.5	0.6
Average number of times that values are assigned to biodiversity						
Anthropocentric	3.2	4.5	3.8	3.5	4.2	3.8
Ecocentric	2.2	2.8	2.8	3.0	3.1	2.6
Science-centred	0.6	0.5	0.8	1.1	1.0	0.7
Average number of times that rhetoric function is used in the articles						
Informing (only)	2.6	2.4	3.8	2.4	2.9	3.1
Persuading	2.8	2.5	2.6	3.0	2.7	2.6
Accusing	2.2	2.4	2.6	3.3	3.0	2.5
Entertaining	0.6	0.2	0.3	0.0	0.7	0.1
Othering	0.6	0.3	0.3	0.5	0.4	0.4
Raising hope	2.2	2.5	2.6	2.1	2.7	2.4
Warning	2.8	3.4	3.9	3.6	4.1	3.4
Average number of times that actors are connected with biodiversity issues?						
Business	3.0	2.2	2.7	2.4	2.5	2.6
Scientists	3.6	4.1	2.2	2.9	2.1	3.4
NGO	1.8	2.2	3.0	4.3	2.9	2.8
Government	3.0	3.9	4.6	4.8	4.6	4.1
General Public	1.8	1.4	1.9	2.4	2.0	1.8
Finance	0.8	1.8	1.4	1.1	0.8	1.6

The results for the individual codes are discussed in more detail in the following sections.

Definitions

Of the 391 articles analysed, only 26 made any attempt at a definition of “biodiversity”. In the vast majority of the articles, it was assumed that the term “biodiversity” is understood by the readership. This circumstance is not surprising, given the fuzzy nature of the term “biodiversity” (Toepfer, 2019). However, as Toepfer (2019) also

points out, this creates opportunities to misuse the term for anything remotely connected to nature.

When articles defined biodiversity some of these definitions were implicit – e.g. by saying that biodiversity is the opposite of uniformity (Il Manifesto, R163). The explicit definitions usually mention aspects of variety and variability, for example: “*It’s about the diversity of life, different species of animals and plants, but also ecosystems*” (Trouw, R239) or are more all-encompassing e.g. “*the totality of all living things on earth and their diverse interconnections*” (NZZ, R138). Often definitions also include a value judgement or explanation why biodiversity is relevant to humans at all by saying, e.g. “*It is the infrastructure that sustains all life on Earth*” (Il Fatto Quotidiano, R155).

Interestingly it was news outlets in the UK that most frequently defined biodiversity. In some articles this was done by offering links to other articles which investigate the term. The outlet most attentively to define “biodiversity” was the BBC (which is the national broadcaster for the UK). Of the 10 analysed articles from the BBC, six defined biodiversity. As an example of such a definition:

“*Biodiversity is the sum of all living things on the planet and the way they are connected in a complex web of life that we rely upon for food, clean air and water*” (BBC, R248).

In contrary, news outlets in Hungary never and in the Czech Republic and Austria only once defined biodiversity. The one article in the Czech Newspaper Lidove noviny defined “biodiversity” with “*the variety of life*” (Lidove noviny, R28).

No pattern could be observed in the occurrence of biodiversity definitions among news outlets with different political stances. Striking was however, that biodiversity was not defined in any article of the news outlets associated with far right political parties.

Values

Biodiversity’s value, by which we mean why it is worth protecting or preserving, was discussed in terms of its value to humans (anthropocentric) in almost half of the articles (n=175, 45 %). Anthropocentric values are the most frequently mentioned values compared to ecocentric and science-centred in all countries except in the Netherlands. Ecocentric values were assigned only in 124 articles (32 %) and science-centred values only in 9 % of the articles (n=34). It should be noted, that one article can refer to more than one value category.

During the analysis it also became clear that some articles made no value statements related to biodiversity. However, as we did not code for the absence of any value statement, the number of articles concerned by this cannot be quantified.

Anthropocentric

The identified anthropocentric value statements of biodiversity differ considerably in describing how tangible and fundamental the value of biodiversity for humanity is. Less tangible but more fundamental values are: “*Biodiversity is the basis of our existence.*” (FAZ, R87) or that “*Humanity relies on the healthy functioning of all ecosystems to survive*” (The Guardian, R283). In other instances, anthropocentric values describe very tangible outcomes by stating that biodiversity is important for food production for example: “*ecosystem services provided by birds, such as pollination of crops, seed dispersal or pest control*” (Právo, R38), for medicines and clean air for example: “*we need plants and biodiversity just to breathe. About two thirds of our medicine cabinet is made up of medicines that are based on nature*” (Lidove noviny, R24) or protection

against natural forces *“Natural habitats [...] offer protection against storms and floods and regulate the climate”* (FAZ, R91). In fewer instances, educational and aesthetic values of biodiversity are mentioned, for example by arguing biodiversity is important so that *“we don't have to go to the zoo to see rabbits, larks and other animals”* (Diary, R9).

Some of the less fundamental and less emotional value statements concentrate on economic consequences of biodiversity loss. These include monetary valuations: *“If we had to do the pollination work of the insects on our plantations ourselves, it would cost 150 to 600 billion euros per year”* (Bild, R72), the value of biodiversity for the economy *“An intact nature is essential for a permanently successful economic system.”* (FAZ, R89) or references to prosperity by stating that *“the world's prosperity is at stake”* (Le Matin, R114). News outlets associated with the right ideology perception spectrum such as the UK's Financial Times, the Swiss NZZ, the German FAZ or the Italian Il sole 24 ore seem to use economic values of biodiversity more often: *“Biodiversity is key to a new vision of natural capital as the ultimate source of all growth, security and fulfilment for humanity”* (Financial Times, R274) or *“the value of biodiversity is estimated at 33 trillion dollars per year”* (NZZ, 134).

Ecocentric

Ecocentric values of biodiversity, by which we mean that nature has intrinsic value, were less frequently mentioned in the analysed articles (n=124, 32 %). Such valuations ranged from statements talking about the disappearance of species. This includes statements saying that even though the COP15 was postponed for two years due to the pandemic *“Meanwhile, a million species, mainly insects, are in danger of disappearing forever”* (Avvenire, R187). In another article, the German Bild talks about *“a catastrophe”* which is taking place and that *“every day, about 150 species become extinct in this world. Animals and plants that never return. 150 times a day, the history of a species, millions of years of evolution, is destroyed”* (Bild, R72). Ecocentric values can also make an appeal to moral obligations, for instance: *“there are areas with species for which Switzerland has a special responsibility because they are rare”* (NZZ, R155). Others highlighted that humans share the planet with other species:

“Because no animal or plant lives alone in the world. All living creatures are connected to each other and to inanimate nature via often complicated networks” (TA, R111)

Interestingly, few news articles also refer to religious values when talking about biodiversity. As the argumentation for the religious values was along the narrative of intrinsic value of nature, we classified such statements as ecocentric. A good example provides the Italian, catholic-inspired, newspaper Avvenire: This news outlet uses also quite emotional language for example talking about *“mother earth”* (R193) or in the following statement:

“let us weep with the bitter cry of creation, let us listen to it and respond with deeds so that we and future generations may still rejoice with the creatures' sweet song of life and hope” (R193).

Also, one article of the German Die Welt was written by a catholic priest (R97) who strongly appealed to moral and religious obligations to preserve biodiversity by citing Pope Francis:

“It is not enough to think of the various species only as possible usable 'resources' and forget that they have intrinsic value. Every year thousands of species of plants and

animals that we can no longer know, that our children can no longer see, disappear lost forever.”

Interestingly these two newspapers are categorized with completely different political stances: Avvenire (left) and Die Welt (far-right). Ecocentric value statements of other news outlets prominent with far right such as the Hungarian Index or Telex are rather factual, reporting on the upcoming extinction of some species:

“Warming and changes in hydrology are also affecting flora and fauna, with up to 84% of endemic mountain species threatened with extinction. Many species have migrated to higher altitudes in recent decades, but this cannot continue indefinitely, as there is no higher ground after a limit, says Anna Kis.” (Index, R48)

Statements from news outlets associated with the left seem a bit more emotional:

“We should remember, for example, that more than 85% of the planet’s wetlands have been lost since 1700. We have more than a million species at risk of extinction and we’re seeing extinction rates that are at their highest since the loss of the dinosaurs. Yet we’re still seeing drivers of biodiversity loss, like land clearing, continue.”(The Guardian, R284)

Science-centred

Science-centred statements were only found in 34 instances of the analysed articles. These articles supported their arguments by citing scientific studies or advances; thereby placing the measurement of biodiversity in the scientific realm and implying the value of scientific work, either 1) to understand the natural world and celebrate scientific advancement: *“Globally representative data on the number of species in plant communities in small areas have not been available before”* (Právo, R35) or 2) as support in persuading or warning their readers: In one article a scientist explains the findings of a biodiversity study in the Swiss alps and continues to state that *“The unique biodiversity of the Alps is therefore under considerable pressure”* (Bild, R101). In another article, reference to science has an emotional tone:

“We know about two million species, but it is estimated that the planet is inhabited by more than eight million species. As a zoologist, I fully agree with these warnings, and have drawn up long lists of species that may be gone” (Il Fatto Quotidiano, R153)

These examples illustrate that science is used to support the credibility of an informing function, which may even be sometimes value free, with the scientific support used as a mechanism for the author of the article to distance themselves from valuation by portraying that they are simply reporting scientific facts. Together, these results suggest that the discourse includes a valuation of science, rather than a science-centered valuation of biodiversity.

Rhetoric function

Informing

Informing statements reported on the biodiversity topic but did not try to convince the reader of its relevance or persuade them to act. Articles with such statements (n=136) usually dealt with updating the readers on any political development (e.g. regarding the COP15) or included interesting snippets of information about some species or ecosystems:

“German researchers have even observed how, after a termite-hunting expedition, the “ambulance service” of one species of African ants carries an injured comrade back to the nest for treatment and convalescence. He does this, however, not for any noble reasons, but simply because it benefits the colony. Recovered warriors remain valid members of society and participate in future war expeditions.” (R28)

Some tabloid news outlets, such as the UK Metro or The Sun had articles with more informing rhetoric than others. Those were usually quite short articles. No pattern was observed related to political stance of the news outlets.

Persuading

Persuading elements (found in 119 articles) usually involved a call to action which could be rather general, for instance: *“We have to fix the world we have.”*(Die Zeit, R86). In other instances, such calls specifically targeted the reader, for example by convincing them to plant native species in the garden (e.g. TA, R108), or governments: *“This summit is a chance the world must not miss, probably the last chance for governments to turn the tide and save our precious life support system,” said Bernadette Fischler Hooper*” (Le Matin, R115).

Other persuading rhetoric provided a proposition of what ought to be done: *“We need richer and more diverse forests”* (Nationen, R321). Other articles used biodiversity to argue for food democracy (Die Welt, R100) flowering strips (SZ, R93), metrics to assess corporate action (FAZ, R89), reduced meat consumption (FAZ, R87) or sufficiency (Die Zeit, R83)).

Only in very few articles were there persuading rhetoric against the biodiversity crisis. In one example from Switzerland, the newspaper Le Matin cited a biodiversity loss denier of a right political party:

“The population has other problems than a biodiversity crisis that does not exist. Once again the Federal Councillor is in the pocket of an extremist group. Stop being naive like with the Glacier initiative. [...] “Let’s make laws that address human beings... We are overpopulated because of immigration and that is why we have a biodiversity problem in our country. [said Michael Graber, SVP]” (Le Matin, R113)

Accusing

Accusations were identified in 30 % of the articles (n=117). Such statements either blame other actors of inaction or wrong priorities to preserve biodiversity loss. Such accusations in many cases target the political sphere (public administration, politicians, government) by saying certain policies are “irresponsible” (Nationen, R322) or that politics lacks action:

“[the current Italian government] has always opposed any measure in Europe that went in the direction of protecting biodiversity, including agricultural biodiversity” (Il Manifesto, R167).

In other instances accusations are less specific, targeting politics or business, for example *“Switzerland has not done much in the last ten years”* (Le Matin, R133) or *“Climate change and intensive agriculture have already almost halved the numbers of insects in the most impacted parts of the world”* (The Metro, R288).

Entertaining

Eight of the 11 entertaining articles were found in tabloid news articles, especially the German Bild, The Norwegian Dagbladet and the Swiss 20 Minuten. Entertaining

elements used biodiversity relevant topics to entertain readers. For example, by reporting about a bird travelling by public transport to be released in a nature reserve (Bild, R74), portraying King Charles as an “eco-entrepreneur” (Dagbladet, R311) or Sebastian Vettel’s biodiversity friendly side projects:

“He is the fastest environmental activist in the country. Sebastian Vettel (34) not only drives Formula 1, but is also committed to biodiversity”, (Bild, R81).

Othering

Othering rhetoric was only identified in 17 of the analysed articles. It was especially dominant among news outlets prominent in the right political spectrum of Hungary where othering rhetoric targeted the European Commission, left-wing politicians or “*radical environmentalists*” (Magyar Nemzet, R56) (see Section 7.3 for more information). In Norway the tabloid news outlets VG and Dagbladet also had a few articles with othering elements. However, these elements were less strong than in Hungary.

Raising hope

Hope raising elements were present in 110 of the analysed articles. Such statements either diminished the severity of the biodiversity crisis by reporting about the reintroduction or halting decline of certain species, for example “*halting bird population decline in Europe. This is good news*” (Il Sole 24 ore, R), or showing efforts actors are already investing in biodiversity “*farmers are doing everything they can to increase biodiversity on their land*” (Algemeen Dagblad, R201). One article in the German Bild talks of “winning” and “loosing” animal species due to the global changes (R77). This framing obscures the real complexity of species extinction, by saying that there will just be a change in composition of the species inhabiting our planet.

In other instances, hope raising elements acknowledged the severity of the situation, but expressed hope after the agreement was reached at COP15, or conveyed in general that we can still turn the course of action:

“The decline of Earth’s biodiversity is not inevitable. Several studies show that the continued loss of wildlife around the world can be prevented” (The Guardian, R277)

Hope raising rhetoric seemed to be more prevalent among right and center news outlets such as the Norwegian VG, the Italian Il Sole 24 ore, the UK BBC or the Hungarian Magyar Nemzet and Index.

Warning

Of all rhetoric elements analysed within this study, warning rhetoric’s were the most frequently used (n=161, 41 %). The warning rhetoric was often quite emotional mentioning the situation is “*terrifying*” (Avvenire, R189), “*frightening*” (TA, R106) and that the earth faces a “*mass extinction*” (Daily Mail, R262). Also, many news outlets mention the status of biodiversity as a “*crisis*”, some even speak of “*collapse*” (e.g. The Guardian, R279), “*apocalypse*” (Avvenire, R187) or a “*nightmare*” (Corriere della sera, R184). Also warning statements issued by NGOs or world leaders are often cited:

“We are losing this war, added Mark Wright of WWF’s UK office” (HN, R23).

“Our planet is in mortal danger. Its lungs, our nature, forests and lakes are failing, said Scholz” (Die Zeit, R84)

Often warning about biodiversity loss is combined with discourse persuading stakeholders to protect it. Also hope raising elements are often in the same articles.

The following example illustrates the combination of warning and hope raising elements within the same article:

“Will it be different this time? According to environmental NGOs, the Montreal agreement is a step forward, but at the same time it contains a number of compromises compared to the original draft text. For example, it does not name harmful activities that should be excluded from protected areas. “There is a danger that real protection will remain on paper, Greenpeace said.” (Právo, R40)

Role of external actors

The most frequently mentioned actors in the biodiversity discourse of the news outlets are governmental actors (191), followed by scientists (136), NGOs (128) and business (115).

Government

Governmental actors seem to be mentioned more frequently among newspapers with a left and center political stance (mentioned on average 4.8 times among left news outlets, while only 3.9 or 3 times among news outlets popular among the right or far-right). This includes statements that report about certain political developments related to biodiversity protection or that accuse politics of inaction. Also, such discourse clearly puts governments in responsibility to act:

“world governments have not yet succeeded in slowing the decline of wildlife” (Il Fatto Quotidiano, R154)

It is not surprising, that among the political right news outlets, less responsibility is attributed to governments.

Scientists

In the statements about scientists, this actor group is repeatedly referred to as a trusted source for information on biodiversity or as the ones warning of the biodiversity crisis: *“Scientists agree on the urgency to act” (Avvenire, R)*. In other instances, scientists or scientific projects are described that proved detailed information on the status of biodiversity or the effects of certain interventions.

Only in a few instances do scientists get ascribed an active role in the preservation of biodiversity such as by preserving seeds of rare plant varieties (Il Manifesto, R163) or by contributing to innovations (Il Sole 24 ore, R172).

NGOs

NGOs seem to be mentioned more frequently among newspapers with a left and center political stance. Newspapers popular among the left, mention NGOS in 4.3 articles, whereas right and far-right leaning newspapers talk about NGOs only in 2.2 and 1.8 articles respectively. Similar to scientists, they are referred to as a trusted source for information on biodiversity or as the ones warning of the biodiversity crisis:

“Environmental Alliance, an alliance of several environmental associations, is sharply critical. [...] “We don't need new paper tigers, but effective measures.” (TA, 107)

In few articles, the activities of NGOs in contributing to nature protection or public awareness campaigns are mentioned.

Business

The role of industry and business in contributing to or tackling the biodiversity crisis is mentioned more or less equally among news outlets with different political stances (see Table 6). However, the newspapers differ in the exact role they attribute to business. Newspapers of the political left, see business as perpetrators of the biodiversity crisis:

“the expansion and intensification of agriculture is the greatest threat to the world's birds.” (TA, 112).

“Business groups block action that could help tackle biodiversity crisis” (The Guardian, R280)

On the other hand, in most statements the right news outlets either see business as vectors of innovation that support the fight against biodiversity loss, for example *“the commitment of the Sanpellegrino group is virtuous”* (Il sole 24 ore, R174), or business as being affected by the decline in natural diversity:

“A 2020 report by the World Economic Forum (WEF) found that more than half of global gross domestic product (GDP) - \$44 trillion - was potentially at risk due to economic dependence on nature. Construction, agriculture, and the food and beverage industries were the three most nature-dependent economic sectors.” (NZZ, 134)

General public

The role of the general public and citizens in relation to biodiversity is only mentioned in 74 of the analysed articles. Surprisingly, in 14 of the news outlets the general public is not mentioned at all. The news outlets of Italy, Switzerland and Norway mention the public frequently. This is usually by giving advice on what citizens can do to halt the loss of biodiversity, for example by adopting a certain type of diet (Nationen, R317) or garden management (TA, 136). In other cases, efforts of citizens to raise awareness of the biodiversity crisis or act upon it are mentioned:

“Many families with children, residents of the neighbouring neighbourhoods, but also activists and sympathisers from all over the city marched to ask the Region to extend the natural protections.” (Il Manifesto, R168)

In addition, the general public is mentioned implicitly by blaming the behaviour of society for the current situation: *“It is therefore on our over-consumption that we must question ourselves”* (Avvenire, R186)

Only in few instances do articles discuss how people will be affected by the loss of biodiversity.

Finance

The role of the financial sector is discussed in 62 articles. Not surprisingly the UK FT mentions the finance sector most often (in seven out of the 10 analysed articles). The role of finance for biodiversity is either discussed in terms of funds needed to finance nature conservation projects, especially in the global South or as the impact of biodiversity loss on the finance sector. The FT, the Swiss NZZ and the German FAZ mainly devote segments to describe how the finance sector has started to consider biodiversity in their operations:

“The impact of ecosystems is firmly rooted in our financial system” (NZZ, R134).

“Biodiversity has also played a rather minor role in the financial sector so far. When people talk about sustainable financing, they are essentially talking about the fight against climate change” (FAZ, R89)

“As a result, biodiversity is “now the fastest developing ESG theme in global capital markets [...]. In just three years, the issue has moved from being virtually ignored by mainstream institutional investors to being acknowledged by all.” (FT, R268)

4 Biodiversity discourse of political parties

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4.1 Methods

Collection of documents

The document analysis was carried out for four countries: Austria, Italy, Norway, and Switzerland. Each of the partners from the respective countries followed a predefined procedure to collect the documents. First of all, the five most important national political parties were selected according to their relative importance at the latest elections. For each party, the website address was identified and the term “biodiversity” was translated to the local language. A Google News search was conducted using the search command “biodiversity site: www.yourParty.com” or “biodiversity site: yourParty.com”. In countries, where several words are used for the concept of biodiversity such as in Austria with the terms “Biodiversität” and “Artenvielfalt”, the search command was adapted accordingly by using both terms (e.g. “biodiversität OR artenvielfalt site:www.övp.de”). The first 10 returns were translated into English using the translation tool Deepl.com.

Description of Political Parties

We use a classification for the political parties developed by ParlGov – a data infrastructure for political science, containing information for all EU and most OECD democracies (<https://www.parlgov.org/>). Political parties are assigned to eight different party families using a two-dimensional perspective of political competition (Döring, 2016): state vs. market (economic) and liberty vs. authority (cultural). ParlGov identifies eight party family categories that can be placed into such a two-dimensional space: Communist/Socialist, Green/Ecologist, Social democracy, Liberal, Christian democracy, Agrarian, Conservative, and Right-wing. The ninth category, “no family”, includes special issue parties without a clear left/right position. Figure 5 shows the distribution of the 20 analysed parties among the party families.

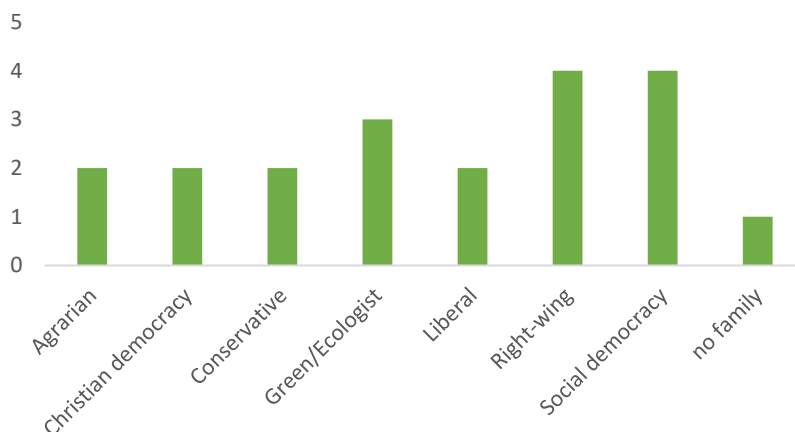


Figure 5. Distribution of parties to party families according to ParlGov classification (Döring, 2016).

Table 7. Political Parties by country and party family according to the ParlGov database.

Country	Party name	English name	Party family
Austria (AT)	Die Grünen	The Greens	Green/Ecologist
	Freiheitliche Partei Österreichs (FPÖ)	Freedom Party of Austria	Right-wing
	NEOS	NEOS - The New Austria	Liberal
	Österreichische Volkspartei (ÖVP)	Austrian People's Party	Christian democratic
	Sozialdemokratische Partei Österreichs (SPÖ)	Social Democratic Party of Austria	Social democratic
Italy (IT)	Fratelli d'Italia	Brothers of Italy	Right-wing
	Partito Democratico	Democratic Party	Social democratic
	Movimento 5 Stelle (M5S)	Five Star Movement	No family
	Lega per Salvini	League for Salvini	Right-wing
	Forza Italia	Go Italy	Conservative
Norway (NO)	Arbeiderpartiet	Labour Party	Social democratic
	Fremskrittspartiet	Progress Party	Right-wing
	Høyre	Conservative Party	Conservative
	Miljøpartiet de Grønne (MDG)	Green Party	Green/Ecologist
	Senterpartiet	Centre Party	Agrarian
Switzerland (CH)	Die Mitte	The Centre	Christian democratic
	Freisinnig-Demokratische Partei (FDP)	Free Democratic Party of Switzerland	Liberal
	Grüne	Greens	Green/Ecologist
	Sozialdemokratische Partei der Schweiz (SP)	Social Democratic Party of Switzerland	Social democratic
	Schweizerische Volkspartei (SVP)	Swiss People's Party	Agrarian

Document analysis

Out of the 20 parties, there were three parties (Italy – Forza Italia, Norway – Fremskrittspartiet, Austria – ÖVP) for which we did not find any press releases dealing with the concept of biodiversity using our search strategy. The documents were imported to the software MaxQDA for qualitative content analysis. Of the 10

documents, at least six documents per party were coded. The analysis was guided by the theoretical and methodological concept of Discourse Historical Analysis (see section 1.2 and 1.3).

4.2 Results

Values

Overall, all parties have mainly an anthropocentric perspective on biodiversity. They refer to the utility of biodiversity for humans and the superiority of humans to nature. There were, however, also a few statements indicating a rather ecocentric perspective taken on the topic. Below, the different positions are described in more detail.

Anthropocentric values

Parties from all party families refer to various benefits that biodiversity provides for humans. Seven parties highlight the role of biodiversity as the basis for our existence and livelihoods.

“Landscapes, habitats, biodiversity: they are not only a prerequisite for our quality of life, they are our livelihood,” Balthasar Glättli stressed in his speech to the delegates“ (CH_Grüne, Pos. 80)

“Biodiversity provides the basis for human life on Earth”. (Arbeiderpartiet, NO, Pos. 23)

Five parties refer to the need of promoting biodiversity for future generations and express their concerns about future livelihoods.

“Conservatives want future generations to inherit a planet that is in better condition than it is now” (Høyre, NO, Pos. 6)

Concretely, parties refer to the role of biodiversity in maintaining good quality of water, air, and soils and to produce food. Further, the role of biodiversity in providing space for recreation is highlighted. Perceptions of biodiversity promotion as an opportunity for value and job creation as part of a green development strategy did not appear to be attached to a particular party family.

Apart from these more fundamental anthropocentric values of biodiversity, parties from different families discuss the economic value of biodiversity. Green/Ecologist and Social democratic parties in Norway and Switzerland call for the calculation of the economic value of biodiversity. They claim that those who damage biodiversity do not pay for the costs and that there are no financial incentives to conserve and promote biodiversity. Therefore, they call for a price to be allocated to biodiversity and for internalization of external costs.

“A large part of the benefits of biodiversity is available free of charge as a public good. The lack of a price contributes to the fact that there are hardly any incentives for its conservation and promotion. Those who damage biodiversity often do not pay for the costs. At the same time, those who take protective measures lack the money. This imbalance must be addressed through the internalisation of external costs and the targeted management of financial resources.” (SP, CH, Pos. 25)

The Austrian Green party and the Norwegian and Swiss social democrats refer to the concept of Ecosystem Services.

“[Healthy ecosystems] help to ensure that important ecosystem services such as clean water or fresh air will continue to be available to all people in the future.” (Die Grünen, AT, Pos. 7)

“Norway’s ecosystems are made up of tens of thousands of species that interact in ecosystems we do not fully understand, but which we know provide crucial services to nature and society” (Arbeiderpartiet, NO, Pos 23).

“Among other things, [biodiversity] provides food, influences the climate, maintains water and air quality, is a component of soil formation or provides space for recreation.” (SP, CH, Pos. 21)

The Italian right-wing party Fratelli d’Italia and the Swiss social democrats highlight the reliance of our economy on biodiversity:

“Every economic process finds its origin in the earth. Agriculture, biodiversity, the production system: the inexhaustible mine of Made in Italy.” (Fratelli d’Italia, IT, Pos. 6)

The Norwegian agrarian party, Senterpartiet, highlights the need to prioritize saving resources rather than saving money:

“The Centre Party wants resource saving rather than financial saving. We have plenty of time when it comes to oil exploration. Safety measures are not yet well enough developed, and the current exploration methods have an unfortunate impact on fisheries.” (Senterpartiet, NO, Pos. 116)

They are supported by the Norwegian Green party who claim that nature is not a good that can be consumed, but that it is an irreplaceable value that we only have on loan (MDG, NO, Pos. 40).

Ecocentric values

The previous sections illustrate that the political parties mostly use an anthropocentric framing of human relations with nature. Although many parties acknowledge that humans are part of nature in the sense that we rely on biodiversity and ecosystems for our livelihoods, there were only very few cases where other living beings (animals and plants) or nature were put in the centre. One example is the Italian Five star movement that emphasizes the need to recognize animals as sentient beings and to question superiority of humans over animals:

“It is time to create a new balance between human activities and nature, to recognise animals as sentient beings, and to regulate this relationship by safeguarding plant and animal biodiversity, which makes a major contribution to our well-being and that of the Planet.” (M5S, IT, Pos. 8)

“Protecting our animal friends is not an act of compassion, but the recognition of the need to overturn the vision according to which man is at the top of a pyramid that he can dominate and exploit at will”. (M5S, IT, Pos. 7)

The Austrian Green party and Swiss liberals emphasise the need to strengthen human-animal relationships and to ensure animal welfare:

“In addition, we would like to create a stronger awareness for a good human-animal relationship. This applies not only to wild animals, but also to farm animals, grazing animals and domestic animals. Cruelty to animals, poaching or inappropriate husbandry must be strictly prohibited.” (Die Grünen, AT, Pos. 32)

“Involve children in this work [of biodiversity protection on private areas] and sensitise them to living together with the animal and plant world. The transfer of knowledge takes place in a natural way”. (FDP, CH, Pos. 14-15)

The Italian social democrats emphasize the need to create environmental laws not just for our own or our descendants’ protection, but for all living beings:

“Having in the Italian legal system [...] a law that [...] protects and promotes national biodiversity [...] is fundamental not only for us Italians and for one of the most successful sectors of our economy, but also for our descendants and for all living beings on Earth.” (Partito Democratico, IT, Pos. 7)

The Green and Social Democratic parties elaborate on their understanding of biodiversity in detail. Reference is made to the complexity of nature, stating that humans are not able to fully understand it and that this is why humans do not give biodiversity enough attention (two mentions). The Swiss Green party highlights that ecosystems are fragile and need to be protected from overexploitation. The Norwegian Green party uses the idea of tolerance limits to describe the fragility of nature.

Parties recognize that biodiversity loss accelerates climate change through the disappearance of moors, forests, and green spaces. One party refers to the connection between biodiversity and good human health in relation to high-quality soil, forest, air, and water.

Rhetoric function

informing

Informing about biodiversity developments is an important function used by most parties, but primarily by the Green/Ecologists and Social democratic parties. Five of the 20 parties (one Green/Ecologist, three Social democratic, and one Agrarian) use concrete numbers to describe the state of biodiversity. This includes descriptions of existing populations, numbers of threatened (or already lost) species or habitats, numbers of declining populations, or statements about the value of biodiversity.

Persuading

Persuasion was the most important rhetoric used by almost all the party families to highlight the role of biodiversity, and the need for action. The role of biodiversity was highlighted by expressions such as *“we need biodiversity to survive”* (IT-Partito Democratico), *“we depend on biodiversity”* (NO-MDG), or *“we are proud of our biodiversity heritage”* (IT-Partito Democratico). The need for Action was emphasized by using terms such as *“threat”* (CH-Grüne; NO- Arbeiderpartiet; AT- Die Grünen; IT-MSS), *“greatest challenge”* (CH-Grüne), *“dramatic loss/decline”* (NO-MDG; CH-Grüne), *“decline not halted”* (CH-SP), *“extinction”* (IT-Partito Democratico; NO- Arbeiderpartiet; CH-Grüne; NO-MDG; , *“crisis”* (AT- Die Grünen; IT-Partito Democratico; CH-Grüne; CH-SP; NO- Arbeiderpartiet; NO-MDG), or *“damaged nature”* (NO-MDG). The required action was described in challenging terms, such as *“fight”* (AT- Die Grünen; IT-Partito Democratico; CH-FDP; CH-Grüne; IT- Fratelli Ditalia; NO- Arbeiderpartiet; , *“halt degradation”* (NO-MDG), *“stronger commitment”* (CH-SP), and *“invest sufficient resources”* (CH-SP). Some parties used constructive persuasion such as *“become a pioneer”* (NO-MDG), or *“we can do something about it”* (NO- Arbeiderpartiet). One party highlights that biodiversity thrives on agricultural land, suggesting that no further action is needed (CH-SVP).

Accusing

In our data, parties often *accused* other actors for a lack of action in promoting biodiversity. Parties expressed missing commitment, that nothing was achieved, a lot of paper produced (referring to political agreements), or that nature was degraded. These accusations were often directed by opposition parties at the incumbent government, although sometimes at coalition partners.

The Swiss agrarian party SVP accuses environmental NGOs and the Green party of blaming farmers for the loss of biodiversity, claiming that this was wrong. They suggest that the finger should not be pointed at farmers but at the “*excessive immigration*” that leads to the increased need for food production. They also point at organic farming, stating that “*it is not justifiable that butterflies are counted instead of food produced on the best soils in Switzerland*”.

Also, liberal and right-wing parties, such as AT-NEOS; AT-FPÖ; CH-FDP; and CH-SVP, have claimed that defining regulations centrally, such as at EU level, can be problematic and argued that local and regional policies would be more effective.

Calling for action

There is agreement among parties from all families that biodiversity is declining and that there is a need for action. Various parties from the Social democracy and Greens party families emphasize the need to take biodiversity loss more seriously and suggest that biodiversity loss is as important an issue as climate change. Three parties (one Christian democratic, one Conservative, one Right-wing) emphasize the need to promote biodiversity without indicating clear actions to be undertaken. In these documents, it remains unclear what they mean by “biodiversity promotion”.

Most parties acknowledge the conflicts that arise between different human activities and biodiversity. Parties assign different levels of priority to the promotion of biodiversity. According to the Swiss Agrarians and the Norwegian conservatives, biodiversity cannot be put at the centre but needs to be balanced with other interests. Green and social democratic parties, on the other hand, highlight the need to take biodiversity loss seriously and to give it more importance.

Othering

Two parties (one right-wing, one Agrarian) see no need for biodiversity protection. The Swiss Agrarian party claims that Switzerland is more advanced in terms of biodiversity protection compared to other countries:

“Compared to other countries, Switzerland has done its homework in this respect. Environmental protection and the protection of biodiversity are already held in high esteem by our population and businesses. There is therefore no need for a strategy or further measures, and certainly no action plans, which run the risk of creating additional state requirements, regulations and possible levies and charges at the expense of the population and the economy.” (SVP, CHP, Pos. 27)

The right-wing party Fratelli d'Italia and the Swiss liberals state that there is a traditional commitment to a balanced ecology. These parties distance themselves from the green/ecological and social democratic parties, who they see as putting the interests of others before the interests of their own.

Knowledge bases and ideological justification for actions

Agriculture and Food

The Italian Fratelli d'Italia (Right-wing) and the Swiss SVP (Agrarian) party generally do not see a contradiction between human activities and environmental protection. They highlight the contribution of farmers to the conservation of biodiversity.

“It is a macrocosm in which man lives in perfect harmony with the biodiversity around him because it is from this that he draws his sustenance, often for several generations. Who can be more interested in defending the nature in which he lives and works than the farmer, the breeder, or the hunter? No one. Here too, a certain radical chic vulgate attempts to pit nature against man: it is a war that does not belong to us.” (Fratelli d'Italia, IT, Pos. 20)

To decrease pressure on agricultural land to produce food, the Swiss right-wing party SVP suggests focusing on limiting immigration. The party claims that agricultural land is scarce and therefore needs to be used intensively in order to ensure that food is produced. In this perspective, the Swiss Centre party (Christian democratic) also states that fertile soils should be converted into pastures.

Parties from different families perceive the need to further promote biodiversity on agricultural land. This is emphasized by parties from all countries, but mainly Green, Social democracy, and Christian democracy parties. Parties in Switzerland, Austria, and Norway highlight the need to promote biodiversity on meadows and pastures.

Green and social democratic parties in Switzerland and Austria refer to intensive and industrial agriculture as an important practice harming biodiversity. Particularly pesticides and nitrogen fertilizers are perceived to harm biodiversity. They perceive organic agriculture to be a solution and suggest promoting organic production as well as consumption of organic products in public procurement. The Swiss Green party has listed some other suggestions on how to reduce pesticides:

“Levy an incentive tax on pesticides, ban the sale of pesticides to private users and the use of pesticides in public facilities, and promote alternatives to the use of synthetic chemical pesticides in agriculture.” (Grüne, CH, Pos. 33)

The Swiss liberal party, as well as the Italian Right-wing parties: Lega and Fratelli D'Italia, promote genetic engineering and precision farming because they see a potential for these approaches to reduce the use of pesticides and therefore promote biodiversity. On the other hand, the Swiss liberals also support the establishment of a new golf course, arguing that replacement of an area of monocultures will have benefits for biodiversity.

Some Christian democratic, Green/Ecologist, and Social democratic parties furthermore refer to the issue of management dependant biodiversity that is lost when lands are no longer in use. Specifically, they refer to species linked to grazed Alpine pastures which are very costly to manage due to herd protection.

Forests and other public greenspaces

The Swiss Centre party claims that managed forests are not harming biodiversity but rather promote it. They ask for support of:

“...targeted interventions in suitable locations, or to promote the currently unprofitable use of certain forest areas, instead of expanding the unused forest area, which is poorer in biodiversity, with an area target.” (Die Mitte, CH, Pos. 22)

The Austrian Green party calls for the reduction of spruce trees because of climate change but also argue from a biodiversity point of view. They highlight the role of mixed forests with an adapted wildlife population:

“Mixed forests are important for us today in the climate crisis to maintain the forest functions that are so important to us. This also requires the forest to be able to rejuvenate itself. For this to succeed, there needs to be an adapted wildlife population, where the proportion of herbivores and predators is balanced and adapted to the habitat.” (Die Grünen, AT, Pos. 36)

The Norwegian Conservatives ask for more reforestation in the country but also highlight the role of rainforests for biodiversity and the need to better protect them. The green parties emphasize the role of public green spaces for the promotion of biodiversity; especially in cities. Parties from different families also emphasize the role of private green spaces and the responsibility of all citizens to promote biodiversity at home, in gardens, or on balconies (Swiss Liberals, Austrian Greens). The Swiss Greens highlight the need to reduce the use of pesticides on private and public green spaces. Parties from all countries and party families highlight the problem of loss of greenspaces due to settlement construction and expansion of transport infrastructure. In Norway, cabin construction is a particular locally relevant topic (see Section 8.3).

Greenhouse gas emissions

Green and social democratic parties in Norway and Switzerland, as well as the Italian Five Star Movement emphasize that climate change and biodiversity loss are closely interconnected and that the two need to be tackled together. They perceive measures aiming at reducing greenhouse gases to be measures for biodiversity promotion and vice versa. In the frame of biodiversity promotion, the Swiss Greens call for the decarbonization of the financial sector.

Environmental damage from mismanagement

Political parties commonly refer to the mismanagement by the governing party in terms of environmental damage and biodiversity loss. For example, in Norway, one party (Agrarian) refer to the relationship between oil exploration and loss of marine biodiversity: *“Safety measures are not yet well enough developed, and the current exploration methods have an unfortunate impact on fisheries”*. (Senderpartiet, NO, Pos. 116). A further example is parties from Austria, Italy, and Norway (Right-wing, no family, Conservatives, Agrarian) highlighting the issues of plastic waste that ends up in oceans and is becoming a threat to ecosystems and biodiversity.

Trade

The Swiss social democrats and the Norwegian Conservatives highlight that our impact on biodiversity does not stop at country borders. They refer to the import of products which are harmful for biodiversity elsewhere along their production, processing, and trade cycles. Specifically, the state of rainforests is mentioned. They ask for trade and financial investment regulations to favour biodiversity-friendly products:

“[...] Switzerland must also increasingly align its free trade and investment protection agreements with the criterion of sustainability. Goods that have been produced in a

way that damages biodiversity should not be treated the same in free trade agreements as those that do not affect or promote biodiversity. Investment protection agreements should also not protect investments that damage biodiversity, but those that favour sustainable investments.” (SP, CH, Pos. 29)

The Norwegian Centre party highlights the role of knowledge about biodiversity. They state that once we have a good knowledge base, conflicts about resource use can be solved. There is no agreement between parties to what extent we already have enough knowledge or still need to acquire knowledge. One liberal and one conservative party perceive that we already have all the knowledge that is needed to take measures. On another occasion, one of these two parties call for more transparency on the loss of biodiversity. This is in line with the statement of the Norwegian Social democratic party where they highlight a need for better understanding of the causes of biodiversity loss and the effectiveness of measures to support biodiversity.

Calls for action

Various types of measures for the promotion of biodiversity were suggested by the different parties. The suggestions vary in relation to their legal obligation and in terms of underlying rationales, time perspectives, and the allocation of financial resources. Green and social democratic parties in Switzerland, Norway, and Italy emphasize the need to provide sufficient financial resources to biodiversity promotion. The Norwegian Conservatives highlight the need for promotion measures to be cost-efficient. The Norwegian Greens also highlight the need to take a long-term perspective by creating *“rules to ensure that overall long-term impacts on nature are given more weight in public and private decisions”* (MDG, NO, Pos. 44).

The suggested measures can be divided according to their degree of being legally binding; spanning from very restrictive, for example *“all interventions in nature should require explicit permission”* (MDG, NO, Pos. 45) to voluntary, for example *“ecological upgrading must be based on private property on a voluntary basis”* (SVP, CHP, Pos. 62), or *“a combination of voluntary protection, sustainable use and nature-based value creation based on strong private property rights”* (Høyre, NO, Pos. 17).

For the further discussion we classify the policy measures into ‘carrots’, ‘sticks’ and ‘sermons’ based on Bemelmans-Videc et al. (2011) (see also Section 1.3).

Sticks – Regulatory measures

Overall, the Greens/Ecologists, the Social democrats, and the Italian Five star movement (no family) call for legal measures that are binding and also for the introduction of bans on certain practices (so called “sticks”).

The Austrian social democrats call for a ban of patents on plants and animals. They also commit themselves to banning certain pesticides such as glyphosate. The Swiss Green party repeatedly mentions the need for reducing pesticides and call for a ban on the sale of pesticides to private users and on the use of pesticides in public facilities.

The Swiss Christian democrats ask for compensation areas that need to be established to compensate for the biodiversity losses due to sealing and construction to be less strict. However, the The Centre rejects the intention to grant the Federal Council the authority to prescribe a minimum scope of this ecological compensation to the cantons by ordinance. Instead, The Centre is of the opinion that the ecological *“infrastructure”*

in the vicinity of settlements (e.g. in the form of near-natural hedges, green spaces, water bodies, etc.) should be specifically upgraded. (Die Mitte, CH, Pos. 29)

Parties in Switzerland, Norway, and Italy (Christian democratic, Green/Ecologist, Social democratic) ask for the expansion of protected areas with no human intervention because of their value for the conservation of biodiversity. The ecological reasons for the expansion of protected areas are dominant in the discourse of the Green/Ecologist family of parties, but other parties call for similar expansion based on economic interests: as illustrated by the statement of the Italian Social democrats:

“New and simpler management models for our protected areas, treatment of land disruption and water and air pollution, protection of fauna and flora, and sustainable management of ecosystems are crucial tools in the fight against the climate crisis, capable of guaranteeing significant economic benefits, especially in marginal areas, and new jobs”. (Partito Democratico, IT, Pos. 37-43)

Carrots - Market interventions

Another approach to promoting biodiversity is to provide financial incentives in order for companies or private households to voluntarily take measures. Liberal and conservative parties from different countries highlight the need for intervention to be voluntary and market-based. Parties from all family types emphasize the need to combine biodiversity promotion with economic growth. There is no party that challenges the concept of economic growth.

An example of such a measure is the internalization of external costs so that the market prices display the real costs that occur for society. Such an internalization may be achieved by the introduction of taxes, such as the nature tax suggested by the Norwegian Greens, or the pesticide tax suggested by the Swiss Greens. In addition, the Swiss social democrats and the Norwegian Greens advocate for the polluter-pays-principle:

“A large part of the benefits of biodiversity is available free of charge as a public good. The lack of a price contributes to the fact that there are hardly any incentives for its conservation and promotion. Those who damage biodiversity often do not pay for the costs. At the same time, those who take protective measures lack the money. This imbalance must be addressed through the internalisation of external costs and the targeted management of financial resources.” (SP, CH, Pos. 25)

The Norwegian and Swiss Green parties also ask for biodiversity-damaging incentives to be abolished. In particular, in Switzerland and Austria, the role of agricultural subsidies is emphasized. The Swiss Christian democratic party highlights the need to compensate farmers for their efforts for biodiversity. The Austrian Greens acknowledge the need to compensate farmers for loss of agricultural animals due to wild animals. The same parties emphasize the need to financially support the management of mountain pastures for it to be continued.

Sermons – Information measures

Among the sermons, the most prominent measures were statements about biodiversity targets. Various parties highlight the importance of defining clear targets for biodiversity. One example is area targets where a certain percentage of the area per country needs to serve biodiversity promotion. This seems to be a controversial topic, especially in Switzerland. The Swiss liberals ask for all types of areas to be eligible to be counted in, including agricultural biodiversity promotion areas of all quality levels.

The Swiss Agrarian party and the Christian democrats are against the introduction of an area target for biodiversity. They highlight that agriculture already promotes biodiversity on a considerable portion of its land.

In Norway, the Green party calls for the introduction of a zero net loss target of nature, using the term 'land-neutrality'. Moreover, parties ask for concrete targets related to species diversity (AT-Die Grünen; NO- Arbeiderpartiet; NO-MDG; CH-FDP).

The Italian right-wing party Fratelli d'Italia emphasizes the need to set goals but highlights that these goals must be realistic and should not harm companies or the economy:

"Today the challenge we face is to combine environment and economic growth. We believe that companies must be accompanied towards an ecological transition. It is right to set goals, even ambitious ones, provided, however, that those goals are realistic. The transition must be gradual, and imposing new burdens on companies is a mistake that leads to further poverty and job losses." (Fratelli d'Italia, IT, Pos. 18).

Various parties (different party families) highlight the need to have a comprehensive perspective on land use and that land should be available for biodiversity promotion. The Swiss liberal party emphasizes the need for habitat connection and a comprehensive perspective on the "*ecological infrastructure*" (FDP, CH, Pos. 65).

Informing and awareness raising measures are only suggested by a few parties. Three parties (one Conservative, one Green/Ecologist, one Social democratic) emphasize the need to map habitats and the state of biodiversity. These parties call for an inventory, repository, register, or map on ecosystems, biodiversity, habitats, species, etc. One Liberal party very specifically asks for more research to be conducted on genetic engineering:

"Genome editing can lead to more resistant varieties that are better able to cope with periods of heat and drought. In addition, they are more resistant to potential pests, require less pesticides and thus better protect biodiversity." (FDP, CH, Pos. 117)

The Austrian Greens, which themselves are actively engaged in the organization of awareness-raising events, call for efforts to raise awareness about biodiversity loss among citizens.

5 Biodiversity discourse of environmental NGOs

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5.1 Method

Collection of documents

The document analysis was carried out for three countries: United Kingdom, Switzerland and Norway. Each of the partners from the respective countries followed a predefined procedure to collect the documents. Firstly, five environmental NGOs were selected by the research team to be those, in their own country, with the highest visibility, activity, and influence within the national context (see Table 7). The NGOs were selected based on an informed, but subjective, evaluation of the NGOs by the research teams in each country, who collectively have many years of experience working within the field of biodiversity research in their respective countries. For each NGO, a Google search was conducted for “biodiversity” and “press release” (translated to the local language) using the following search command “biodiversity AND “press release” site: www.<NGO’s web address>”. In countries, where several words are used for the concept of biodiversity, such as in Austria with the terms “Biodiversität” and “Artenvielfalt”, the search command was adapted accordingly by using both terms. The search was not restricted to particular years and the first ten returns, which were listed in the sequence as returned by the google algorithm (see section 7.4 on limitations), were collected in a document and translated to English using the translation tool Deepl.com.

Table 8: Overview of selected environmental NGOs by country.

Country	NGO
United Kingdom (UK)	Butterfly Conservation
	Plantlife
	Royal Society for the Protection of Birds (RSPB)
	The Wildlife Trusts
	World Wide Fund for Nature (WWF)
Switzerland (CH)	Birdlife
	Greenpeace
	ProNatura
	Stiftung Landschaftsschutz Schweiz (SLS)
	World Wide Fund for Nature (WWF)
Norway (NO)	Bellona
	Natur og Ungdom (Nature and Youth, NU)
	Friends of the Earth Norway (Naturvernforbundet, NVF)
	Sabima
	World Wide Fund for Nature (WWF)

Document analysis

The documents were imported to the software MaxQDA for qualitative content analysis. Of the 10 documents, at least five documents were coded per NGO. Articles that were off-topic or didn't provide enough insight on the position towards biodiversity and news memos were excluded. The analysis was guided by the theoretical and methodological concept of Discourse Historical Analysis (see sections 1.2 and 1.3). The focus was on understanding how the NGOs frame the concept of biodiversity. The press releases often included statements by actors outside the NGO (e.g. government officials or scientists). These citations were not coded unless they conveyed information on a meta-level so that it became clear how the NGO is using the citation for their argument.

5.2 Results

Values

Anthropocentric values

The analysed documents predominantly make anthropocentric arguments for the value of biodiversity and nature. The NGOs repeatedly state that biodiversity is the “*basis of our existence*” (SFS, CH) or of our “*livelihood*” (e.g. Sabima; NO, Birdlife, CH). In few cases biodiversity is framed as of less fundamental importance when saying that it is necessary for human well-being (WWF, UK) or that people (elsewhere) are suffering because of degraded nature (Sabima, NO).

The NGOs further argue for biodiversity by referring to specific ecosystem services, especially regulating and provision services, such as:

- Carbon sequestration of moors, marshes, wetlands and forests (Pro Natura, CH, WWF, CH; Sabima, Norway; NU, NO)
- Storage and purification of water (ProNatura, CH; WWF, CH; NU, NO)
- Protection against extreme weather events such as heat, drought or flooding (ProNatura, CH; WWF, CH; NU, NO; Sabima, NO)
- Protection against erosion (NU, NO; ProNatura, CH; WWF, CH)
- Provision of food, either via pollinating insects (Greenpeace, Switzerland; WWF, CH) or directly from an ecosystem (NU, NO)
- Medicine (NU, NO)
- Raw materials (Sabima, NO)

Cultural ecosystem services, such as recreation or aesthetics, are less frequently mentioned. Only one example figured among the analysed press releases:

“Access to unspoiled nature, biodiversity and a sustainable environment is of great importance for our physical as well as mental health and thereby the quality of life of future generations.” (NVF, NO)

Ecocentric values

The NGOs rarely argued for biodiversity from an ecocentric perspective and the only NGO to do so was WWF. In the UK WWF used ecocentric statements by referring to the world as “*our home*” (WWF, UK) or calling for “*A change from viewing nature as*

something that's optional or 'nice to have' to the single greatest ally we have in restoring balance to our world" (WWF, UK). In Norway, WWF state that:

"In the debates about where to draw the line, it is easy to forget what this is really about: The large and small animal species that live in the ice edge zone and the renewable fisheries resources. For the species that live here, there is nowhere else to live on the planet." (WWF, NO)

Rhetoric function

The analysed press releases show that environmental NGOs from the UK, Switzerland and Norway use their texts to warn readers about the severity and effects of biodiversity loss, persuade them of the need to be concerned about biodiversity decline, and call for action.

Warning

The warning rhetoric in the UK is more alarming and emotional than in Norway or Switzerland. The organizations from the UK warn of an *"ecological emergency"* (RSPB, UK) with *"catastrophic consequences for the planet"* (WWF, UK) given the *"freefall"* in wildlife which is in a *"catastrophic decline [...] showing no signs of slowing"* (WWF, UK) or of *"nature's extreme declines"* (Wildlife Trusts, UK). Additionally, the decline in local wildlife and the framing of the UK as *"nature depleted"* is a unique narrative (Wildlife Trusts, UK). In Switzerland and Norway, the most emotional language is used by WWF. However, most press releases are less confrontational than in the UK, for example:

"The year 2022 was not a good year for biodiversity in Switzerland and globally. The biodiversity crisis is still not taken seriously enough, especially in politics" (Birdlife, CH).

Persuading

A strategy by the UK, Swiss, and Norwegian NGOs is to use the increased awareness about climate change to draw attention to the problem of biodiversity loss and persuade readers to consider them as interrelated. They highlight that *"biodiversity loss is as acute a crisis as the climate crisis"* (Sabima, NO) framing them as the *"twin crises"* (Plantlife, UK). Such statements are sometimes given further external justification, with the NGOs referring to publications or statements of trusted institutions, such as the COP to the UN Framework Convention on Climate Change (e.g. Birdlife, CH) or the World Biodiversity Council (WBC) (e.g. SFS, CH). Biodiversity loss and climate change is understood as being interrelated, with climate change proposed as a major cause for biodiversity loss by *"accelerat[ing] species extinction"* (WWF, CH), while functioning ecosystems are *"the most important insurance against the consequences of climate change"* (Sabima, NO). WWF Switzerland explains the relation between climate change and biodiversity as follows:

"Climate change is a financial risk that is recognised as such by a growing number of financial actors and regulators. A related but unrecognised environmental risk is the rapid loss of global biodiversity. Climate change further accelerates species extinction and leads to rapid changes in ecosystems. This drastically limits the natural carbon sequestration of ecosystems, which in turn exacerbates climate change. This negative spiral has so far been virtually ignored by decision-makers, the financial sector, and its regulators." (WWF, CH)

Therefore, some NGOs argue for the need to tackle climate change and the biodiversity crisis jointly and not “*play [...them] against each other*” (WWF, CH).

Calling for action

The calls for action by the UK, Swiss, and Norwegian NGOs adopt an alarming and emotional tone, with claims that “*The facts are clear. Nature is in crisis*” (Butterfly Conservation, UK) and that “*we must do everything we can to halt its decline now*” (Plantlife, UK). The WWF even uses war-like allegories:

“We are in a fight for our world: we now know what needs to be done, and paper promises won’t be enough.” (WWF, UK)

The UK, Swiss, and Norwegian NGOs have hopes for the international negotiations, as part of the Conference of the Parties (COP) on Biodiversity, to halt the loss of global biodiversity. In the majority of the calls for action, the NGOs address politicians or urge the governments to take the degradation of biodiversity seriously and implement effective measures to halt further losses. Other actors are barely addressed specifically. Usually the general term “*we*” is used to describe measures to be taken by politicians, governments or the international community. The Norwegian NGO Sabima stood out with its call for citizens to consider biodiversity in the upcoming national elections.

Role of external actors

When discussing responsibilities to act for biodiversity, the NGOs mentioned government actors (including politicians and public administration) most frequently, followed by industries and citizens. The role of science, NGOs or finance is less discussed.

Government

When speaking of the government actors, the NGOs frequently use ‘accusing rhetoric’, criticizing the government for a lack of action in general, failure to reach targets or comply with regulations (Birdlife, CH; Pro Natura, CH; SFS, CH; NVF, NO; Wildlife Trusts, UK), developing vague, non-rigorous or unambitious strategies (Greenpeace, CH; WWF, CH; Wildlife Trusts, UK), or favouring other short-term interests (in agriculture or energy) and thereby weakening environmental protection (WWF, CH; Bellona, NO). In this line, governments are repeatedly accused of being too influenced by business interests in forestry (NVF, NO) or agriculture (Greenpeace, CH). Statements like the following are exemplary of the accusing tone:

“[...] it is high time that the conservation of biodiversity is taken seriously by those who govern the country. Nature needs no more big words. The knowledge of what needs to be done is in place. It is the action and investment that is lacking.” (Sabima, NO)

To justify the accusations the NGOs use a variety of instruments. On some occasions, the NGOs refer to public opinion, stating that the public expects more action from the government (Sabima, NO; Wildlife Trusts, UK). In other instances, well-established institutions, who criticise the country, are cited (NU, NO). NGOs in the UK (RSPB, UK, Wildlife Trusts, UK) were found to remind governments of promises that they have made. Another instrument to underline the poor performance is the comparison with other countries.

“Today, forests cover 40% of the country's [Norway] land area. Of this, just over 3% is protected areas. However, Russia and our neighbours on the Scandinavian peninsula have higher figures to show, although even they are not on target in a long-term perspective.” (NU, NO)

Non-accusatory rhetoric regarding government action is seldomly found. Apart from informing the readers about recent development in biodiversity politics, some statements highlight windows of opportunity to improve biodiversity protection (WWF, CH; RSPB, UK). Only in two instances have governments been praised for actions taken or progress made (RSPB, UK; NU, NO).

Business

The role of business and industry in contributing to the biodiversity crisis has much less accusatory notions than for the government actors. Accusations were mainly about environmental impacts of agricultural activities (ProNatura, CH), forestry (NVF, NO) and oil extraction (Bellona, NO). Interestingly the discussion about the roles of industries was framed in the sense that governments need to better regulate industrial activities, for example in oil extraction or forestry, rather than pushing for industries to become more considerate themselves (Bellona, NO; NVF, NO). On one occasion, an NGO also highlighted the potential that businesses can have to promote nature friendly projects (Plantlife, UK).

Citizens and the general public

The ability of citizens or the general public to halt the loss of biodiversity is regularly addressed. The NGOs mention the role of citizens concretely in contributing to biodiversity mapping through citizen science (Butterfly Conservation, UK), volunteering with the organization (Birdlife, CH), creating natural areas in their neighbourhood (Wildlife Trusts, UK) or in home gardens (SFS, CH), in raising awareness about the issue:

“Be the voice of biodiversity when it needs it most.” (Sabima, NO)

In addition, citizens are urged to influence the trajectory of biodiversity policy through voting in elections (WWF, NO; Sabima, NO). NGOs call on citizens to adapt their (consumption) behaviour by *“flying less, eating less meat and reducing consumption”* (WWF, NO). Ultimately, another way to support biodiversity protection is to donate money to the organization (WWF, NO).

Science

Apart from referring to information describing (the loss of) biodiversity in numbers or citing reports to make an argument, the role of **science** is barely mentioned in the documents. An exception is the case of Norway, where biodiversity policy follows *“knowledge-based management”* (NVF, NO). Norwegian NGOs raise the need for further mapping of ecosystems (Sabima, WWF and NVF). In addition, there seems to be a dispute about having the right kind of knowledge:

“We would also like to emphasize that the accuracy and knowledge base for identifying new and important candidates for protection is not yet good enough. The forest industry's own environmental mapping (MiS environmental mapping in forests) has proved to be very inadequate. They capture only 14% of what independent professional biologists record” (NVF, NO).

NGOs

When the NGOs discuss their own role in contributing to biodiversity, the discourse is praising. In such statements the NGOs mention their efforts in mapping rare species (NVF, NO), manage protected areas or nature reserves (Birdlife, CH) or awareness raising campaigns (Birdlife, CH; Wildlife Trusts, UK)

“With these activities, the BirdLife family is making a major contribution to combating the biodiversity crisis in our country,” says Raffael Ayé, Executive Director of BirdLife Switzerland. (Birdlife, CH)

Finance

Only one press release by WWF Switzerland mentions the role of the finance sector in overcoming the biodiversity crisis:

“Central banks and financial regulators have a critical role to play in the transition to a more sustainable financial system that benefits people, the climate and nature. Climate-related risks are increasingly being considered, but those related to biodiversity loss, such as forest degradation or overfishing, are still largely ignored. There is an urgent need to address this shortcoming.” (WWF, CH)

Calls for action

A large proportion of the NGO press releases deals with argumentations for or against certain policy measures. As part of these, the NGOs call for increased funding by their governments for biodiversity protection, to fill the “*biodiversity finance gap*” (WWF, UK), both nationally and for developing countries. Some calls are more specific to increase financial resources for protected areas (SFS, CH; Wildlife Trusts, UK), scientific studies (WWF, NO), or environmental authorities (WWF, NO).

For the further discussion we classify the policy measures into ‘carrots’, ‘sticks’ and ‘sermons’ based on Bemelmans-Videc et al. (2011) (see also section 1.3).

Carrots – Market interventions

Few of the discussed policy measures fall under the category of ‘carrots’. The removal of biodiversity-damaging subsidies, such as subsidies for oil and gas, or the sales of animal products, play a major role here (Birdlife, CH; Sabima, NO; WWF, NO).

“[Biodiversity damaging subsidies] are one of the main causes of our country's serious biodiversity crisis and at the same time undermine all efforts to protect nature and species.” (Greenpeace, CH)

As an alternative, measures according to the polluter-pays principle are advocated for. However, with no concrete proposal on its design.

Sticks – Regulatory measures

Among the discussed regulatory policy measures, three types of ‘sticks’ are frequently encountered. First, the NGOs call for the establishment of additional protected areas or for introducing greater restrictions in protected areas (WWF, CH; RSPB, UK; NU, Norway; WWF, NO; Plantlife, UK). Second, they advocate for certain bans on harmful practices, such as burning peat (RSPB, UK; Wildlife Trusts, UK), using pesticides in agriculture (Greenpeace, CH) or gravel gardens, where gardens are covered with gravel to reduce maintenance (SLS, CH). Third, the organisations call for stricter legislation, to make biodiversity measures binding (WWF, CH), define “*powerful,*

legally-binding environmental targets” (Wildlife Trusts, UK), and to implement legislation across sectors (WWF, NO).

In addition, we also found country specific regulatory measures. Documents from the UK highlight the role of peatlands and call for the restoration of damaged land (Wildlife Trusts, UK; RSPB, UK). Furthermore, the UK NGOs praise recent developments in the permission to reintroduce wildlife such as beavers, wildcat or the golden eagle. In Switzerland the conflict between other environmental goals and biodiversity protection is discussed. Greenpeace Switzerland criticises the relaxation of environmental regulations to speed up renewable energy expansion. And in Norway NGOs call for stricter requirements for risk and impact assessment related to oil spill (Bellona, NO) and other projects (WWF, NO).

Sermons – Information measures

The most prominent measures among the discussed ‘sermons’ are international cooperation and specifically international agreements as part of the COP. Some environmental NGOs call on their governments to push for an ambitious international agreement (WWF, UK; WWF, NO) to “set the world on a new course” (WWF, CH).

“The time for pure national interests has passed, internationalism has to be our approach and in doing so bring about a greater equality between what nations take from the world and what they give back. The wealthier nations have taken a lot and the time has now come to give.” By Sir David Attenborough (WWF, UK)

Mixed with the high hopes for the Kunming-Montreal Biodiversity Targeting Framework is the criticism that the agreement is non-binding and has loopholes, and that the Montreal treaty does not properly address the underlying drivers of biodiversity loss (WWF, UK). Furthermore, Friends of the Earth, Norway warns of a strong focus on percentage targets as the regional distribution – for example of protected areas – also plays an important role. After the COP15, the NGOs call for the implementation of the treaty (Birdlife, Switzerland; NVF, NO). The following statement is exemplary:

“Some of the targets are good and ambitious, others are rather nice declarations of intent, and a minority are even insufficient. Overall, the adoption of the Kunming-Montreal Biodiversity Targets Framework is an important step in the right direction. The community of states thus recognises even more clearly than before that the world is facing a serious biodiversity crisis. Now the appropriate measures must be taken quickly and decisively so that we do not end up empty-handed in 2030.” (Birdlife, CH)

In Switzerland, the national biodiversity strategy is highly criticized as the government is failing to achieve the defined goals (Birdlife, CH) because strategies are “toothless” (SFS, CH) and implementation is missing (Pro Natura, CH; WWF, CH).

Apart from international agreements and national strategies, other ‘sermons’ or policy measures are barely mentioned. The exceptions are an urge for the Norwegian government to monitor the state of biodiversity and map vulnerable areas (Sabima, Norway; NVF, NO) and a call for the Swiss government to disseminate more information regarding biodiversity (Birdlife, CH).

6 Biodiversity discourse in business and industry

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6.1 Method

Collection of material

In order to explore the business and industry discourse on biodiversity, two lines of inquiry were chosen: timeliness and relevance. First, we searched for relevant audio-visual material to be analysed from the 53rd Annual Meeting of the World Economic Forum (WEF) in Davos, Switzerland having taken place in January, 2023. According to the official website of the event, “the Annual Meeting 2023 will bring together more than 2,700 leaders from government, business and civil society, at a pivotal time for the world.” We used the search engine of the WEF webpage², initiating a search for the term “biodiversity” and identified other potentially relevant programme items by reading through the programme. This search resulted in seven videos that were all watched and the session³ “Business Action in Nature” was identified and chosen for analysis as the most relevant to explore a business perspective on biodiversity. Although the participants on stage represented diverse groups (incl. agricultural and mining companies, finance sector, NGO sector, and government), the language used by participants referred frequently to “business”, with key expressions and terms used such as “the value of nature in terms of money”, “assets”, “demand”, “nature is profitable” and many more.

Second, we analysed two documents by the World Business Council on Sustainable Development (WBCSD). As to the relevance of this choice, the official website⁴ claims the following: “WBCSD is the premier global, CEO-led community of over 200 of the world’s leading sustainable businesses working collectively to accelerate the system transformations needed for a net-zero, nature positive, and more equitable future.” One of the documents is the flagship initiative VISIONS 2050: Time to Transform (WBCSD, 2021), which puts the term “transformation” into the focus. The other one is a practitioner guide on the meaning of nature positive business (WBCSD, 2021). It claims “nature positive” as being a rallying term to take transformative action in all sectors of economy and society.

Document analysis

The analysis was guided by the theoretical and methodological concept of Discourse-Historical Analysis (see section 1.2 and 1.3).

² <https://www.weforum.org/events/world-economic-forum-annual-meeting-2023/programme>

³ <https://www.weforum.org/events/world-economic-forum-annual-meeting-2023/sessions/investing-in-nature>

⁴ <https://www.wbcscd.org/Overview/About-us>

6.2 Results

World Economic Forum session

The setting

The video is about a panel discussion. The moderator is a chief executive officer (CEO) of an international conservation non-governmental organisation (NGO). The four members of the panel consist of representatives of the agricultural sector, the mining sector, finance and investment sectors, and NGO sector. Interestingly, the government sector is also represented by an initial speech of one of the ministers of Ecuador who, after his short speech, left the discussion.

The event was scheduled on the fourth day of WEF 2023 and its video lasted 45 minutes 44 seconds.

Summary of the specific contributions

The moderator has set the stage for discussion by a short introduction that started with the achievements of COP15 in Montreal after the pandemic: the Global Biodiversity Framework (GBF) and the 30-by-30 target (protecting 30% of land and water by 2030 agreed by all parties of the international meeting). The moderator called this a “massive ambition” and directed the audience to “get to the business of how we make this happen?” Then, he introduced the Ecuadorian minister as a “real champion for nature” and gave him the floor.

The first speaker representing the public sector (government) has chosen to focus his talk on his own business experience and what lessons he has learnt from “25 years in the business of saving the Planet.” His job, as he explained, was to advise the private sector on how to move towards being a sustainable company. His line of argument was that he had spent the first 15 years of his consultancy work by referring to “climate change, floods, temperature, losing biodiversity” but – most probably – without much effect since he had changed his argumentation. In the last decade, he – more effectively – used another line of argument that rests on the monetary value of nature. Rhetorically, he used the example of Costa Rica, as opposed to Ecuador, in order to highlight his message: if public policy is developed around the monetary value of nature and biodiversity conservation is demonstrated as a good business opportunity then results will follow. The example of Costa Rica with less “natural assets” than Ecuador but more revenues from ecotourism business is supposed to justify this change of argumentation. Costa Rica has learnt or knows – as the speaker claims – that “leave nature alive is more profitable.” His message was rhetorically highlighted by putting forward a dichotomy in convincing the private sector: “Do you want to save the world?” vs “Do you want to be more profitable?” His argument rests on the assumption that if the language of biodiversity conservation is changed from ‘saving nature for its own sake’ to ‘saving nature is a good business’ then the argument for biodiversity is more effective and actionable for the private sector. “That’s the language we have to share with them” (“them” meaning: the private sector). He also emphasised in the last part of his speech that his last 10 years of consultancy focused on numbers to “convince” the private sector and “accelerate” change towards sustainability.

The moderator has emphatically summed up the minister’s speech rephrasing his message as a top line of “numbers move faster than hearts.”

Next, the moderator turned to the representative of the agricultural sector and, afterwards, one by one to the other panellists, the reps of mining, NGO and finance sectors, respectively.

The representative of the agricultural sector (more particularly, the fertiliser business) starts his talk with describing sustainability as a journey that drives its company to redefine everything, including mission, vision, values, and strategy. He considers GBF as a “breakthrough” and claims that “there are business opportunities if you put a price or value on nature then we drive farming differently as well.” He calls for thinking about nature from a business perspective that leads to different business models. He describes this change for the agricultural sector as a business model of soil health and healthy crops, selling less fertilisers but increasing nutrient use efficiency and moving from commodity fertilisers to premium ones that provide solutions in specific contexts. His top line at the end of his input: “we’re never prospering in a world that is not prospering.”

The representative of the mining sector has advanced an argument on how the mining sector positively contributes to decarbonisation by mining critical minerals for electrification. He sees the sector’s main challenge as “mine more responsibly with the lowest environmental footprint possible.” As to the concern for biodiversity, he claims his company as the first to “make a commitment to be nature-positive by 2030” in way that 1 ha land mined will be compensated by 3 ha land conserved or rehabilitated at the same time the mining operation progresses. Being parallel in time is claimed as “accelerating rehabilitation” of nature. He also talks about the necessity of partnering with communities and Indigenous people who are stewards of the land under mining operations, advocates for collective action on the part of business, as well as partnering with conservation organisations. Increasing the number of companies committed to being nature-positive is set as the highest priority for 2023. To achieve this, there is a need for setting standards and developing reporting frameworks that are consistent across the business sector. After an example of a new mining development in Chile, he explicitly connects the moral and business imperatives: “there is a moral imperative and a good business imperative to do these things in the right way.” He further elaborates that a “green premium” will only be paid if data and traceability along the value chain will be available.

The NGO representative was introduced by the moderator as someone working in the frontlines of conservation and representing a young generation of environmentalists. From the very start of her contribution, she emphasised that climate action and nature conservation cannot be punitive, they should be organised for and with the people and their communities. Communities should benefit from nature conservation as she cited the example of bees, honey, and pollination. Community awareness should be nurtured, communities should be empowered, and money should be put in their pockets in effective biodiversity conservation. In relation to business, she also agreed that “to save nature is really good business” but she also added that “I feel business is not doing enough.” Her line of argumentation starts with business being powerful and influential, so it should be accountable and responsible, too. Business is able to influence consumers and put pressure on governments due to its power, so it should take responsibility to move them towards sustainability: “If you could influence them to consume your product you can influence them to change their ways and you have the responsibility to them to run your business sustainably.”

The representative of the financial sector (more specifically, pension funds as investors) compared the biodiversity challenge to climate change in the way of

responding to the challenges by measurement, reporting, and relevant figures used actively in investment decisions. He assumes that the climate challenge was comprehensively addressed by the financial sector through developing measurement and reporting that drives investment decisions towards projects and sectors that provide solutions to climate change mitigation. He calls for a “kick start a similar movement in biodiversity:” “you have got what you measure.” Biodiversity “has to be very concrete for us” in order to develop a comprehensive approach and “make sure that we are nature-positive” in the financial sector. He explained the approach of investors in real estate and construction that “before a project, we measure biodiversity on the land and we guarantee that when we have finished the construction biodiversity will be higher than before.” Again, he calls for “integrating biodiversity in real estate decisions” since he sees a good business case due to people preferring to live in a place with higher biodiversity. “Doing good and doing well at the same time is the most attractive investment.”

In the remaining time, the moderator allowed four questions or comments from the audience. The question by the representative of Business for Nature was responded by the reps of agriculture and mining sectors. The ESG (Environment, Social, Governance) framework was referred to that assist businesses to contribute to a nature-positive future. The reasoning behind nature-positive commitments were competitive advantage in accessing resources, on the one hand, and resilience in business operations and supply chains, on the other. Data, rating, performance, and translation to shareholder value were also mentioned.

The relatively long intervention of an amateur conservationist on the need for governments to step in in order to effectively conserve biodiversity were handled by the moderator himself. Next, a representative of a chamber of commerce emphasised their willingness to “learn and move fast.” No response was invited. Lastly, a company representative’s question was answered by the finance and mining sector reps by both emphasising the need for “doing figures” (“you get what you measure”) and developing consistent framework to measure and database to track value chains.

World Business Council on Sustainable Development documents

WBCSD use a language of transformation. The flagship initiative is “VISIONS 2050: Time to Transform.” Biodiversity is not separated in a chapter but referred to throughout the text, most importantly under “Food” in the part on transformation pathways.

WBCSD has also produced a specific guide (“Practitioners guide to nature-positive business”) on the meaning of nature positive business. It claims “nature positive” being a rallying term to take transformative action in all sectors of economy and society.

First, the Vision 2050 document is introduced, next, the practitioner guide on nature-positive business will briefly be analysed.

Vision 2050

Vision 2050 chooses its focal question to be addressed as “How business can lead the transformations the world needs?” The structure consists of six main parts, starting from an introduction, going through four main parts addressing transformation, and ending with conclusions. The four main parts develops the understanding of transformation, while the conclusion part adds another dimension: leadership. The four

main parts address “shared vision”, “transformation pathways”, “mindset shift”, and “the need for systems thinking”. The shared vision accepts the planetary boundaries perspective (“living well and within planetary boundaries”). The transformation pathways include nine actionable paths with a sectoral focus (e.g., energy, food, etc.). The mindset shift discusses reinvention, resilience, and regeneration. The need for systems thinking (main title: Time to Succeed) calls for systems transformation.

The starting “message” of the document by the WBCSD president is titled as “The mindset shift to transform everything”. Three interconnected challenges are acknowledged: the climate emergency, loss of nature, and growing inequalities. They are the unsustainable outcomes of capitalism. Part Three on the mindset shift elaborates on the reinvention of a “transformed model of capitalism” in addition to resilience and regeneration. There is also a significant discursive move with regard to the meaning of resilience which is employed here to ensure long-term business success. Resilience (or, as referred to in the text, “true resilience”) calls for companies to embrace, anticipate, and adapt to change while being part of resilient communities, societies, and ecosystems. Regeneration is also added, calling for steps beyond the approaches of doing less or no harm (risk mitigation and net-zero) towards healing and enhancing capacities for self-regeneration (restoration and regeneration). Part Four on systems thinking points to four areas of enabling transformation where businesses should direct their attention and resources to: innovation & technology, finance & investment, individuals & consumption, policy & regulation.

Practitioners guide to nature positive business

Nature-positive is a term of recent invention but high expectations are attached to it. For example, in WBCSD Insights, [Williams \(2021\)](#) call it a “rapidly emerging” “north star” “to guide action and transform business”.

The term ‘nature-positive’ in the WBCSD practitioner guide on ‘What does nature-positive mean for business?’ (further referred to as The Guide) was mentioned 78 times in this 30-page long document. More interestingly, nature-positive, beyond using it as a separate term in itself, is attached to a variety of other terms:

- Nature-positive world
- Nature-positive outcomes
- Nature-positive economy
- Nature-positive future
- Nature-positive actions
- Nature-positive building blocks
- Nature-positive space
- Nature-positive strategy
- Nature-positive value chains
- Nature-positive messages
- Nature-positive investments
- Nature-positive discussions
- Nature-positive business contributions

The Guide reiterates the term nature-positive as a “rallying term” and “a beacon” or “a new beacon for nature action”. It builds on an article co-authored by scientists, international conservation NGO leaders and business CEOs, titled “A Nature-Positive World: A Global Goal for Nature” (Locke et al. n.d.). This piece of grey literature refers to the emergence of the term nature-positive in the 2020 UN Biodiversity Summit and

explicitly defines it as an objective, “halting and reversing nature loss by 2030, measured from a baseline of 2020”. The authors clearly see the need for a concrete global goal for biodiversity conservation which they set as “three measurable temporal objectives”: “Zero Net Loss of Nature from 2020”, “Net Positive by 2030”, and “Full Recovery by 2050”. This article argues for a goal for nature that is manageable by business and government, comparing the success of “carbon neutrality” as a manageable goal translated from the unmanageable temperature change objective. Therefore, nature-positive as a goal encapsulates a “high ambition scenario” at planetary scale and aims to “give humanity a guiding ‘North Star/Southern Cross’ for development pathways” (Locke et al. n.d.). Nature-positive is therefore supposed to simultaneously enjoy being scientifically sound and actionable for business and government, repeating the assumed success of carbon neutrality.

Values

In the discussion among the business representatives in the WEF session, anthropocentric values of biodiversity dominate. The motivations to protect biodiversity are treated implicitly. The language of business and economics assumes self-interested human creatures as a universal, ahistorical phenomenon. This is underlined by the storyline of the first speech by a government representative who himself had to learn the power of numbers and arguments for profitability over the arguments based on natural science (climate change, biodiversity loss, etc.). One of the highlights of this approach is demonstrated by the moderator’s summary of the first speech when putting it as “numbers move faster than hearts.” It is clear that what is implicitly assumed here is the motivational power of monetary gain over emotional attachment, or the utilitarian ethics over the ethics of care. Even the NGO representative accepts the language of talking about nature as a good business opportunity, though she also points to the power and influence of business and the transformative opportunity lying in their hands. This consensual atmosphere of market-based win-win, including nature as an asset to invest in for business opportunity (i.e., private gain), is suddenly broken by the input of the amateur conservationist who redirects attention to nature as a public good in the responsibility of governments and public decisions. However, the moderator again assists us back to the calm waters of the win-win language.

Rhetoric function

In the analysed materials persuading and hope raising rhetoric dominated. Other rhetoric was less present in the materials and therefore did not strike our attention.

Persuading

In all analysed materials the language followed a safe business language, dominated by terms such as assets, figures, measurement, reporting, standards, etc. In the WEF session, this language use was set in motion by the first speaker representing the public sector. He claimed that “we have to download a language with the private sector that to save nature is a good business.” In a sense, his speech narrowed the possibilities of using other languages, including more critical ones towards the currently dominant one, the language of economics (values of nature) and business (nature as asset and an investment opportunity, etc.). In order to save nature, our societies are supposed to sell nature (put a price tag on it) in order to keep our businesses and, eventually, our way of life going (we still want more but this time responsibly). There is

no need for sacrificing something (i.e. degrowth), not even transforming, since we can “mine more but more responsibly.” However, responsibility does clearly not involve any reductions or limits to mining or any other business activities. We can have our cake and eat it, too. The rhetoric of win-win operates here. The ideology of market society rules the discourse.

Also, in the WBSCD documents, the safe business language was used widely. Even though capitalism is blamed to contribute to nature loss in the WBCSD Vision 2050, the systems logic of capitalism is not addressed as something to be transformed. The response is a “transformed model of capitalism” that ceases to be extractive and is transformed into “true value creation” (i.e., environmental and social costs and benefits are internalised). This is a significant discursive move from acknowledging capitalism as a cause of unsustainability (note, however, that corporations are not mentioned explicitly as agents of unsustainability) to a call for a new model of capitalism. Thus, the problem is not with capitalism as such but the ‘extractivist’ version of it. If capitalism is transformed to create “true value” it will immediately be sustainable. Therefore, ‘transformation’ is paradoxically used to keep capitalism as an institutional-ideological system intact. Also, in the practitioner guide for nature-positive business the proposed actions seem rather conventional and remain within the safe business language. The translation of the global crisis of nature into the managerial hands of business experts is discursively carried out.

Accusing

We did not observe any accusatory rhetoric in the analysed documents. This most likely has also to do with the safe business language applied through the discourse. Interestingly, throughout the conversation of the WEF session, there was no attempt to initiate a debate between participants or highlight differences in participants’ opinions. The moderation was aiming for a smooth, non-conflictual atmosphere where opinions are shared but not confronted. The one occasion at the end when the amateur conservationist raised his topic in a relatively confrontational mode, the moderator stepped in and did not allow any of the panellists to respond but himself channelled the discussion back to the safe waters. There could have been plenty of space for highlighting some differences (e.g., the power of business to influence) or clarifying some arguments (e.g., how to measure biodiversity?) but – probably partly due to time constraints and the overall atmosphere of WEF that is already regulated through access to this forum – the moderator opted for sharing arguments, instead of clarifying or confronting ones. The only slightly confrontational wording by the NGO panellist (“I feel business is not doing enough”) was left unaddressed.

Hope raising

Overall, the business perspective on the biodiversity topic – even though acknowledging the severity of the problem – conveyed a rather optimistic tone that in a joint effort, society can still prevent deterioration of biodiversity.

Role of external actors

The discussion of actors was dominated by putting the action space of business and industry into the foreground. Apart from that only in one instance did we find a concrete description of another actor’s role (science) in halting biodiversity loss.

Industry and Business

In the WEF session, the moderator set the tone for this by emphasising the implementation challenge that seems to invite the private sector that has power to act. No other actor group is explicitly mentioned as capable of implementation beyond partnership with business.

In the Vision 250 of the WBCSD it is acknowledged that businesses shape cultural norms and aspiration in our societies, so they are responsible for enabling sustainable choices to be made. Here, we confront a call for business to enable and empower individual consumers to become “positive agents of change”. The topic of policy & regulation recognises that, instead of “behind closed door” influence, business can advocate for an inclusive approach for all stakeholders. These latter two topics seem to contain an implicit acknowledgement of the need for transforming the politics of capitalism, though this is not elaborated upon further.

Science

In The Guide an explicit role of science is mentioned by referring to the Science Based Targets Network (SBTN). SBTN aims to provide “companies and cities a clear pathway to competitiveness and resilience by using science to define their role in restoring nature”. Science has a clear instrumental role here: it is employed to reconcile business and biodiversity, assuming and proposing a win-win solution of a conflict-free world. Here, ‘big’ science (planetary scale) and ‘big’ business (transnational corporations) make partnership, assisted by ‘big’ international nature conservation NGOs, to bring along the ideal of ‘Managing Planet Earth’. Again, capitalism as an institutional-ideological system will not be ‘transformed’ but ‘amended’ (or ‘transformed’ but remains the same as regards its own institutional logic). If science sets targets right (make change actionable), business will do it right (implement the changes as “nature-positive actions”). No place for further doubts.

7 Discussion

The aim of this study was to gain an understanding of how different social groups perceive and communicate about biodiversity, the worldview this implies, and how perceptions, communication, and worldviews intersect with values. The review of the existing academic literature on biodiversity discourses revealed the main discourses and enabled us to identify whether these reappeared within the actor groups that were the focus of this research. The Discourse-Historical Approach proved to be a useful way of identifying actor groups (news outlets, political parties, environmental NGOs, and business leaders), the values that are evident within them (anthropocentric, ecocentric, and science-centric), and the rhetoric functions they use (warning, calls for action, informing, persuading, accusing, entertaining, othering, and raising hope). The results were structured according to actor group, so in this discussion section, we will examine the values and rhetoric functions between actor groups including within national contexts.

We have shown that the term biodiversity is rarely understood, which leaves it open to use, or perhaps abuse, by actor groups to further their agenda. We hypothesised that the language used in the biodiversity discourse can be chosen by actor groups strategically with the intention of persuading an audience to take action or inaction or to justify or explain their own action or inaction. The results from the news outlets,

political parties, and NGOs, at least implicitly, support this premise while the results from the business actor group support it explicitly.

7.1 Plural values of biodiversity

Anthropocentric value

We hypothesised that participants in the anthropocentric discourse around biodiversity frame their values of biodiversity in terms of the contribution it can make to people. This set of anthropocentric values was found to be ubiquitous in publications by all of the actor groups. This result is understandable for the news outlets, who have an interest in connecting their content with the lives of their readers so that the readers will continue to subscribe to the news outlet. It is also understandable from the point of political parties, who seek to gain or maintain power by representing the population, so are served by connecting their position with the everyday life of their constituents. From a business point of view, taking an anthropocentric view of biodiversity might be used to gain customers by demonstrating corporate social responsibility. However, it was less intuitive for environmental NGOs, many of whom perceive an intrinsic value of nature, including biodiversity, as central to their identity.

Ecocentric (intrinsic) value

We hypothesised that a range of actors perceive biodiversity to have intrinsic values and assume the role speaking on its behalf, with this role taken predominantly by environmental NGOs. Overall, the analysis shows that the NGOs included in this study mainly use anthropocentric values to argue for biodiversity protection, which is surprising because they simultaneously, or more prominently, argue for recognition that biodiversity has intrinsic values. Essentially, they face "the Environmentalists' Dilemma" (Norton, 1991) of whether our obligation is to save natural resources *for future* consumption, or to save nature *from* consumption, which is solved by arguing for the former to achieve the latter. This result suggests that the environmental NGOs are pragmatic in their operationalisation of the biodiversity concept, and use it to motivate participation and action by connecting it to the well-being of the people they are targeting. However, we did not find any statements expressing monetary values of biodiversity or its services. This clearly sets the biodiversity discourse of environmental NGOs apart from discourses in news outlets, business, and political parties.

Science centric value

We also hypothesised that participation in this science-centric discourse on biodiversity leads to biodiversity being valued in terms of its potential contribution to scientific endeavour. Indeed, this rhetoric was found in 13 scientific articles but rarely in publications by the other actor groups. Exceptions include some examples of rhetoric indicating science centric values that were found in publications by political parties and by business, although both of these results might be explained by derived anthropocentric values in that they wish to support scientists. Although science-centric values of biodiversity have been found in academic papers that analyse biodiversity discourses (such as Blicharska & Grandin, 2015; Howard et al., 2018; Lee et al., 2021; Mitchell, 2016; and Valiverronen & Hellsten, 2002), we argue that science-centric is a specific example of an anthropocentric perspective in that scientists, who are the usual participants in the scientific discourse, are interested in preserving a biodiversity as a resource that is useful to them.

Table 9 provides an overview of the value domains of biodiversity in the discourse of the different actor groups analysed within this work.

Table 9. Overview of the apparent prevalence of the value domains of biodiversity in the publications from the different actor groups.

Actor groups \ Value of biodiversity	Academic literature	News outlets	Political parties	NGOs	Business
Anthropocentric	++	+++	+++	+++	+++
Science-centric	+++		+		+
Intrinsic	+	+		+	

7.2 Rhetoric function

We hypothesised that rhetoric about biodiversity is used by individuals or groups to be argumentative or strategic and to persuade in order to further their agendas. The rhetoric functions discussed in this work were inductively identified, which means they were driven by the data and used to generate theory. We acknowledge the subjectivity of such inductive work, but some comparison with the results of previous study adds plausibility to the interpretations. The depth of rhetoric functions identified in the review of the 64 relevant articles, which is described in detail in section 2, could be reduced to three major functions of rhetoric: *Warning*, *Calling for Action*, and *Informing*.

The **warning** rhetoric in the academic literature is based around two dominant value domains: intrinsic and anthropocentric.

- 1) The intrinsic value of biodiversity, as a part of nature, that is under threat, such as Bjærke (2019) who equated losing biodiversity with losing happiness and Blicharska, and Grandin (2015) who reported a discourse that all species have a right to exist, even if they have no clear benefit for humans; and
- 2) The anthropocentric value of nature as a vital resource, with human existence inextricably tied to the preservation of biodiversity. This discourse was identified in 28 papers that have analysed the discourse on biodiversity.

Similarly, warning was identified as a main stream of rhetoric function in the public discourse in each of the four actor groups. Although there were differences found in the sensationalism in which warnings were presented, this rhetoric function was used extensively by news outlets. Muradian and Gomez-Baggethun (2021) point out a strategy to use rhetoric function to create a connection between the audience and the phenomenon by anchoring experience in analytical categories, establishing causal relationships, and conveying symbolic meaning. Indeed, the warning rhetoric used by news outlets commonly had an anthropocentric focus, with warnings typically framed in terms that connect them with the individual reader, which are intended to motivate them to consume media as a strategy of avoiding the consequences of biodiversity loss. Similarly, warnings in the rhetoric used by environmental NGOs were also framed with an anthropocentric focus to motivate the audience to change behaviour, contribute to the NGO, or both. Warning rhetoric by political parties and by business was framed

in such a way that the actors placed themselves as part of the solution, which could encourage votes or custom, respectively.

The **Calling for Action** rhetoric is primarily based on the anthropocentric arguments that we have:

1) A *moral obligation* to preserve biodiversity as a resource for future generations, in 10 papers, including Valiverronen and Hellsten (2002) who identified discourse around “green medicine” and Muradian and Gomez-Baggethun (2021) who identified a narrative in which nature and biodiversity are represented as domains that are external to human societies and from which a positive flow of benefits emerge.

2) A *political obligation* to preserve biodiversity to enable economic development, in five papers, including Serrano et al. (2019) who identified a discourse that sees biodiversity as a product of histories that shows the interconnection between nature and society with diverse global contexts, such as culture, science, and economy.

3) A *solidarity based obligation* to preserve biodiversity to respect the cultural ties with biodiversity held by others, with 11 papers identifying this discourse, including Bjærke, (2019), Blicharska and Grandin (2015), and Serrano et al. (2019).

Arguments to preserve biodiversity based on its scientific value as a store of scientific knowledge were present, but less common, in the academic literature. Exceptions include Valiverronen and Hellsten (2002) who identified the description of biodiversity as the “library of life”. Sceptical arguments that enough is already being done to preserve biodiversity, were also found, for example, by Takala et al. (2022a), but were even rarer. Calling for Action was identified as dominant discourses in all analysed materials.

The **informing** function of rhetoric appears to be the exclusive domain of news outlets and academic literature, with most academic articles adopting a neutral tone when describing a particular biodiversity issue. While most uses of the concept of biodiversity in publications in the other actor groups included some information function, it was almost always attached to another rhetoric function.

However, away from the academic discourse, in the realm of public discourse, a range of other rhetoric functions were identified. These included 1) persuading: particularly by NGOs and political parties, but also news outlets; 2) accusing: particularly by NGOs political parties, and news outlets; 3) entertaining, which was exclusively the domain of news outlets; 4) othering: which was found in political parties and news outlets; and 5) raising hope, which was commonly found in business and political parties who each tried to represent the optimistic future.

An overview of the occurrence of the identified rhetoric functions in publications by the respective actor groups is shown in Table 10.

Table 10. Overview of rhetoric function used in relation to biodiversity by different actor groups.

Actor groups Rhetoric function	Academic literature	News outlets	Political parties	NGOs	Business
Warning	+++	+++	+	+++	
Calls for action	+++	++	++	+++	
Informing	++	++	++	+	
Persuading		+++	+++	+++	+++
Accusing		++	+++	+	
Entertaining		+			
Othering		++	+++		
Raising hope		+	+		++

7.3 Country specific observations

Discourse and especially conflicts in biodiversity relevant topics tend to be locally relevant. Most of the conflicts that we identified, in all of the actor groups, were primarily relevant at the national level, or even more locally. For example, many were related to the intensity of agricultural production to ensure food production, herd protection from wild animals, or the production of renewable energy (namely water and wind power). There are also conflicts with local cultural values as illustrated by the Norwegian example of weekend cabins. This suggests the value of looking at national contexts individually. The following national portraits are intended to give an overview of each participating country with the perspectives of the actor groups that were analysed within that country (see also Table 11).

Table 11. Overview of the type actor groups materials analysed per country.

Actor groups Countries	News outlets	Political parties	Environmental NGOs
Italy	+	+	
U.K.	+		+
Switzerland	+	+	+
Czech Republic	+		
Netherlands	+		
Hungary	+		
Germany	+		
Norway	+	+	+
Austria	+	+	

Italy

In general, the biodiversity rhetoric among Italian news outlets seems more emotional than in countries such as Germany. There is more accusing, warning or hope raising language using sometimes quiet drastic expressions. For example, accusatory segments include: “*five horsemen of the apocalypse*” (Il Manifesto, R164) or “*Excessive consumption by the rich is a danger to living species*” (Avvenire, R186). Also, accusations of the government are quite serious. The warning rhetoric is equally emotional. Interestingly, among the Italian news sample hope raising language is rather frequent. Particularly striking is the language in Il sole 24 ore, who raise hope in 7 of the 10 articles analysed. In their article’s humanity is already successfully reversing the trend of biodiversity loss.

Also, regarding the role of actors, the Italian newspaper Il sole 24 ore is interesting. This newspaper has a very neoliberal discourse and portrays big industries as saviours of biodiversity. They seem to question scientific evidence by stating that “*the scientific community believes [...]*” (R173) and frequently cite scientific outputs generated by business or financed by business. The discourse in Corriere della sera is similar, regarding the role of industries as a generator of solutions to the biodiversity crisis. In contrast, the newspapers Il Manifesto and Avvenire portray industries rather as the perpetrators of biodiversity loss, with statements like the following:

“I want to ask, in God's name, the big extractive companies - mining, oil, forestry, real estate, agribusiness - to stop destroying forests, wetlands and mountains, to stop polluting rivers and seas, to stop intoxicating peoples and food.” (citing The Popoe in Avvenire, R193)

In the biodiversity discourse among the political parties, the position of the Fratelli d’Italia is particularly interesting. On the one hand, this right wing party clearly identifies itself as protectors of nature:

Natural heritage conservation is a fundamental element of the political identity of us conservationists. [...] there is nothing more 'right-wing' than ecology. The Right loves the environment because it loves the land, the identity, the homeland. Preserving the environment means preserving and passing on to our children the places where they were born, making them known and defending them. (Fratelli d'Italia, IT, Pos. 15)

However, in their view there is no need to protect nature from humans, since they “do not consider the presence of man and his activities to be at odds with environmental protection.” (Fratelli d'Italia, IT, Pos. 16). Instead, this party uses the biodiversity discourse as an argument for nationalist politics:

In our vision, man is the custodian of Creation, who enjoys the beauty in which he is immersed and feels an existential duty to protect it and hand it over to those who will survive him. Ours is a pragmatic and realistic attitude that holds together love for Nature, the defence of our landscapes and the sustainability of ecosystems with human activities. (IT_Fratelli d'Italia)

Some topics seemed to be particularly relevant to the Italian biodiversity discussion: reduction of plastic waste in the environment, preservation of agricultural variety and genetically-modified organisms (GMOs).

UK

In the UK, overall, the biodiversity discourse seems quite emotional. This became evident in the type of language the NGOs use to persuade readers of the severity of biodiversity loss. Also, in the news outlets – except for the Metro – the articles were frequently anthropocentric and often accusatory in nature. 17 of the 60 articles analysed had an accusatory tone with comments such as “*Observers have slammed the "snail's pace" of negotiations and are pressing for a strengthening of ambitions*” (BBC, R248). Outlets such as the BBC often issued a warning with regard to biodiversity decline with comments like the following being common place: “*Scientists have issued repeated warnings about threats to nature driven by human actions, including chopping down forests and turning natural land over to farming*” (BBC, R248).

Switzerland

In the Swiss media articles persuading rhetoric was very frequent. Certain topics stood out in the Swiss discourse such as private gardening (TA, R108; Le Matin R122; 20 Minuten; Blick R125), renewable energy projects (TA, R103 and R104; Blick R131) or invasive species (20 Minute, R144, R146). Accusations have been identified in around 20 articles of the Swiss sample, most of them targeting public administration, politicians or “Switzerland” in general. In addition, a particular accusatory discussion is currently taking place related to biodiversity. In response to the energy crises, there are a variety of proposals in the Swiss parliament to speed up the construction of big solar or hydropower plants. In this matter some blame environmental associations to be “*sabotaging the compromise*” (Blick, R124) while others accuse politicians:

“What is happening in politics at the moment is irresponsible. Principles of the rule of law are being thrown overboard. It is not necessary to relax environmental regulations and massively damage biodiversity in order to advance renewable energies” (TA, R106).

The newspaper *Le Matin* stood particularly out, as it was characterised by a populist reporting style, with only seldom reference to the value of biodiversity. In one article the newspaper cited a biodiversity loss denier among the right political party SVP. Also,

other newspapers have articles criticising biodiversity protection as being in conflict with other environmental goals (e.g. renewable energy production), food sovereignty or tourism. In rather populist newspaper 20 Minuten, the return of threatened species is portrayed as controversial as it often implies problems for the local populations (e.g. beavers in urban areas).

Agriculture seems to be an emotional topic in the Swiss biodiversity discourse. Among the political parties and the NGOs, there is dispute about the role of farmers in contributing to biodiversity loss or preserving the latter, the type of (agricultural) areas eligible for protection and calls from NGOs, left and green parties to abolish “harming” subsidies. Also, wild predators are discussed frequently. The Christian democratic party highlight the need for controlling populations of predators such as wolves and ibex to prevent them from reproducing uncontrollably especially in protected areas. The Greens on the other side, ask the parliament not to allow more and more protected species such as the wolf or the swan to be shot.

Czech Republic

In general, the tone of many news outlet articles is hopeful and the EU laws are described in positive terms:

“The most effective tools for protecting species are EU-level laws, such as directives on environmental protection, land use or species diversity. The expansion and linking of protected areas, the managed return of species to the wild and efforts to improve the natural environment, among other things, are working.” (Právo, R39)

On balance ‘raising hope’ is a common rhetoric function used where articles warn they frequently raise hope as a counter balance. Although there are accusatory statements in Czech news outlets, such as:

“The main reasons for the dramatic decline in the numbers of these birds, according to her, are the ever-increasing intensity of agriculture” (Právo, R38) and *“Unlike breeding in zoos, the purpose of which is to preserve biodiversity and protect endangered species, circuses breed animals just for entertainment and profit”* (Lidove noviny, R25).

In general, the tone of articles presents biodiversity as interesting in itself, as well as a topic of concern that needs addressing.

Netherlands

Overall, news outlet articles in the Netherlands were less accusing and negative compared to articles from other countries, such as the UK. Many articles in the Netherlands reported reasons for hope, with 13 articles including statements such as *“farmers are doing everything they can to increase biodiversity on their land”* (Algemeen Dagblad, R201) and *“Fortunately, there are now also positive developments at COP27. Thanks in part to the Brazil of future president Lula da Silva (who was welcomed like a pop star in Sharm el-Sheikh on Wednesday)”* (De Volkskrant, R221). Actually, hope raising rhetoric (n=14) were more often observed than warning elements (n=12). Although some scientific articles were evident, most articles were concerned with the discussion around government level response.

Hungary

Only a few of the Hungarian news outlet articles address biodiversity as a central topic. Hungarian articles are characterised by the use of biodiversity as a supporting argument, to persuade and argue for other interventions including: cleaning up water

courses (Index, R43), forest management (Index, R44), reducing nutrient enrichment from dog faeces (Magyar Nemzet, R52), reduction of chemical production and pollution (Index, R42), and addressing the issue of microplastic in coastal waters (Origo, R59).

The discourse in Hungary includes a negative response by business and the national government to EU attempts to protect biodiversity and considers it a threat to agricultural sector profits. This is evidenced in accusatory statements and warnings:

“The National Chamber of Agriculture is fighting to the last on the battlefield in Brussels. Balázs Gyórfy, president of the public body, told our newspaper that the European Commission would rather use political capital to force unrealistic expectations on farmers in the Green Deal than the interests of agriculture and environmental protection” (Magyar Nemzet, R54)

“Almost all the studies we have seen agree that the measure would not only harm the livelihoods of farmers, but that consumers would also pay a high price for the inability to feed the agri-food industry.” (Magyar Nemzet, R49)

Biodiversity and allied topics are used in political point-scoring through othering:

“This is the classic left-wing tempo: tax everyone, tax the farmers, the dominant social stratum of the countryside. [...] However, what we are seeing is that the Timmermans team is not approaching the issue from an economic point of view, nor are they even driven by environmental concerns. I am firmly convinced that they are making politics out of this too.” (Magyar Nemzet, R54)

The arguments around biodiversity are politicised from both sides with accusation and counter accusation: *“Former employees of BirdLife Belarus (APB) are suspected of trying to destabilise the country's political life under the guise of bird protection. After 24 years of work, the organisation was ordered to close down by the court”* (Index, R46)), with the argument bringing in conflict that extends beyond the Hungarian border.

Despite this tension in the discourse, hope is raised in several cases although, for the most part, it is a celebration of the national government projects or praise for the action of the Hungarian people.

Germany

In Germany, a bit less than half of the news outlet articles had persuading elements within them. Usually this involved a call to action (“We have to fix the world we have.” (Die Zeit, R86) or a proposition of what ought to be done (“Less money for catch crops and a regionally adapted subsidy for fallow land would therefore be much more clever” (Die Welt, R96). Other articles used biodiversity to argue for food democracy (Die Welt, R100) flowering strips (SZ, R93), metrics to assess corporate action (FAZ, R89), reduced meat consumption (FAZ, R87) or sufficiency (Die Zeit, R83)). Accusations or warning rhetoric was also used in nine and eight articles respectively. Accusations were mainly inexplicit and blamed humanity in general. In two articles the UN Secretary-General António Guterres was quoted, calling humanity a “weapon of mass destruction” (Die Zeit, R83; Die Zeit, R86). Few articles voiced more explicit accusations towards the agricultural lobby (Die Zeit, R83), industrialized countries (Die Zeit, R84), China (FAZ, R91) or big companies such as Coca-Cola or Nestlé (Die Welt, R100). The Bild newspaper stands out by being the only newspaper from the analysed five with entertaining and hope raising messages. Warning rhetoric were especially frequent in Die Zeit (three out of five articles) and used drastic statements by world leaders such as Olaf Scholz or Justin Trudeau.

Actors frequently referred to were scientists (19 articles) and governments (18 articles). Interestingly the majority of references to business actors refers to farmers and agricultural companies. NGOs were mentioned in all articles of Die Zeit, while being less present in the reporting of the other newspapers.

Norway

A vast majority (28 of 37) of Norwegian news articles contained anthropocentric value statements, often referring specifically to the monetary value of biodiversity: *“If we do not put a price in kroner on nature, the value is in practice zero, it is claimed.”* (Klassenkampen, R334) The rhetoric around biodiversity was largely warning of the risk in its loss, accusing either business or the government for not protecting biodiversity well enough, or persuasive in an attempt to increase biodiversity’s perceived value. In comparison to other countries, more news articles focussed on action carried out by the general public or were somehow directly relevant to the general public than relating to business impacts.

In Norway a particular biodiversity relevant topic seems to be the use of cabins. This has become evident in the analysis of political parties and the news outlets. The Norwegian Greens ask for a limitation to the construction and expansion of cabins. The Conservatives are clearly against such limitations as cabin culture is an important Norwegian value. The conflict is also evident in the news:

“We rant about the loss of biodiversity, but politicians continue to allow the construction of cabins. It’s hard to see the connection,” (Aftenposten, R299)

Remarkable is also a particular discourse on the “right” type of knowledge related to nature management in Norway. On various occasions the actors refer to the aspiration for Norway to follow a “knowledge based politics or management”. However, whether the relevant knowledge already exists and which kind of knowledge is the right one, seems to be under dispute. Among the political parties, the Norwegian Centre party highlights the role of knowledge about biodiversity. They state that once we have a good knowledge base, conflicts about resource use can be solved. There is no agreement between parties to what extent we already have enough knowledge or still need to acquire knowledge. One liberal and one conservative party perceive that we already do have all the knowledge that is needed to take measures. On another occasion, one of these two parties call for more transparency on the loss of biodiversity. This is in line with the statement of the Norwegian Social democratic party where they highlight a need for better understanding the causes of biodiversity loss and the effectiveness of measures to support biodiversity. In this dispute, uncertainty in science is thus used to argue for specific management decisions and different groups call on different scientific results. In a way the discussions thus become power struggles over knowledge.

Austria

The biodiversity discourse in all analysed Austrian news outlets seems generally informing, with less emotional language compared to other countries such as the UK or Norway. Such informing segments are often about places that are rich in biodiversity, or about scientific discoveries. The Kurier presents biodiversity as something to be inspired by, for example, one article presents a long list of animals, plants, fungi and minerals of the year 2023 with description of these species (R360). However, except for a few hints, the article does not provide any suggestions to support these species.

Accusing rhetoric is only found in a few articles (n=7, 15 %). For example, one article on COP15 reported on an accusation by Greenpeace "*Greenpeace has harshly criticised the outcome of the summit, saying that the goal of protecting at least 30 percent of land and marine areas by 2030 has "significant gaps"* (Kronen Zeitung, R352). Where articles are warning, it is usually a factual warning about biodiversity loss such as "*Reptiles, amphibians, birds and insects in particular are struggling with dramatic population declines*" (Heute, R338). In contrary the warnings in the Kleine Zeitung are starker: "*Human activity, such as the destruction of natural habitat, has disastrous consequences for the diversity of life on our planet*" (Kleine Zeitung, R376). In the Kurier warnings were only detected in one article.

Ecocentric (n=17) and anthropocentric (n=18) values were balanced among the Austrian news outlets. However, Kleine Zeitung tended to focus on more anthropocentric consequences such as "*Among other things, biodiversity offers us food security and can be used for advances in medicine*" (Kleine Zeitung, R376), whereas in Heute ecocentric values were mentioned more frequently than anthropocentric values. In the Kurier, values of biodiversity are mentioned only in three instances.

In Austria the biodiversity discourse among the analysed political parties seems to be strongly dominated by the party "Die Grünen" who accounted for the majority of statements that were coded within the respective press releases. The FPÖ, NEOS and SPÖ seem to be much less involved in biodiversity politics and for the ÖVP, we did not find any press release mentioning the word biodiversity or 'Artenvielfalt'.

Some topics seemed to be particularly relevant to the Austrian biodiversity discussion: alpine pasture management, promotion of predators and other wild animals (especially wolves), patents on plants and animals, ban on pesticides, expansion of organic farming.

Interestingly, the FPÖ uses biodiversity policy to argue for a dissolution of political power towards the national level. They call to stop the "dictate from Brussels" as "The conditions in the nation states are far too different".

7.4 Initial reflections on and some limitations of the work

The approach applied within this study has overall proven as efficient and easy to use and has provided a structured way to analyse discourses from a range of actor groups in different European countries. For future studies we recommend removing the 'science-centric' value category when studying biodiversity values and instead think of science-centred discourse as a variation of anthropocentric values (see section 7.1).

A limitation of this work is that there was no time restriction for publications from NGOs and political parties, and that the news outlet articles were sourced from 2022. While this approach gives an informative snapshot of the societal discourse on biodiversity, it is limited in the ability to track the development of discourses over time. The extensive picture of the current societal discourse places future research in the position to add to this knowledge with snapshots from other time periods that would allow conclusions to be drawn as to changes in the discourse.

A further limitation is that the research was limited to four actor groups from a limited number of countries for in depth analysis. Although these actor groups were selected according to the DHA, as outlined by Reisigl (2017), and combined with categorisations suggested by Lee et al. (2021) and Bemelmans-Videc et al. (2011), there are other

fields, such as education or health, that may be informative to understanding the societal discourse on biodiversity. Time and resource constraints did not allow the inclusion of countries in the analysis of the discourse in news outlets other than the partner countries in PLANET4B, while the analysis of the discourse in political parties and NGOs was limited to four and three countries respectively. The inclusion of further countries in the analysis may have gained additional insights and remains the challenge of future research. Such future research will also be faced with methodological challenges, as this study was, such as inter-coder reliability and the potential for nuance to be lost due to translation.

The search strategy was also a limitation to this research. Although the search strategies for each field of interest were as systematic as possible within our available resources, some pragmatic decisions had to be made. For example, the NGO study was limited to press releases because they were deemed to be a good way of learning the individual NGO's perspectives, but other document types, such as speech and/or interview transcripts, might also have been informative. Although the "site" query in Google is well suited to return results from one specific domain, the query is not meant to be complete and therefore also not suitable for diagnostic purposes. Instead of providing information on how many pages exist on a given domain that match with the search query, it returns documents based on a google algorithm to evaluate relevance. While this search strategy is a good tool to identify relevant articles, the number of returned search results should be interpreted with care.

8 Conclusion and outlook

We hypothesised that the language used in the biodiversity discourse can be chosen by actor groups strategically with the intention of persuading an audience to take action or inaction, with influences on biodiversity outcomes, or to justify or explain their own action or inaction. Although it is beyond the resources of this study to directly evaluate biodiversity outcomes based on the rhetoric, we could draw conclusions from prior research and link these with the results of this study. We found extensive and theoretically supported evidence that the language that is used and communicated is indeed intended to motivate action or inaction. Furthermore the patterns strongly suggest that the use of rhetoric is strategic and systematic in attempting to further the agendas of actor groups.

We explored three dominant value domains that have been identified in discourses of biodiversity – anthropocentric, ecocentric, and science-centric. However, the results of this study led us to the conclusion that they instead represent two value domains: anthropocentric and ecocentric, with science-centric discourse being essentially a subset of anthropocentric discourse. The science-centric biodiversity discourse was found to use exclusively anthropocentric arguments, so we consider it as part of the anthropocentric value domain rather than a value domain in its own right. We also found that virtually all rhetoric function is based on anthropocentric arguments: even from organisations which espouse a mindset that biodiversity has intrinsic values. We also note that following these dominant discourses (here adopted from Lee et al. 2021) does not capture relational values that emphasises relationships and responsibilities (Chan et al. 2016), an area of investigation that we suggest for future research.

A range of rhetoric functions was found in the news outlet's discourse on biodiversity, including 'warning', 'calling for action', 'informing', 'persuading', 'accusing',

'entertaining', 'othering', and raising hope. This result makes intuitive sense, as news outlets have the motivation to attract the attention of a wide audience to attract readership. Political parties attempt to gather political support, and thereby gain or hold power, by using a rhetoric that is centred on 'persuading', 'accusing', and 'othering', although it also includes 'informing' and 'calling for action'. With this rhetoric, they place themselves as being the solution to biodiversity loss or provide justification for their actions or inactions. Furthermore, they differentiate themselves from other political parties that are competing for power. Environmental NGOs exist to work towards environmental goals, which is reflected in their rhetoric that includes 'informing', 'warning', and 'persuading' their audience to engage with their issues: usually by relating consequences of action or inaction with the effects on humans. In this way, environmental NGOs take a pragmatic approach to gaining followers and gathering support for their activities by using anthropocentric arguments to further their ecocentric ideologies. The business discourse is based on a rhetoric of 'persuading' and 'raising hope', as business and industry leaders present an optimistic picture in which 'business as usual' is a viable and sensible option.

The outcomes of this analysis are expected to enhance the understanding of perceptions of and values related to the concept of biodiversity by different actor groups. Indeed, the hypothesis that biodiversity discourse can be chosen by actor groups strategically, with the intention of persuading an audience, has been supported in this analysis. These outcomes will inform PLANET4B partners in their efforts to tailor interventions for specific actor groups: civil society, policy makers and business representatives, to maximise the contribution of Expected Outcome 1: "Conceptual understanding of how the terms biodiversity, ecosystem services and nature-based solutions are perceived by and communicated to the key target groups". In this way, the results of this analysis will also be used to inform all of the interventions planned within the case study work in WP3.

A shortcoming of the format of this report is that the amount of information presented is extensive. Next steps in processing of these data will be to rewrite specific parts of the report for publication in academic and professional journals.

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Statement on data availability

All of the data that were used to generate this report are publicly available online, with detailed descriptions of the search methodologies explained in each of the actor group sections (2-6). These descriptions will allow ready replicability of the study using the same data that were used in this analysis.

In addition, the full collection of analysed materials can be found on PLANET4B's community in publicly accessible data repository Zenodo (www.zenodo.org/communities/planet4b).

Statement on ethics

This work exclusively used published material that was freely available on the Internet. No personal data were collected, so no ethical issues are apparent. The authors declare no potential conflicts of interest.

Annexes

Annex 1. Overview of discourses in academic articles

Table A1. Types of discourses that emerged from the analysis of academic articles and the articles where the discourses were presented.

Discourse type	Occurrence across articles
Utilitarian	
Utilitarian	(Adger et al., 2001; Aggestam, 2015; Berry et al., 2018; Bjærke, 2019; Blicharska & Grandin, 2015; Bonie & Hulme, 2015; Bredin et al., 2015; Brunet et al., 2020; Buijs et al., 2022; Carmen et al., 2018; Drury et al., 2022; Gustafsson, 2013; Howard et al., 2018; Huge et al., 2017; Jetzkowitz et al., 2018; Jinnah, 2011; Kusmanoff et al., 2017; Lee et al., 2021; Mitchell, 2016; Muradian & Gomez-Baggethun, 2021; Primmer et al., 2017; Schaal et al., 2022; Serrano et al., 2019; Takala et al., 2019; Troumbis, 2017; Turnhout et al., 2013; Valiveronen & Hellsten, 2002; van den Burg & Bogaardt, 2014)
Economic development	(Chalaye, 2022; Howard et al., 2018; Muradian & Gomez-Baggethun, 2021; Serrano et al., 2019; Spash & Aslaksen, 2015; Blicharska & Grandin, 2015; Carmen et al., 2018)
Sceptical	(Chalaye, 2022; Takala et al., 2019, 2022a)
Nature as caring and providing	(Bjærke, 2019; Olausson & Uggla, 2021)
Ecological modernization	(Adger et al., 2001; Aggestam, 2015; Anquet & Girard, 2022; Bredin et al., 2015; Carmen et al., 2018; Chalaye, 2022; Drury et al., 2022; Howard et al., 2018; Spash & Aslaksen, 2015; Turnhout et al., 2013; Valiveronen & Hellsten, 2002; van den Burg & Bogaardt, 2014)
Obligations	
Moral and Political obligations	(Anquet & Girard, 2022; Bjærke, 2019; Blicharska & Grandin, 2015; Gustafsson, 2013; Howard et al., 2018; Mitchell, 2016; Muradian & Gomez-Baggethun, 2021; Primmer et al., 2017; Sebastiao and Soares, 2022; Spash & Aslaksen, 2015; van den Burg & Bogaardt, 2014)
Nature conservation discourses	
Interventionist	(Bredin et al., 2015; Mitchell, 2016; Serrano et al., 2019; van den Burg & Bogaardt, 2014)
Preservationist	(Anquet & Girard, 2022; Berry et al., 2018; Bjærke, 2019; Blicharska & Grandin, 2015; Bredin et al., 2015; Howard et al., 2018; Huge et al., 2017; Mangachena & Pickering, 2021; Mitchell, 2016; Steinwall, 2015; Valiveronen & Hellsten, 2002)
Responsibility	(Huge et al., 2017; Takala et al., 2019; van den Burg & Bogaardt, 2014 ; Zemanek, 2022)
Solutions and issues with them	(Huge et al., 2017; van den Burg & Bogaardt, 2014)
Solidarity	

Cultural solidarity and values	(Anquet & Girard, 2022; Mitchell; Anquet & Girard, 2022; Austen et al., 2023; Bjærke, 2019; Blicharska & Grandin, 2015; Bredin et al., 2015; Buijs et al., 2022; Carmen et al., 2018; Howard et al., 2018; Serrano et al., 2019; Takala et al., 2019), 2016)
Ecological solidarity	(Anquet & Girard, 2022; Bjærke, 2019; Chalaye, 2022; Drury et al., 2022; Howard et al., 2018; Jinnah, 2011; Primmer et al., 2017; Schaal et al., 2022; Serrano et al., 2019)
Holistic (Mother earth)	
Holistic (Mother Earth)	(Berry et al., 2018; Bonie & Hulme, 2015; Brunet et al., 2020; Carmen et al., 2018; Howard et al., 2018; Lee et al., 2021)
Biocentric	(Aggestam, 2015)
Ecological collapse	(Anquet & Girard, 2022; Chalaye, 2022; Valiverronen & Hellsten, 2002)
Nature as eternal and magnificent	(Olausson & Ugglå, 2021)
Nature as mighty but delicate	(Olausson & Ugglå, 2021; Zemanek, 2022)
Non-grouped discourses	
Scientific Specimen logic	(Bjærke, 2019; Blicharska & Grandin, 2015; Boiral, 2016; Gustafsson, 2013; Howard et al., 2018; Jetzkowitz et al., 2018; Lee et al., 2021; Mitchell, 2016; Primmer et al., 2017; Spash & Aslaksen, 2015; Toepfer, 2019; Turnhout et al., 2013; Valiverronen & Hellsten, 2002)
Uninvolved	(Adler et al., 2017; Boiral, 2016; Drury et al., 2022 ; Ibouroi et al., 2021 ; Takala et al., 2022b; Valiverronen & Hellsten, 2002)
Concerned	(Bjærke, 2019; Boiral, 2016; Carmen et al., 2018; Ibouroi et al., 2021; Ohtani, 2022; Schaal et al., 2022; Takala et al., 2022b; Valiverronen & Hellsten, 2002)
Transcendence	(Mitchell, 2016)

Annex 2. Full list of reviewed academic articles

- Adger, W. N., Benjaminsen, T. A., Brown, K. & Svarstad, H. (2001). Advancing a political ecology of global environmental discourses. *Development and Change*, 32(4), 681–715. <https://doi.org/10.1111/1467-7660.00222>.
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