

Nature-based Solutions:

narratives, frames,
and future horizons

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unearthodox



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Foreword

When we first started work on this collaboration in 2021, I was curious to see which places in the Nature-based Solutions (NbS) landscape could benefit from a fresh perspective. If we took a step back, including from our present time, what would we see? We know that the path we have taken to the here and now matters as much as where we find ourselves and how we see the future we are trying to create. The growing field of NbS represents an intersection of our time, our era and our aspirations – an imperfect step, but nonetheless a step.

If you are working in the field of NbS, then you are likely trying to make a difference in the world. You see something that needs to change. This work is sorely needed. Meeting you here, I encourage a spirit of curiosity and critical reflection and a willingness to go deeper into the roots of the problem. A willingness to sit with the spaces that would really benefit from being upended, given more visibility and expanded, and inviting in multiple – maybe conflicting – perspectives. Don't look away from places that demand uncomfortable conversations and deeper root work on our relationship with ourselves and other forms of life. Make more space for them.

If we took a step back, some questions come to mind:

- How could NbS live up to their potential as viable stepping stones towards real systemic change?
- Where would innovation, applied thoughtfully in NbS, make a truly radical step-change for nature (including humans)? And who might already be working on those leading-edge approaches? And how would we know?
- When and where are NbS being divisive or reinforcing barriers and past world views, or the world views of only a few?
- If we really examined power, in which places could we do more? Who would you make more space to listen to and let go of power to?
- Are we scrambling to treat just the symptoms of our societal relationship with nature while letting the underlying root causes thrive and replicate?

At Unearthodox, we feel that this exploration represents the places where co-creation, systems change, diversity, equity, innovation and scaling deep could make a powerful difference. The areas highlighted in this report relate to our history, divisions, narratives, limitations, potential and strengths, as well as justice, and push us to sit in the uncomfortable spaces of power, colonisation and human–nature framings. These areas

are not the sole domains of NbS, and they offer underlying places to transform many of the 'solutions' we see in our current era.

For our part, we have launched our new programme of work focussed on regenerative futures, something wider and more encompassing than strictly NbS. If you have an inkling that there could be more hiding in your work on NbS, I invite you in. 2024 is the moment. Don't let the NbS label be a box that you can't step out of or completely transform. Be curious and find where to move beyond barriers, divisions and limitations. Don't let the challenges highlighted here paralyse you nor the opportunities limit your vision. Every step-change, no matter how radical, is imperfect and messy, but imagine looking back in ten years and saying: "We should have looked harder at the uncomfortable questions and opened up the field of NbS to even greater potential for systemic change." If you are working, investing, funding, researching or otherwise acting in this space, doing this work now will only bring you a wider set of possibilities. Imagine what you might do differently if you saw the world with fresh eyes.

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Executive summary

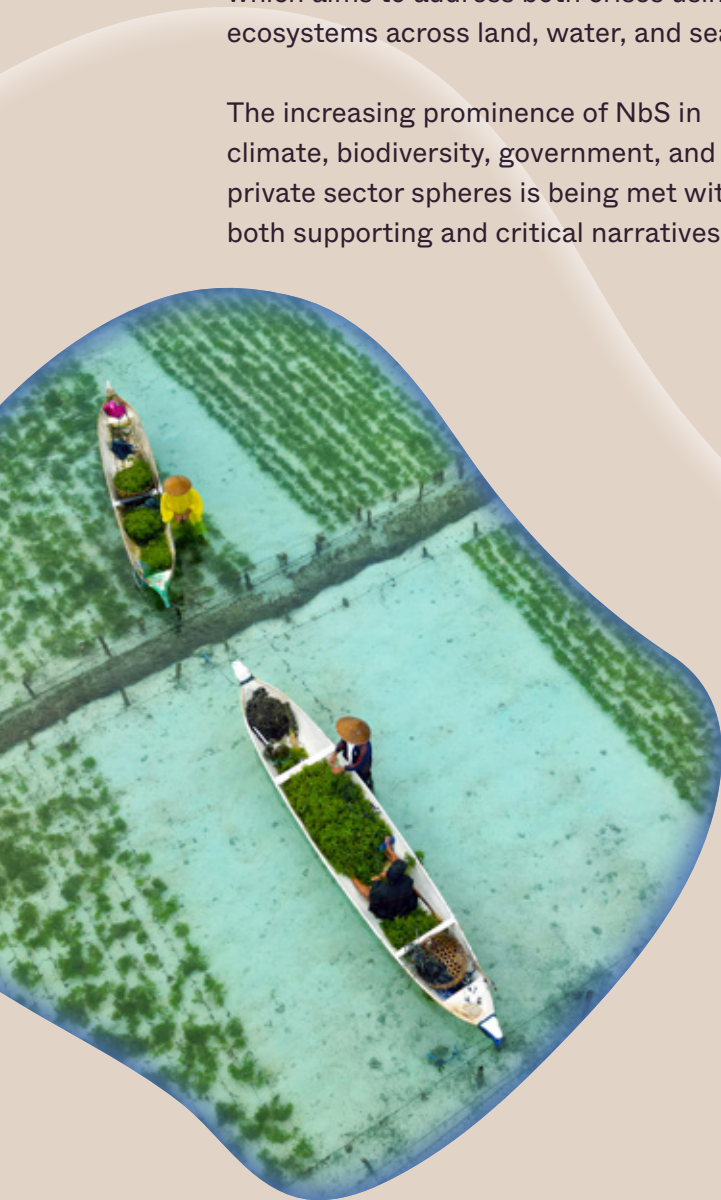
Efforts to combat climate change and biodiversity loss have historically operated in isolation. However, there is a growing realisation of their interconnectedness, driven by the understanding that actions like deforestation and other forms of land-use change contribute significantly to both issues. This, combined with other drivers, has led to the emergence of the Nature-based Solutions (NbS) concept, which aims to address both crises using ecosystems across land, water, and sea.

The increasing prominence of NbS in climate, biodiversity, government, and private sector spheres is being met with both supporting and critical narratives.

This report examines these narratives, emerging divergent viewpoints and their implications. Most proponents see NbS as cost-effective tools for climate adaptation and mitigation, although some acknowledge concerns over the potential for greenwashing, adverse effects on biodiversity, and insufficient inclusivity.

Proponents present two main narratives – one focused on climate mitigation and carbon markets, and another focused on the impacts of climate change and resilience. Critics, on the other hand, challenge uncritical attitudes among proponents and emphasise the need to tackle structural drivers behind climate and biodiversity breakdown. Critics also fear that the NbS concept perpetuates business as usual and marginalises Indigenous peoples and Local communities (IP&LCs).

The increasing prominence of NbS in climate, biodiversity, government, and private sector spheres is being met with both supporting and critical narratives.



NbS narratives in the climate and biodiversity spaces vary; biodiversity actors in particular express concerns about nature commodification. For instance, carbon finance and markets emerge as pivotal topics, viewed by proponents as financing opportunities for NbS, while critics warn of the risks of entrenching carbon-intensive economies by displacing focus away from emission reductions. Critics raise the alarm about the potential for IP&LCs being sidelined in NbS, but proponents increasingly stress the need for inclusive, local community-focused NbS. Divergent views among biodiversity actors also emerge: some express hope that finance can be channelled towards biodiversity while voicing concerns over negative consequences, such as the risk poorly planned NbS pose to biodiversity.

Drawing from the analysis of NbS narratives, frames, and viewpoints (Section 3), the report explores barriers and pathways for transformation associated with the NbS concept. Framing NbS in terms of ecosystem services (the benefits that nature provides, such as clean water) and natural capital highlights the economic reliance on nature, fosters integrative thinking and innovations in natural capital valuation to support decision-making, and helps to attract private investments in nature. However, this Global North-centric perspective can challenge transformative change by reinforcing anthropocentrism and human–nature divisions and perpetuating power imbalances, potentially exacerbating Global North–South disparities.

There is a risk that instead of encouraging a shift away from the worldviews and values driving biodiversity and climate

breakdown, NbS will potentially reinforce them while marginalising alternative perspectives and knowledge and exacerbating inequality. Transformative pathways can emerge by embracing Indigenous ontologies and relational thinking, placing humans within nature, and shifting from an instrumental value to one of relationship with nature. Embracing plural valuation through NbS also makes space for a broader set of stakeholder values, fostering coexistence and centring NbS on local needs.

However, under justice-oriented approaches involving IP&LCs, imbalanced power dynamics and international governance systems must be challenged, aligning with calls for decolonisation. Finance mechanisms should be restructured to enable IP&LCs to lead interventions that respond to their own needs and priorities.

While not endorsing or opposing NbS, the report highlights how this concept has the potential and power to encourage interconnected thinking across climate, biodiversity, and justice contexts. However, the potential of NbS to bridge diverse worldviews requires careful management of power dynamics.

The report concludes by providing recommendations for engaging with NbS, fostering discussion, and advancing just and regenerative outcomes for nature and people. These recommendations are targeted at organisations like Unearthodox that aim to foster systems change and social innovation to regenerate nature, and include the need to:

- **Avoid advocacy positions on NbS:** Maintain a pluralistic view of solutions for the biodiversity crisis; do not advocate for or against NbS.

This approach allows engagement with various perspectives and avoids hindering discussion among different actor groups.

- **Strengthen capacities for just and transformative implementation:**

Collaborate with organisations promoting NbS to enhance their ability to implement just and transformative policy and practice. Ensure that actions address power imbalances and drive transformative pathways to just and equitable implementation.

- **Establish inclusive discussion platforms:**

Create discussion platforms that accommodate diverse ways of knowing and values, bridging colonial-era power differentials. Enable discussions between Indigenous groups, grassroots organisations, and international non-governmental organisations, fostering interregional and intergenerational dialogue.

- **Influence representative policy:**

Use discussion platforms to shape NbS-related policies that genuinely reflect stakeholders' and rights holders' needs and concerns. This ensures local perspectives are not overshadowed by global knowledge.

- **Foster collective reflection on NbS:**

Embrace a systems thinking approach

and scenario exploration involving diverse stakeholders to assess NbS's potential for transformation. Organise discussions on barriers and opportunities for a just and equitable future for nature, including people.

- **Engage multilateral and aid**

funds: Collaborate with multilateral and country aid funds to develop decolonial funding mechanisms that address Global North–South power imbalances. Funding mechanisms should incorporate robust safeguards, empower local communities, and promote inclusive national-level policies.

- **Foster innovation in policy**

appraisal: Support the development of innovative valuation methods for policy appraisal that challenge current power asymmetries. Move beyond financial valuation to incorporate diverse values, plural benefits, and wellbeing considerations in decision-making processes.

- **Research NbS narratives:**

Support further research to explore NbS narratives in the biodiversity space. Investigate the association between biodiversity NbS narratives and colonial conservation legacies and examine how narratives frame biodiversity finance and policy integration in relation to NbS.

1. Introduction

Efforts to address the climate and biodiversity crises have been pursued largely in parallel, without integration. Institutions have been set up to address climate change or biodiversity loss, but not both simultaneously.¹ However, biodiversity and climate agendas are beginning to converge, with growing awareness of intersections [3] and the need to address these crises through an integrated approach. This push is driven by the reality that deforestation and other forms of land-use change not only lead to biodiversity loss, but also contribute to nearly a quarter of global carbon emissions [4], making the protection and restoration of ecosystems central to addressing the climate crisis. In turn, climate change is already a significant driver of biodiversity loss and is expected to become the most significant driver by the end of the century [5,6].

The importance of biodiversity and ecosystems in addressing the climate crisis is often promoted in mainstream climate and biodiversity policy initiatives under the concept of Nature-based Solutions (NbS). A related trend, particularly evident in early 2021, is a surge in funding commitments from public, business, and philanthropic sources for climate and biodiversity issues. In part, this increase is driven by the recognition that vast investments in biodiversity and ecosystem health are

critical to shore up the planet's life-support systems [7].

While many influential environmental actors have rapidly taken up NbS, especially in climate policy discourses, the term has also faced some opposition [8]. For example, critics have emphasised how certain actions advocated under the banner of NbS, such as plantation forestry, can pose serious social and environmental harm [9]. Critics also point out that the broad scope of NbS means that they can be co-opted by actors with little interest in structural change and that the focus on NbS as carbon offsets promotes business as usual, thereby jeopardising the need to rapidly decarbonise [10].

The rapid uptake of the NbS concept has influenced multiple communities of practice in biodiversity conservation, climate change adaptation and mitigation, disaster risk reduction, and natural resource management. Due to the widespread adoption of NbS in both the public and private sectors, it is essential to consider the concept's opportunities, limitations, assumptions, and whose interests it supports. These questions have important implications for research, policy, and practice, including the design and implementation of effective NbS [11–13], with important consequences for biodiversity and people.

1. For example, the conservation sector has been labelled as 'climate blind' [1] and focused on sustaining biodiversity in a silo despite forecasted rapid shifts in suitable bioclimatic envelopes for many species [2].

In response to these needs, this report delivers a situation analysis on the concept of NbS, clarifying definitions, framings, supportive and critical narratives, and areas of tension, as well as complementary or alternative concepts to the climate and biodiversity crises. The rapid uptake of the NbS concept has influenced multiple communities of practice in biodiversity conservation, climate change adaptation and mitigation, disaster risk reduction, and natural resource management.

Given the breadth of this scope and the need to provide meaningful insights and tangible recommendations, the report restricts its focus to the biodiversity and climate international policy space, building on previous work on narratives and NbS discourses [14]. The primary analysis is also limited to key events in biodiversity and climate discourses from 2020 to 2022.² Within this scope, the report undertakes a discourse analysis [15] to explore frames and narratives through interviews with actors from the biodiversity and climate policy spaces and NbS, as well as document analysis.

Acknowledging the constant evolution and actor perspectives, the report notes significant developments in NbS discourse in 2023 and 2024, including the focus on biodiversity credit markets. Drawing from the analysis of actor perspectives in Section 3, Section 4 reflects on limitations, barriers, and ways forward. The report concludes by offering recommendations to support Unearthdox's efforts to promote a more just and sustainable future for all life on Earth.

The rapid uptake of the NbS concept has influenced multiple communities of practice in biodiversity conservation, climate change adaptation and mitigation, disaster risk reduction, and natural resource management.



2. Including United Nations Framework Convention on Climate Change (UNFCCC) COP26, events in the run-up to UNFCCC COP27, UN Convention on Biological Diversity (CBD) COP15, the 5th UN Environment Assembly (UNEA-5), and Stockholm+50.

2. Background and history

The term ‘Nature-based Solutions’ was coined in a 2008 World Bank report that was prepared for the World Conservation Congress in Barcelona, which focused on the protection and management of biodiversity for climate change adaptation.³ At its inception, the term was explicitly associated with climate change adaptation and biodiversity, in contrast to the current predominant use of the term for mitigating atmospheric carbon, particularly in relation to net-zero strategies and commitments [17].

The idea was introduced in a 2009 position paper to the United Nations Framework Convention on Climate Change (UNFCCC) COP15 by the International Union for Conservation of Nature (IUCN). Later, in 2012, IUCN officially embraced it as one of their key areas of focus in their 2013–2016 programme, alongside ecosystem-based approaches (working with nature to adapt to the impacts of climate change) and REDD+.⁴ IUCN saw NbS as an integrated framework to address a suite of societal

challenges beyond climate change, including food and water security, health, and socioeconomic development, while promoting biodiversity and climate policy integration [18]. Since then, organisations have defined the term for themselves, including the European Commission (EC) in 2015, IUCN in 2016, and the United Nations Environment Programme (UNEP) in 2022 (Box 1). Alongside these definitions, several guidelines and criteria have emerged (Box 2).

The phrase ‘Natural Climate Solutions’ (NCS) was coined after NbS in a seminal paper by Griscom et al. (2017) [19].

Unlike NbS, it does not have an agreed definition or set of principles and criteria. Generally, actions falling under NCS can be understood as NbS for climate change mitigation, but the intersection between them is open to some interpretation.⁵

The findings by Griscom et al. underpin the oft-cited statement in business and policy discourses that nature has the potential to provide about 30% (or one-

3. The term ‘natural solutions’ also featured prominently in a publication on the relationship between protected areas and adaptation to climate change [16].

4. ‘REDD+’ represents ‘Reducing Emissions from Deforestation and Forest Degradation in developing countries’. The ‘+’ indicates extra forest-related actions that safeguard the climate, including the sustainable management of forests, conservation, and the increase of forest carbon reserves. <https://www.un-redd.org>

5. The extent to which the scope of NCS overlaps with the scope of NbS targeting climate change mitigation varies, depending on the subjective interpretations of actors. For example, biochar (a form of charcoal) might be labelled as an NCS, but not as an NbS, by some actors. Please refer to Ellis et al. 2024 in Nature Communications for the principles of natural climate solutions. <https://doi.org/10.1038/s41467-023-44425-2>

The term ‘Nature-based Solutions’ was coined in a 2008 World Bank report, which focused on the protection and management of biodiversity for climate change adaptation.

third) of the solution for climate change mitigation. Proponents of NCS do not always accompany this statement with the need to decarbonise the global economy, nor do they consistently mention that there are significant sources of uncertainty about the mitigation potential of NCS and NbS [17]. Whereas the term NCS is primarily associated with interventions in the agriculture, forestry, and other land use sectors, NbS is increasingly used in urban sustainability discourses and policies.



Box 1. Definitions of Nature-based Solutions

- **European Commission (2015):** Solutions that are inspired and supported by nature, which are cost-effective; simultaneously provide environmental, social and economic benefits; and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes through locally adapted, resource-efficient and systemic interventions.
- **International Union for Conservation of Nature (2016):** Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits.
- **United Nations Environment Programme (2022):** Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services, and resilience and biodiversity benefits.

Comparing the definitions

While the IUCN definition emphasises biodiversity and human wellbeing, the EC definition emphasises cost-effectiveness and innovation and does not explicitly mention biodiversity, referring instead to nature or ‘nature-inspired solutions.’ The EC definition provides more flexibility to include solutions like biomimicry, actions which are beyond the scope of the IUCN and UNEP definitions. These differences are rooted in different agendas: the IUCN definition focuses on the conservation, restoration, and management of

ecosystems and biodiversity, while the EC is driven by European agendas focused on economic growth, development, and innovation, notably in the urban space [20]. Thus, the EC definition reflects a specific focus on green infrastructure (that is, ‘urban’ NbS). Although this frame of NbS has a strong foothold in Europe, the IUCN definition holds more traction internationally, in both practice and policy, and provides a foundation for implementing NbS through the IUCN Global Standard for NbS (2020) [21]. The UNEP definition of NbS that was unilaterally agreed in 2022 is aligned with the IUCN definition.

Box 2. Nature-based Solutions guidelines and criteria

To address key concerns about the ambiguity of the concept and lack of standardisation, several normative guidelines and criteria on NbS have come to light (as explained by Seddon et al., 2021 [8]), including the IUCN standard (2020), the Nature-based Solutions Initiative guidelines [22], the World Bank NbS principles that focus on flood reduction [23], and the World Wide Fund for Nature (WWF) NbS principles [24]. These principles, guidelines, and criteria converge on the need to support and enhance biodiversity and ecosystem integrity across a range of ecosystems, the need to ensure social safeguards, and the need for full engagement of Indigenous peoples and Local communities through co-design and co-implementation [8].

Although all aim to explain the concept clearly, they target different audiences. The IUCN and World Bank guidance explicitly focus on NbS implementation and practice, whereas the Nature-based Solutions Initiative guidelines explicitly focus on delimiting overarching policy. The IUCN standard also strives to promote the flow of finance by making clear what ‘counts’ as NbS.

In sum, the IUCN standard provides guidance to stakeholders in the public, private, and civil society spheres, describing 28 indicators nested in eight criteria that highlight the core characteristics of NbS, focusing on delivering benefits for people and biodiversity [21]. Other differences include the explicit focus on ensuring NbS are not a substitute for drastic emissions reductions across sectors, highlighted by the WWF and NbS guidelines, and the explicit focus on equity and fairness in the IUCN standard.

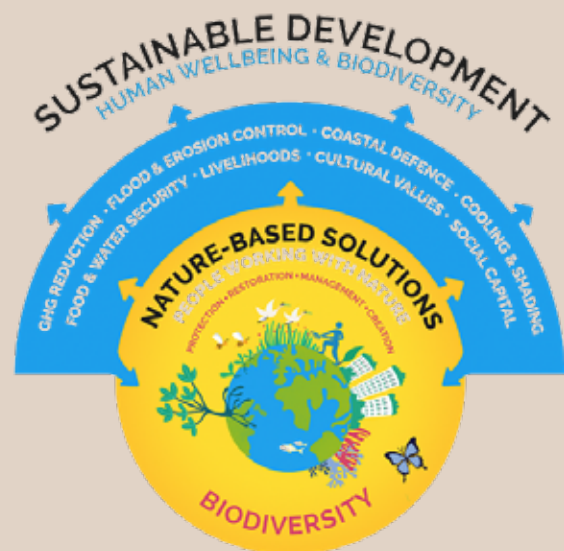
What types of interventions come under the umbrella of NbS?

The IUCN and UNEP definitions identify NbS as “actions that involve people working with nature, as part of nature, to address societal challenges, providing benefits for both human wellbeing and biodiversity” [17].⁶ As clarified by Seddon et al. (2021) [8], NbS can be broadly classified into four categories – protection, restoration, management, and creation – which align with the range of interventions included in the IUCN and UNEP definitions [26,27]. Specific examples of actions include ecosystem-based adaptation (working

with or using nature to adapt to the impacts of climate change), forest and landscape restoration, ecosystem-based disaster risk reduction, locally managed marine areas, and agricultural approaches designed to promote and harness ecological interactions and biodiversity, such as agroforestry or regenerative agriculture [28]. However, the extent to which such actions are NbS in practice depends on how they align with IUCN NbS standard criteria in their design and implementation.

Recognised pros, cons, and pitfalls of NbS

The NbS concept has been promoted in research, policy, and practice as an integrated approach to address interlinked societal challenges in biodiversity, health, and climate. The overarching focus has been on climate change rather than other societal challenges, perhaps because in a rapidly warming world, the effects of climate change amplify the risks and impacts of other societal challenges [29]. Research demonstrates that, even with rapid decarbonisation, carbon needs to be drawn down to stay below 2°C of peak warming [30]. NbS can play a critical role, and studies suggest that terrestrial NbS could sequester approximately 10 gigatonnes of carbon dioxide per year, which is more than the annual emissions from the entire global transportation



Nature-based solutions (NbS) encompass actions like protecting, restoring, or managing natural ecosystems and working lands. People and nature, together (yellow circle), co-produce a variety of outcomes which benefit society and support ecosystem health. To qualify as an NbS, an action must sustainably provide one or more benefits for people (such as reducing flood risk or storing carbon) while fostering ecosystem-health and biodiversity compared to the pre-intervention state [8].

6. The emphasis on working *with* – as opposed to working *for* – emerges from research demonstrating that the plural benefits associated with NbS, including those framed as ecosystem services or less ‘tangible’ benefits rooted in relational values and intangible connections with nature, ultimately emerge through interplays between the ‘social’ and ‘ecological’ dimensions of NbS [25].

sector [30,31]. Demonstrating the full potential of NbS for climate change adaptation is more challenging because adaptation is multidimensional and cannot be boiled down into a single metric. However, research shows that coastal ecosystem protection, agroforestry, and community-based forest management is crucial to reduce the vulnerability of ecosystems, communities, and infrastructure to the effects of climate change [32–36].

As NbS are increasingly promoted for climate change mitigation, the ambition to scale up voluntary carbon markets⁷ is ramping up, driven in part by dedicated initiatives such as the Taskforce on Scaling Voluntary Carbon Markets.⁸ Concerns have emerged that this distracts attention from the need to rapidly phase out fossil fuels while creating a moral hazard, in that it

allows companies to ‘offset’ emissions rather than transform business models. A second concern is that the rapid growth of nature-based offsetting can pose significant risks to both people (such as land grabbing) and biodiversity (for example, scaling up monoculture forest plantations) [37].⁹ A simultaneous concern is that rapid growth in plantations competes with land needed to feed a growing population while promoting low-biodiversity systems [9,39]. Simplistic solutions such as tree planting, especially when they ignore critical social dimensions, risk doing more harm than good [40]. The following section provides a deeper exploration of the critical and proponent narratives associated with NbS in biodiversity and climate spaces, and the implicit values and actor groups with which these are associated.

7. The push for market-based mechanisms, including biodiversity credits, is also driven by the significant lack of finance for NbS [7].

8. <https://www.iif.com/tsvcm>

9. The notion that this can lead to harmful outcomes is not new. Critiques of REDD+ highlight that the infusion of financial value for carbon in forests has led to land dispossession and direct violations of IP&LC rights [38].

3. Narratives, frames, and discourse coalitions

The report harnesses a discourse coalition analysis approach [15], following Melanidis and Hagerman (2022) [14], to examine how diverse actors frame the NbS concept, focusing on climate and biodiversity policy discourses. A mixed-methods approach was used to explore these frames and narratives and the actors underpinning them, consisting of an analysis of 55 documents and 10 key

informant interviews. Document searches in Google Scholar and Google yielded 55 documents, including research and policy reports, perspectives, commentaries, position statements, blogs, and media articles. For the interviews, a sample of actors were selected who represent a variety of organisational types from different geographies and who engage in advocacy or policy development.

Actor representation

Document analysis

Actor groups represented in the document analysis span a wide range of areas, with most from international non-governmental organisations (NGOs), academia, multilaterals, and research institutes (Figure 1). Most documents focus explicitly on climate change and the majority support the NbS concept (85%), while the remainder present critical views (15%). Of documents supporting NbS, most were from academia or research institutes (35%), international NGOs (20%), or multilaterals (16%). Most critical documents are from academia, international NGOs (including those working on justice and human rights), and Indigenous peoples and Local communities (IP&LC) organisations. Almost all critical

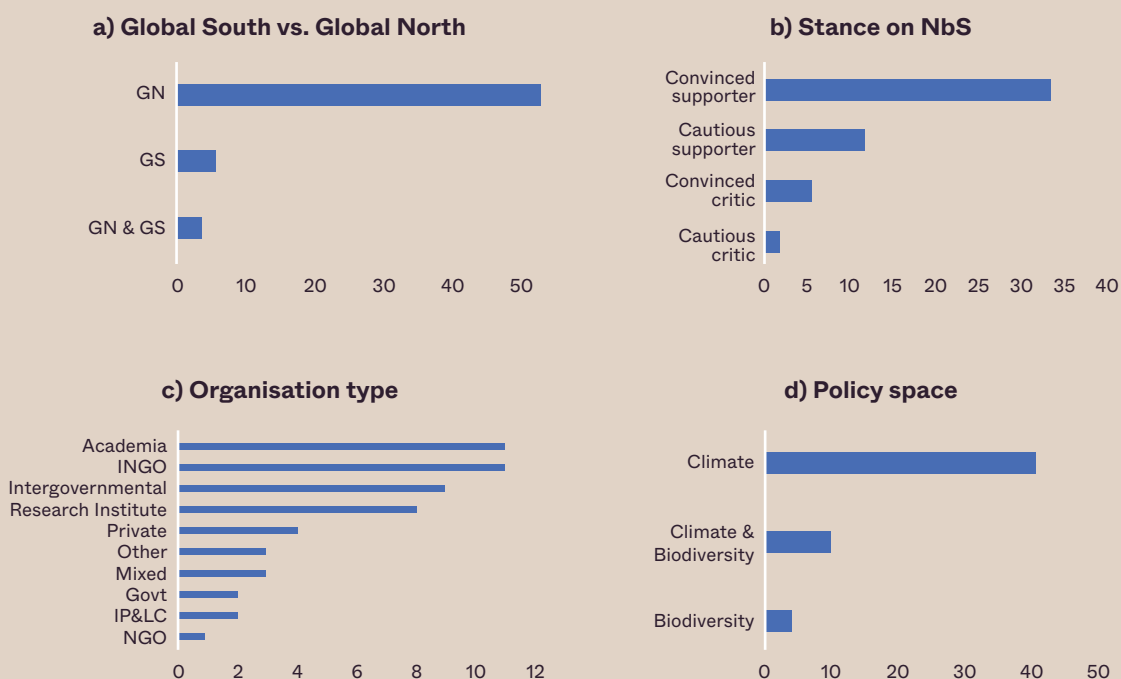
views are associated with climate policy, with three documents focusing on both climate and biodiversity policy.

Most of the documents (34, 62%) are categorised as ‘convinced supporters,’ with an undoubtedly positive impression of NbS. Some are ‘cautious supporters’ (12, 22%), with a positive view of NbS but caveats about potential negative impacts. Across convinced and cautious supporters (46), two overarching narratives are found. The first narrative (the ‘mitigation narrative’) (54% of supporters) generally frames NbS as opportunities to reduce greenhouse gas emissions, particularly through carbon markets and corporate sector emissions offsetting. The second narrative (the ‘vulnerability narrative’) (50% of

supporters) frames NbS mostly in terms of vulnerability reduction and resilience for local communities, focusing on reducing the effects of climate change. Five documents reflect both narratives, and three are associated with neither.¹⁰ Of the critical documents (8), six are ‘convinced critics,’ with an undoubtedly negative view of the role of NbS, and

two are ‘cautious critics,’ with a negative view of the role of NbS but caveats about potential positive impacts. All critical documents fall under one common narrative that challenges the emphasis on NbS for climate mitigation, highlighting a neglect of structural issues and unequal power dynamics sidelining non-Western knowledge.

Figure 1. Number of documents by a) Global South vs. Global North,¹¹ b) stance on NbS, c) organisation type, and d) policy space.



■ Number of documents

GN = Global North

GS = Global South

INGO = international non-governmental organisation

Intergovernmental = intergovernmental or multilateral organisation

Private = private sector

Govt = government

IP&LC = Indigenous peoples and Local communities organisation

NGO = non-governmental organisation

10. These documents do not create a new or third narrative. They were either too short to meaningfully assign them to a narrative or did not focus on our defining narrative characteristics (Table 1).

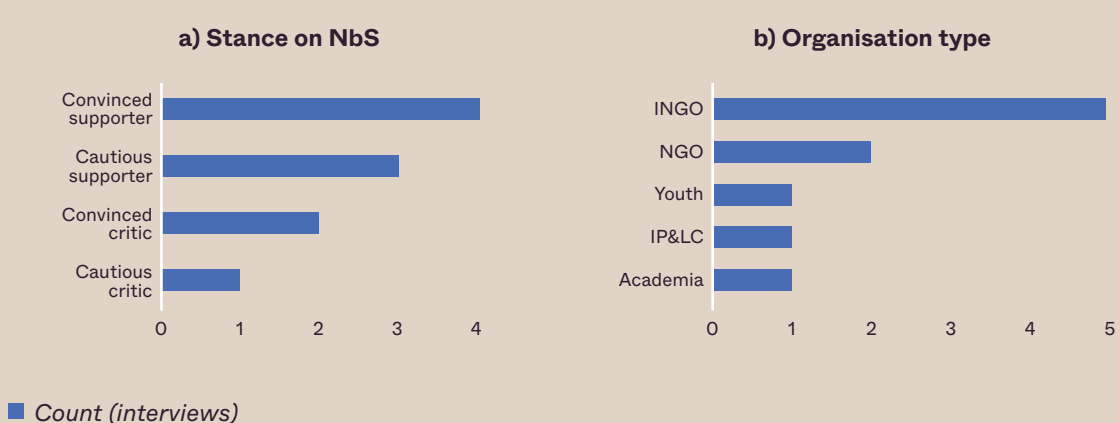
11. The terms ‘Global North’ and ‘Global South’ are not strictly geographical, but rather conceptual distinctions used to describe and categorise countries based on economic, social, and political characteristics. These terms have evolved from older ones like ‘First World’ and ‘Third World,’ and they reflect more than just a country’s location on the globe [41].

Interviews

The 10 interviewees represent international NGOs, national NGOs, academia, and IP&LC and youth organisations, although there is a bias

towards NGOs (Figure 2). There is balanced representation of perspectives on NbS in relation to biodiversity and climate policy. Among interviewees, most (7) are supporters, with three critics.

Figure 2. Number of interviewees by a) stance on NbS and b) organisation type.



INGO = international non-governmental organisation
NGO = non-governmental organisation
Youth = youth organisation
IP&LC = Indigenous peoples and Local communities organisation

How is NbS being framed?

A clear distinction was found between proponents and critics of NbS. Proponents generally emphasised the potential for NbS to deliver 'win-win' or 'no-regret' solutions. Critics, however, are unified in their scepticism about the concept, especially how nature is framed, the role of local communities, and the distraction NbS can pose from reducing emissions and the fundamental drivers of the biodiversity and climate crises. This section examines these groups and the ways they frame NbS, focusing specifically on what problems NbS can or cannot address and for whom, the role of ambiguity in NbS, and the opportunities and risks NbS may offer.

Proponents and critics: problem and solution framings

The nature of the challenge to be addressed by NbS differs between the two proponent narratives. The mitigation narrative focuses on the climate crisis and increasing emissions, closely followed by the biodiversity crisis. Actors upholding this narrative frame NbS as global solutions for global issues with the potential to be cost-effective tools. There is also a strong emphasis on voluntary carbon market mechanisms to offset private sector greenhouse gas emissions.



This group often refers to the need for ‘global stewardship’ to manage this global market: “While some types of Nature-based Solutions have been used under the Clean Development Mechanism (CDM) only to a certain extent, the magnitude of the required emission reductions to achieve the aims of the Paris Agreement make it necessary to widen and substantially scale the use of ecosystems as natural solutions for combating climate change including through carbon markets.” [42]

The vulnerability narrative highlights climate change adaptation as the main concern for NbS. The primary focus is on reducing vulnerability to impacts of climate change (for example, floods and soil erosion) and promoting resilient livelihoods: “NbS are also a crucial factor in enabling adaptation to climate change and building resilience. For example,

forests and other natural vegetation can stabilise slopes, prevent landslides, regulate water flow and prevent flash floods.” [43]

Critics, especially those focused on biodiversity, argue that nature should not be seen as a commodity. This view opposes the idea of NbS as ‘tools,’ which many believe is a fundamental aspect of the NbS approach. This idea is closely underpinned by the perspective of most critics that humans are stewards of nature and its resources, rather than controllers. As one critic highlighted, “We’re here to steward the plot and the resources [in contrast to] those people [who are] looking for profit.” (Interview 7, IP&LC)

Critics were unified in their concern that NbS are no substitute for decarbonisation, which a growing number of proponents also emphasise.

Varying perceptions of ambiguity in NbS

Ambiguity is a prominent theme among both critical and proponent narratives, but in different ways. Proponents acknowledge that NbS is an umbrella term for a wide range of actions that involve different sectors, but proponent narratives perceive ambiguity differently. The mitigation narrative generally emphasises the importance of definitions to counter this ambiguity in the use of the NbS term. According to this group, clear metrics are crucial to evaluate NbS quality and effectiveness, to attract potential investors and tackle climate change.

In contrast, the vulnerability narrative recognises that ambiguity creates the flexibility needed for NbS to adapt to local

circumstances, while also highlighting that it allows misuse of the NbS concept, such as through greenwashing: “We are concerned and unclear about the extent of the definition of NbS. We can see how it is used by different actors, and we can see the different actors are using it in a slightly different way, and that to us is a concern.” (Interview 5, international NGO)

In critical narratives, the perceived conceptual ambiguity of NbS has the potential to do more environmental and social harm than good. To critics, ambiguity enables manipulation by opening a pathway for commodifying nature for private gain and by ‘hiding’ the negative impacts of destructive business models, notably on IP&LCs, biodiversity, and carbon emissions.

What are the benefits and risks of NbS, and for whom?

Supporters highlight the wide array of outcomes of NbS on a global and local level. They emphasise the simultaneous opportunities NbS provide in terms of socioeconomic, climate, and biodiversity benefits. However, the envisioned benefits – and who receives those benefits – vary.

The mitigation narrative frames NbS as global solutions to the climate and biodiversity crises, with an associated globalised view of people as beneficiaries, although some emphasis on IP&LCs was also mentioned (Table 1). NbS are seen to provide a large potential for carbon offsetting, next to global decarbonisation efforts. The vulnerability narrative, on the other hand, stresses the potential of NbS for place-based vulnerability reduction in terms of the climate and biodiversity crises. This narrative

places emphasis on social-ecological resilience, including through soil health, biodiversity regeneration, income stream diversification, or strengthening social cohesion through community-based land management.

As this group generally focuses on benefits to local communities rather than global public goods, the associated documents often raise concerns about stakeholder and knowledge inclusivity in NbS, including the limited role of Indigenous peoples in decision-making, knowledge generation, and implementation.

In line with the vulnerability narrative’s place-based focus and the importance of preserving local ecosystems, the critical narrative strongly emphasises the role of local communities, particularly in terms of power disparities. However, critical narratives differ in several key aspects. First, they characterise NbS by saying that the term offers nothing new. As one critic highlighted, “What is the thing that the term gets us that we didn’t have already? So why don’t we talk about the individuals [Indigenous and local people] rather than this banner term [NbS]?” (Interview 5, international NGO)

For these critics, what the concept proposes is already well known, with suggested ‘solutions’ already being implemented by IP&LCs. Second, for critics, the concept risks more harm than good in several ways. Coupled with its ambiguity, they say the term allows big polluters (notably large multinational enterprises) to delay transforming their business models. Critics in both the climate and biodiversity spaces emphasise the pitfalls of NbS, claiming that the major polluters can use the approach to avoid ambitious emission

reductions. To critics, NbS present an opportunity to use market-based carbon offset mechanisms and net-zero plans as substitutes for rapid, immediate, source emission reductions.

An interviewee echoed this sentiment, saying: “If a big proportion of NbS is used to offset continued emissions in other places, then that opens up a significant risk because emissions need to be driven down as fast as possible.” (Interview 5, international NGO)

A group of critics in both the climate and biodiversity spaces echoed this sentiment. An open letter to the COP26 presidency and parties to the UNFCCC and United Nations Convention on Biological Diversity (CBD) stated: “We are alarmed by oil, gas and other polluting companies’ increasing promotion of NbS to offset their future emissions and meet ‘net-zero’ pledges, rather than putting forth credible plans to reduce greenhouse gas emissions at the source.” [44]

Additionally: “...the fear is that some key players in the global political economy

can use accounting methods to offset their way out of this. So, if the legal system is designed that way, then it will not be a surprise when key players in the global political economy try to find different ways to maintain their profits, even if that comes at the expense of people, nature and climate.” (Interview 6, international NGO)

Critics further caution that offsets are not absolute or reliable: “There are a lot of narratives that are based on offsetting, like we have the net-gain, net-zero, nature-positive and planet-positive. I have heard crazy concepts like people-positive somewhere, and that really worries me... carbon offsetting is a very, very complicated process because the time in which you emit the carbon and the time it is getting absorbed is very different.” (Interview 9, Youth)

“Carbon offsetting is a very, very complicated process because the time in which you emit the carbon and the time it is getting absorbed is very different.”



Critics worry that the concept amplifies or engrains inequalities and injustices that are entrenched in the governance of natural resources, thereby promoting colonial legacies and environmental injustices. They fear that by integrating NbS into policies, particularly without proper safeguards and tenure security, local and Indigenous people will be dispossessed of their lands by large multinational corporations or NGOs, under the pretext of NbS.

A critic from the biodiversity space gave an example, stating: “The Maasai people are going to be evicted from their lands in the name of conservation for the establishment of a protected area, and that is something that is happening now in 2022.”^{12,13} (Interview 9, Youth)

Critics are particularly concerned that inequalities in relations between powerful actors in the Global North and marginalised IP&LCs will be reinforced by NbS through the commodification of nature in their landscapes. One critic emphasised: “Some elders [of IP&LCs] that I talked to ... they said, we’re not sure that they [powerful actors] understand that we are not here for profit... but for those people, they’re looking for profit. Our experience over the years has been that they disrespect the values that we respect, and they extract, and they leave. These are the levels of insecurity but also the vagueness of NbS.” (Interview 7, IP&LC)

In turn, critics emphasise that these power imbalances disenfranchise

those who have a deep, place-based understanding of nature, lands, and seascapes, which underpins their stewardship. One interviewee said: “...Nature-based Solutions are mainly being discussed as ‘how do we lock off large areas of land to store carbon’, which translates to colonial-like practices, the [Global] North dictating what happens... [and] what belongs to Indigenous and local people around the world.” (Interview 2, NGO)

Who should steward NbS?

The documents and interviews showed varying perspectives among proponents about who should steward NbS and support their implementation. The mitigation narrative presents NbS as global opportunities benefiting both global and local stakeholders. It mainly entrusts the responsibility for managing global resources to international organisations or the private sector. However, it acknowledges the significance of local communities in the landscapes where NbS operate. The vulnerability narrative, however, focuses on locally led approaches by the people whom NbS are supposed to benefit. Both critics and proponents of the vulnerability narrative emphasise IP&LC as the rightful stewards of their landscapes, given their unique relationship with their lands and deep place-based knowledge.

12. This references the eviction in 2022 of Maasai from their ancestral lands in Tanzania for a planned 1,500-sq-km wildlife reserve [45].

13. Concerns with land grabs under the banner of NbS have been amplified recently with an intense push to capture and sell carbon credits across tens of millions of acres of forests across Africa without meaningful local consultations [46].

Table 1. Overview of narratives

	Proponents		Critics
	Mitigation narrative (22 documents)	Vulnerability narrative (21 documents)	
Coalition membership	Mixed	Mixed	IP&LCs, organisations working on justice and human rights
Generalised stance on NbS	Convinced supporter	Cautious supporter	Critical
General perspective on NbS	NbS deliver a plurality of benefits (or co-benefits). NbS are scalable and cost-effective solutions to mitigate climate change.	NbS deliver a plurality of benefits. NbS can foster social-ecological resilience, notably through vulnerability reduction and adaptation, while supporting local biodiversity.	NbS false solutions that risk the exploitation of nature and people while delaying rapid decarbonisation. Secure land tenure, robust safeguards, and rights-based mechanisms are essential.
Problem identification	Global climate change and biodiversity crises	Local impacts of the climate and biodiversity crises	The commodification of nature and the inequalities, power imbalances, and injustices in governance
Beneficiaries	Global community and local communities	Local communities	Local communities
Identified stewardship	International organisations and private sector	IP&LC	IP&LC
Ambiguity	Conceptual ambiguity and the lack of standardised metrics are risks to securing finance, particularly from the private sector.	Conceptual ambiguity can allow NbS to be tailored to the local context but can open the door to greenwashing.	Conceptual ambiguity is harmful because it enables polluters and bad-faith actors to maintain business as usual and hide the negative social and environmental impacts of their practices.

Contrasting narratives between the biodiversity and climate policy spaces

Climate change dominates NbS discourse

The analysis reveals a strong association between NbS and climate change policy, rather than biodiversity policy. This preference mirrors the growing focus on using NbS primarily for climate

change mitigation [8]. In other words, the NbS concept became popular through narratives that position nature as a solution to climate change, which has had tangible implications for climate policy. For example, recent years have seen a substantial increase in policies within global Nationally Determined Contributions (NDCs) labelled as ‘Nature-based Solutions’ [47].

The popularity of the NbS concept has also served to eclipse other concepts, such as ‘ecosystem-based adaptation,’ that were used to integrate biodiversity perspectives into global climate policy. In turn, this has shifted the role of nature in climate policy from adaptation to mitigation: “Historically, the main focus has been on ecosystem-based adaptation to climate change, so, supporting the resilience of human and nonhuman nature to adapt to climate change. However, more recently, there’s been a clear shift in focus on nature-based solutions to reduce carbon emissions, to take in carbon from the atmosphere and to keep carbon in the ground.” (Interview 2, NGO)

The association of NbS language with climate change and climate mitigation has shaped how biodiversity policy actors engage with the term. According to one interviewee, the conversation around NbS within the CBD can be traced back to a proposal to incorporate NbS in a climate-mitigation-related target of the post-2020 Global Biodiversity Framework zero draft [48]:

“[We realised] very recently that Nature-based Solutions are going to play an important role in these discussions [on the post-2020 Global Biodiversity Framework, now referred to as the Kunming-Montreal Global Biodiversity Framework¹⁴] because some countries

are proposing Nature-based Solutions in the climate-related target ... and also some of the documents that are going to guide the implementation of the framework also have Nature-based Solutions as proposals. We started to look at these, and to look at the positions of civil society, and see how Nature-based Solutions will be implemented, if [they] are really going to help with the real implementation of conservation actions on the ground.”

(Interview 9, Youth)

As a result of this association, NbS narratives in the biodiversity space are being built *in response to* existing, and dominant, NbS narratives in the climate space.¹⁵ Three responses to NbS as a concept in biodiversity policy spaces have been identified: uncertainty, pushback, and opportunity.¹⁶

Uncertainty

Some interviewees were uncertain about the incorporation of NbS in global biodiversity policy and how the rapid momentum and popularity of NbS might influence policy and practise for biodiversity. This led to opposition to incorporating the term in the post-2020 Global Biodiversity Framework. Some question the inclusion of NbS

14. The Kunming-Montreal Global Biodiversity Framework now includes NbS in targets 8 and 11. <https://www.naturebasedsolutionsinitiative.org/news/landmark-kunming-montreal-global-biodiversity-framework-to-halt-and-reverse-biodiversity-loss-by-2030-agreed>

15. The association of the NbS concept with climate mitigation was also identified by the Global Youth Statement on Nature-based Solutions, published jointly by the Global Youth Biodiversity Network, YOUNGO, and Youth4Nature, which states that the dominant narratives surrounding NbS in both global climate and biodiversity policy spaces “overemphasises carbon sequestration through carbon offsetting schemes” [49].

16. Because of the small number of documents in our data collection focused on the biodiversity space, we relied primarily on interview data to identify key themes and trends unique to NbS discourses in biodiversity-focused policy spaces and interpret findings with these limitations in mind.

when existing terms in biodiversity policy are, as some critics and cautious supporters would argue, better defined and accepted than NbS. For example, the CBD endorses the ecosystem approach (EA) concept as the primary framework for implementation within the convention and has a suite of 12 guidelines and principles associated with it that have been multilaterally agreed [50].¹⁷ EA communicates many of the same ideas as NbS, which is not surprising, given that the NbS framework emerged from EA principles [18].¹⁸

The question raised by many in the biodiversity policy community is whether the NbS concept is truly an improvement on the EA concept:

“We are afraid that Nature-based Solutions are going to have a very climate-focused perspective, we’re going to lose the biodiversity aspect, and that’s something that was core for the ecosystem-based approach: ecosystem integrity and the functions and all of these conjunctions of things that are an ecosystem has to be the core, and that cannot be lost ... I do think that is why many actors in the CBD are pushing to have an ecosystem approach or ecosystem-based approach and not Nature-based Solutions [in the decision text].”

(Interview 9, Youth)

Another key issue is whether NbS are about biodiversity at all. The idea of nature is not necessarily rooted in a diversity of life. A common



example pointed out by critics is that a monoculture tree plantation is not biodiverse, but could still be considered as nature. While widely agreed definitions of NbS incorporate biodiversity as core pillars, including definitions from IUCN and UNEP, not all definitions do (Box 1). When NbS discourses emphasise climate change mitigation and carbon sequestration, biodiversity can be seen to be relegated to a co-benefit, even though the standards and principles position biodiversity at the root of the NbS concept [8].

Others perceive that the NbS concept is not rooted strongly enough in biodiversity knowledge or science, creating further

17. The ecosystem approach concept is defined as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way” and explicitly incorporates people and cultural diversity as integral components of ecosystems [50].

18. The ecosystem approach is also explicitly referenced in the preamble of the UNEP NbS definition [27].

uncertainty: “For example, in the CBD, it is certain parts of the academic community and researchers that are concerned about [NbS] not being founded in biodiversity science, for example, which again is a relevant concern but not a good enough reason to throw the whole concept out, in my mind.” (Interview 8, international NGO)

Pushback

There has been a strong pushback by some actors in biodiversity spaces. There is a fear that the inclusion of NbS in biodiversity discourses and policy ultimately serves to reduce nature to its value as a carbon sequestration or storage technology, leaving out biodiversity entirely (in comparison to the EA concept, which is grounded in biological and cultural diversity). This concern is shared by many proponents embedded in the biodiversity space, who also warn of the risk of expansion of low-biodiversity systems, such as monoculture plantations.

As one interviewee pointed out: “Although the CBD is [supposed] to protect nature, it is not a climate convention, and when you turn trees into carbon, we can see what happens because you know it could be a plantation. [NbS] could be anything, so I think that’s some of the resistance in this...” (Interview 6, international NGO)

Manuel Pulgar-Vidal, leader of Climate & Energy at WWF and interim chair of the IUCN Climate Crisis Commission, corroborated these concerns at the NbS conference 2022,¹⁹ reflecting on

convention negotiations in Nairobi, Kenya, ahead of CBD COP15 in Montreal, Canada, in December 2022. He noted resistance to the concept in relation to perceived competition with the multilaterally recognised ecosystem approach of the CBD, the perception that NbS lead to the commodification of nature, and how this conflicts with the rights of ‘Mother Earth.’

Some critics also noted fear that the increasing popularity of NbS will redirect funding from biodiversity to initiatives that are more explicitly climate-focused: “I do think that a lot of the funding [for NbS] is focused on climate change and the fact we have a lot more climate funding than biodiversity funding. I am scared that Nature-based Solutions being something that is more discussed [in] climate discussions [means that] the present discussions are going to take away some money for biodiversity to climate change things.” (Interview 9, Youth)

Similarly, for critics in the climate space, the colonial legacy of the global conservation movement and the violence inflicted upon many Indigenous and local communities [51–53] also feed into the hesitancy and pushback of some biodiversity actors against NbS. The concern is that, as a climate-focused idea and an idea born out of Global North institutions and colonial worldviews, NbS will repeat past injustices (see Appendix 3 for supporting quotes). Unjust and harmful experiences with REDD+ are a particularly apt example, as REDD+ is often associated with or interchanged with NbS in critical NbS narratives [14].

19. The NbS Conference was held in Oxford, UK, on 5–7 July 2022. Recordings and session summaries are available at <https://conference2022.naturebasedsolutionsoxford.org/programme>

Two interviewees made this connection between REDD+ and NbS, and one explained: “Nature-based Solutions provide a kind of blanket to cover up [the ineffectiveness of carbon offsetting] because it includes REDD+ projects and includes projects that are supposedly carbon sequestration, so reforestation and afforestation and now potentially soil carbon ... and my sense is that even the terminology of Nature-based Solutions is new, people are backing away a little bit because it becomes a little toxic in some places...” (Interview 6, international NGO)

Opportunity

Several actors in the global biodiversity space identified areas of opportunity for the NbS concept. In contrast to concerns about diverting funding away from biodiversity, there were hopes that the momentum of NbS might increase access to sources of funding that, in the past, have been exclusive to climate-specific initiatives, ultimately increasing overall funding for biodiversity. Tied to this was an acknowledgement among biodiversity actors that the NbS concept is a powerful communications tool that could be used to bring in funding and attention to biodiversity loss.

For example, an opportunity for the NbS concept to bring more private sector actors into biodiversity was identified by one interviewee: “[NbS] creates a space for business engagement, which would otherwise be smaller. And if you want business to be engaged in the work of the conventions [CBD and the UNFCCC], then that’s a good thing.” (Interview 5, international NGO)

The NbS concept is a powerful communications tool that could be used to bring in funding and attention to biodiversity loss.



Other participants highlighted the opportunity for the NbS concept to strengthen the link between the global climate and biodiversity conventions (UNFCCC and CBD). This would clarify the concept and encourage policy integration, and the established infrastructure of the conventions could involve all rights holders and stakeholders in NbS discussions and decision-making: “As soon as you do not have something recognised as part of the conventions, you will need to have a process to clarify its implementation, right? I think that’s why it is very important that there’s a recognition of Nature-based Solutions from both climate and nature conventions. They can sort of align also on that and discuss safeguards [and] rights-based approaches and include all stakeholders...” (Interview 10, international NGO)

Ultimately, coherence among the conventions, notably the CBD and UNFCCC mechanisms, is also argued to be key to increasing finance flows to biodiversity [54]. The interviewee added that as the CBD is universally recognised as the leading authority on biodiversity, adopting NbS would create prospects for the CBD and its stakeholders to guide discussions on NbS towards recognising biodiversity as a fundamental, foundational value in NbS research, policy, and implementation: “Of course, the CBD is an authority on nature, and NbS revolves around nature, so we need to define better what that means. The one that should be doing that is the CBD. I think it is important for the CBD to recognise [NbS]. It is getting more traction in the CBD. We hope that we will get some sort of recognition or acknowledgement of the importance of Nature-based Solutions at COP15.” (Interview 10, international NGO)

From this perspective, if NbS are recognised in the CBD, there is an opportunity to further reduce the likelihood of continued ‘misuse’, confusion, and harm from the NbS concept. Because the NbS concept shows no sign of going away and these conversations will continue to happen with or without the CBD and the global biodiversity policy community, it is better to be involved than not to be [55].

However, many describe these opportunities as conditional on incorporating strong, binding safeguards alongside NbS in policy and practice. One interviewee described NbS as a ‘hopeful’ idea but emphasised the need for practical examples where safeguards were applied effectively, especially in



areas where biodiversity is threatened: “[NbS] still needs real case studies or applications, a pilot or proof of concept that this Nature-based Solution is new and something better than what’s been

tested and tried before. I think the only way or one of the best ways that could happen is to take seriously those safeguards...” (Interview 7, IP&LC)

Key takeaways

The analysis reveals a divide between those who support NbS for their potential in climate change mitigation and adaptation, and critics who raise concerns about their impacts and inclusivity. Proponents highlight NbS as cost-effective, win-win solutions to societal challenges, while critics argue that they overlook the root causes of the climate and biodiversity crises and perpetuate unequal power dynamics. Despite growing recognition of the importance of IP&LCs in biodiversity, critics also

point out that NbS discussions often exclude non-Western knowledge systems. Additionally, both sides acknowledge the role of carbon finance and markets in NbS, but they diverge on its implications: proponents see it as a vital source of funding, whereas critics worry about its effects on decarbonisation efforts and the commodification of biodiversity. This discourse reflects broader debates on capitalism, geopolitical power, and the role of market-based mechanisms in environmental policy.

4. Barriers and opportunities for Nature-based Solutions

NbS and transformation

To many critics of NbS, the concept reinforces neoliberalism,²⁰ where human interests dominate, leading to harmful environmental practices and unfairness [60]. These concerns are evident in calls for transformation, defined by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2019) as “a fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values” [61]. This change is crucial for developing ways to cope with climate change, through transformation [62]. Proponents of the NbS concept, however, claim that NbS are – or has the potential to be – transformative. These contradictory viewpoints highlight that NbS can be understood in many ways. This section looks into these different interpretations of NbS, discussing the challenges to and opportunities for transformative change,

using the Three Horizons Framework as a guide (see Appendix 1).

The push for market-based mechanisms to finance biodiversity is gaining momentum, as public and philanthropic sources alone are recognised to be insufficient [7]. The emphasis on these mechanisms in turn spurs research and management innovations in natural capital and ecosystem services. The ecosystem services concept highlights the benefits humans derive from nature [63,64] and provides a structured approach to evaluate the impact of land and seascape management on aspects of human wellbeing [65,66]. Natural capital accounting, in turn, underscores the biophysical embeddedness of economies [67] and helps track impacts on biodiversity and ecosystem services [68,69]. Proponents argue that a key strength

20. Neoliberalism “holds that a society’s political and economic institutions should be robustly liberal and capitalist... endorses [ing] liberal rights and the free-market economy to protect freedom and promote economic prosperity” [59]. It promotes ‘free’ markets, privatisation, deregulation, and reduction in government spending [59].



The push for market-based mechanisms to finance biodiversity is gaining momentum, as public and philanthropic sources alone are recognised to be insufficient

of NbS concept is its potential to bring together these innovations (see Appendix 3 for supporting quotes).

Efforts to value nature (i.e. natural capital valuation) in decision-making and to attract finance demand coding natural assets, verifying impacts, and using advanced monitoring technology such as eDNA detection and carbon storage monitoring. This trend has led to the emergence of biodiversity startups, like those in the voluntary carbon market [70]. Additionally, initiatives like the Taskforce on Nature-related Financial Disclosures (TNFD) and Science-Based Targets Network (SBTN) are complementing these efforts.²¹ TNFD aims to foster a shift towards nature-positive investments through risk disclosure, while SBTN

helps organisations set nature impact targets. Scaling these innovations could significantly alter current practices. However, there are concerns about their effectiveness in addressing biodiversity loss and climate change, including whether the finance directed through these means will benefit the right places and communities.

Through this lens, NbS act as a vessel for natural capital accounting, ecosystem service assessments, and commitments by public or private entities, contrasting the status quo, where biodiversity is sidelined. However, to what extent does this represent transformative change, characterised by shifts in paradigms, goals, and values? How can NbS as a concept be transformative?

21. In May 2023, 17 companies started the process to set targets for nature as part of the SBTN Initial Target Validation Pilot [71], and 320 companies and institutions were to start TNFD nature-related corporate reporting by January 2024 [72].

Barriers to transformation

The NbS concept was designed to align with neoliberalism, valuing markets and growth to foster private sector engagement in the ‘solution.’ As stated in the European Commission definition of NbS and promoted by adopters of other definitions, the concept is often tied to monetary valuation and markets, with interventions framed as ‘low cost’ [73], ecosystem services [25], natural capital [74], and carbon offsets [8]. Although proponents often claim this as the most practical approach, market-based mechanisms alone fall short of what is needed to scale up NbS [75]. For example, Koh et al. (2021) evaluate that 80% of potential implementation opportunities of NbS for reducing greenhouse gas emissions are not financially viable through voluntary carbon markets alone when factoring in the costs of implementation, management, and monitoring [76]. However, the transformative potential of NbS is hindered by a neoliberal perspective in various ways. This perspective fails to address the root causes of social injustice and environmental crises, such as consumerism and commodification within capitalism [77]. So, it perpetuates the worldviews, values, and power dynamics that sustain these issues.

Neoliberalism draws criticism for prioritising value in corporations, free-market mechanisms, and economic growth. This prioritisation often justifies actions such as land dispossession, resource extraction, and ongoing greenhouse gas emissions [78]. Scholars have explored the connection between neoliberalism and NbS. Kronenberg et al. (2017) argue that NbS align with neoliberalism, in which “the existence of anything needs to be justified by its ability to solve some problem,” presenting barriers to protecting

non-utilitarian aspects of the environment [79]. Further, Kotsila et al. (2019) argue that NbS are strategically positioned to support the notion that neoliberalism and market-based governance can be ‘nature-friendly,’ furthering the interests of those who benefit from markets while risking the exploitation of both nature and people [80].

This concern is made explicit in the critical narratives uncovered in this report, notably around justice issues whereby for example, IP&LCs may be dispossessed from their lands or excluded from NbS decision-making. The concept and its application are influenced by corporate interests and agendas “inherently resistant to transformative change” [81]. This section explores how this framing may inhibit the transformative potential of NbS.

NbS and the human–nature binary

Understanding underlying power dynamics is central to exploring barriers to transformation. The human–nature binary separates humans and nature, where the human side is seen as superior, triggering concerns about justice in NbS [82]. Binaries are mutually defining, with ‘nature’ defined as everything ‘human’ is not [83]. Under market structures, the divisions between humans and nature intersect with colonialism and racism, as well as with notions of development and gender.

The privileged sides tend to align with whiteness, the Global North, and masculinity. The resulting associations are human with white, Global North with men, nature with non-white, and Global South with women. These associations have been used to justify slavery, colonialism, extractivism,

and environmental injustice. NbS are criticised for being too Global North-focused and lacking inclusivity of local communities and their place-based knowledge in decision-making and implementation (see Section 3). This is a reflection of the human–nature binaries triggering justice and equity concerns. Critical narratives raise this concern in relation to epistemic injustice; that is, the marginalisation of IP&LCs and their knowledge systems [84] (Interview 9, Youth). If these binaries are not considered carefully there is a risk that the NbS concept will amplify faults in policy and practice.

Dominant NbS frames currently reflect a strong human–nature binary, hiding the co-evolving interactions between human and more-than-human entities

that underpin NbS interventions. Take, for example, how NbS are framed as ecosystem services, with NbS approach as a mechanism to ‘harness the services of ecosystems’ and ‘deploy nature in helping resolve major societal challenges’ [21]. As Welden et al. (2021) demonstrate, this frame reinforces a binary, making external ‘nature’ an instrument that works for the benefit of human society [25,85,86] in a value system focused on monetary benefits. Critics of NbS elaborate on this, highlighting how offsetting is central in NbS, with nature seen as a commodifiable resource.

Another example of this is the financialisation of natural capital, which is central to many NbS discourses (e.g. Chami et al. 2022 [87]). While natural capital accounting can support environmental management [88], trading natural capital in international markets – to stimulate financial flows from distant actors for capital gain – reinforces a human–nature binary [25]. External ‘investors’ are often alienated from the interactions between people and nature that underpin resilient landscapes [89,90].

Critics of NbS pick up on these points, saying that NbS are ‘false solutions’ that maintain business as usual and do not address the root of the issue: commodification of nature and the extractivism embedded in capitalism (Interview 6, international NGO). Extractive and instrumental notions of NbS strengthen existing value systems and power hierarchies rather than promoting a shift towards regenerative human–nature relations, which are crucial for addressing the biodiversity and climate crises. For the NbS concept to be transformative, it is necessary to move beyond binaries, opening space for multiple perspectives and values.



Neoliberal frames sideline justice and equity in NbS governance

Understanding who is represented and who is excluded in NbS frames is important because frames and narratives shape who participates in decision-making processes, and in turn, which and whose knowledge, values, and worldviews are considered relevant and valid [86]. This has important implications for impacts on policy and on the ground [91–93].

Given the power imbalances in international policy and governance between the Global North and the Global South, NbS risk infringing on justice and equity aspirations, as has been true of past international environmental programmes, such as REDD+. In other words, the concept risks being fundamentally non-transformational. For example, carbon finance in NbS generates market pressures to prioritise short-term gains over the needs and perspectives of local communities. This ‘green economy’ mindset upholds instrumental values that justify the commodification of nature embedded in IP&LC lands (Diego Pacheco, NbS Conference 2022), harking back to the intersectionality between binaries. Critics echo this angle, arguing that some people (and their values and knowledge) are not valued in the current framings of NbS, which instead focus on ‘putting a price on nature’ (Interview 5, international NGO). Hence, there is a risk that carbon finance, advocated by many proponents as a practical solution, reinforces unequal power relations between marginalised communities and powerful actors.

The urgent nature of the climate and biodiversity crises can exacerbate the challenge of creating spaces that accommodate the needs and viewpoints

of IP&LCs, as market-based mechanisms and the epistemologies of IP&LCs often clash and are difficult to reconcile. Calls for knowledge inclusion have increased, but discussions on biodiversity and climate are mainly led by natural scientists, economists, and Global North-oriented organisations, which often prioritise global perspectives and view nature in technical terms (e.g. nature as a tool), neglecting local knowledge [94].

These power imbalances affect the agency and ability of IP&LCs to exert their rights, for example, in relation to legal matters, land tenure, and sovereignty. This issue is a key concern for critics, given that IP&LCs steward at least 17% of global forest carbon, yet there remains a significant lack of progress on the legal recognition of their forest-tenure rights [95]. Until environmental governance structures are transformed, the risk is that NbS will fail to address past injustices and realise transformative aspirations (for example, see IUCN NbS standard criteria 8 [21]), delivering instead for those in power.

Townsend et al. (2020) highlight how colonial legacies re-emerge in NbS discourses, with ‘carbon colonialism’ threatening land rights and ultimately erecting a barrier to decolonisation [96,97] that is rooted in racism [53]. Therefore, decolonisation is critical to delivering transformative NbS, yet neoliberal NbS frames and narratives fall short of these aspirations. As NbS policies and funding pledges continue to grow [30], it is important to draw attention to the risk of neocolonial legacies in NbS and how to mitigate them. What is needed goes beyond ensuring participatory processes and towards focusing on power relations because ultimately what matters is “who

makes decisions, mediates conflicts [and] enforces compliances” (Eric Kumeh Mensah, NbS Conference 2022). Lack of attention to this detail will maintain inequitable decision-making, hindering local leadership and jeopardising NbS effectiveness [25].

IP&LCs must take the lead and participate fully in NbS framings to

Opportunities for transformation

While the transformative potential of dominant NbS frames and narratives is inherently limited, there are opportunities for framing NbS towards a viable world sustaining life and regenerating human–nature relations [101]. Alternative modes of relating to nature have existed for a long time, embedded in the worldviews and cosmologies of ancestral cultures, for example from Indigenous relational thinking [102,103]. Many argue these views can and should be the foundational frames that drive NbS towards transformation [25,97]. For example, Reed et al. (2022) explain how Indigenous ontologies can help frame discourses away from extraction and scarcity towards abundance and connectedness, promoting mutual connections between people and nature [98]. Turning to perspectives of NbS outside market structures involves consideration of relational and more-than-human thinking, plural valuation, environmental justice, and decolonisation. From these perspectives, the concept of NbS holds the potential to be transformative.

Relational and more-than-human epistemologies

Based on Indigenous understanding of human–nature connections, which

address the harms and injustices of colonialism and to limit further harm, such as land dispossession [98]. Effective ‘solutions’ to biodiversity loss and climate change must include IP&LCs, as actions that exclude them from decision-making often end up being detrimental to the surrounding ecosystem and biodiversity [99,100].

emphasises interconnection rather than binary distinctions [103], there is a growing call for a relational shift in both sustainability [81,104] and NbS [25]. As in the IUCN’s definition, human wellbeing and biodiversity are explicitly related. Delving deeper into this relationship reveals that NbS encompasses more than just human–nature connections; it involves various relationships among governance structures, technologies, ecosystem interactions, human stakeholders, and rights holders.

Indigenous thought embraces more-than-human perspectives [105]. The intricate networks of relationships inherent in NbS are drawn out through such understanding [106]. This perspective emphasises that the world is not solely human-centric or purely natural; rather, it comprises multiple interconnected relationships [107]. Significantly, this transformative approach repositions humans within a broader context, challenging the dualistic notion of nature serving humans. It enables humanity to view nature not merely as a tool, but as a teacher or partner (see Appendix 3 for supporting quotes).

Box 3. Alternative concepts and worldviews

The NbS concept emphasises human reliance on nature for solving societal issues, linking the biodiversity and climate crises [3]. However, NbS isn't the sole perspective advocating for a non-dualistic view of human–nature relations. Relational thinking, as described by West et al. (2020) [81], offers a paradigm shift recognising the entanglement of human and natural worlds in the Anthropocene, blurring traditional distinctions between them. It promotes a vision of coexistence and mutual respect, acknowledging humans as part of a broader ecological community [108].

Such concepts include:

- *Buen Vivir*: A concept coined by South American Indigenous communities promoting human–nature spatial and temporal interconnectedness and harmony [109].
- *Ecological Swaraj*: A concept from South Asia that underpins the Earth's boundaries and acknowledges the rights of species and ecosystems. This concept explicitly focuses on social justice, equity, and holistic understandings of the world [110].
- *Etuaptmunk*: A guiding principle of some Indigenous groups in Canada, meaning 'two-eyed seeing', which sees humans as part of ecosystems [111].
- *Caring for Country*: A concept revolving around Indigenous Australian peoples' relationships with their physical, cultural, social, economic, and spiritual environment [112].
- *Ubuntu*: An ancient African philosophy implying an interdependence and mutual constitution of all entities on Earth, which also puts an emphasis on harmony between people and nature [113].
- *Kaitiakitanga*: A Māori-based worldview meaning 'guardianship and protection', which is a way of managing nature in a caring and protective way based on the belief that humans, nature, and land are all closely connected and part of the natural world [114].
- *Ecological Civilization*: A Chinese concept that seeks to harmonise the relationship between humans and nature. It represents a shift towards sustainable development, framed around environmental preservation, economic development, and cultural advancement. It aims to embed ecological principles across society, economy, and governance spheres [115].

Such ontologies have also influenced concepts proposed in the environmental academic literature, such as:

- *Culture-based Solutions*: A concept proposed by Local Biodiversity Outlooks (2020), given the critical role people play in supporting nature through socio-cultural systems [116].
- *More-than-Human Approach*: An approach called for by Colléony and Schwartz (2019) that attempts to move beyond human rationality and away from NbS' inherent anthropocentrism [82].
- *Nature-based Thinking*: A concept that criticises seeing nature as purely having instrumental value and instead emphasises nature's intrinsic value [117].
- *Survival Ecology*: Another paradigm reflecting the need to shift away from dichotomies, and calling for holistic management towards resilient adaptive systems for people and nature [1].
- *Integral Ecology*: An idea popularised by Pope Francis in the encyclical *Laudato Si* in 2015, representing a set of lenses to critically look at and respond to ecological challenges in a more transdisciplinary, ethical, and inclusive way. Integral Ecology adopts a holistic approach to addressing global societal challenges, recognising the fundamental interconnectedness of political, social, economic, and environmental problems, as well as the dynamic relationship between humans and nature [118].

Epistemological pluralism

In addition to understanding human–nature relationships, there's a growing focus on embracing a variety of knowledge types in environmental governance and practice. This involves moving beyond traditional knowledge divides to include multiple perspectives and forms of understanding:

- *Integral Ecology*: In line with the recognition that everything is connected, Integral Ecology calls for knowledge integration. This means no area of knowledge and no form of wisdom can be left out, including religion [118].
- *Walking on two legs*: A concept discussed by Dickson-Hoyle et al. (2021), which aims to bring Indigenous communities into the field of nature interventions through Indigenous-based management [119].
- *Nature's Contribution to People*: An idea highlighted by IPBES that broadens the view of human–nature relationships beyond the traditional Ecosystem Services approach, suggesting diverse perceptions across cultures. It acknowledges that different groups have unique understandings of nature and these relationships, and ignoring varied perspectives can affect the success and acceptance of environmental policies and projects [86,120].



Examining how diverse values and knowledge intersect in NbS prompts a reconsideration of human–nature relations

Embracing plural valuation through NbS

NbS can be transformative through the adoption of plural valuation,²² making space for the values that more-than-human and relational thinking bring to the forefront. IPBES uses this approach to collect diverse worldviews and promote the shift towards regenerative futures [122,123]. As Jacobs et al. (2020) share in their perspective, “valuation is – often implicitly – based on specific lenses through which human–nature relations are perceived” [124]. These values can be intrinsic, instrumental, or relational when considering human–nature relations [125] and can coexist in NbS.²³

Similarly, different stakeholder groups might prioritise or emphasise different values and associated value systems, such as the proponents of NbS who speak of valuing nature as more than a tool. These diverse values are reflected in language: for example, the notion of Ubuntu (which translates to ‘the good life’) and pacha mama (which means ‘Mother Earth’) [126,127]. NbS approaches that respect different forms of knowledge and acknowledge various values, including spiritual and ethical aspects, are also more likely to be incorporated into policy and practice [128]. NbS that centre on local needs and interests are more effective, as they are designed to address the local conservation and climate realities for those who manage most biodiversity- and carbon-dense ecosystems [40].

Ultimately, examining how diverse values and knowledge intersect in NbS prompts a reconsideration of human–

22. Plural valuation is defined as a continuous process between science and policy to evaluate the variety of values held across stakeholders, including IP&LCs [121].

23. For example, in mangrove planting for coastal protection, there is instrumental value in the mangroves’ use for protection. This sparks relational value between the people living with, perhaps stewarding, the mangroves. Intrinsic value may then be maintained or built, valuing the mangroves not only for their use but also for their existence as living beings.

nature relations, pushing NbS to break free from narrow ways of thinking. Some proponents of NbS highlight the bridging potential of the concept; for example, NbS may provide a common platform for businesses and IP&LCs to discuss environmental issues. It may present daunting complexity, but the 2022 IPBES values assessment found that there is an urgent need to consider the multiple values of nature in policy decisions, shifting the focus away from short-term profits and economic growth at the root of the biodiversity crisis [129,130].

Transformation towards ‘just NbS’

Recognising and incorporating diverse value systems is essential for developing fair and equitable solutions [131] that pave the way for transformative pathways. Justice in NbS is not inherent or easy, but many argue it is essential. Cousins (2021) shares that to work towards ‘just NbS’, it is critical to consider not only how nature becomes a solution, but for whom that solution is designed [132]. Justice involves more than just benefiting individuals; it is also about fostering “systemic fairness in opportunities and outcomes” (Rachel Garrett, NbS Conference 2022) across various levels, from interventions to national and international policies.

Some also highlight how the notion of justice should be expanded to all forms of life on Earth through legal frameworks (Diego Pacheco, NbS Conference 2022). By fundamentally transforming the current system and adopting a socially differentiated approach, achieving justice in NbS becomes feasible [133]. Anguelovski and Corbera (2022) underscore the opportunity to transition from nature-enabled dispossession to nature-based justice in

NbS by integrating justice across policy options, decision-making processes, implementation strategies, and evaluation methods [134]. The importance of just NbS is being acknowledged at high levels: for example, in the UK government’s G7 Climate and Environment focus on gender and social equity in NbS [135]. However, critics of NbS highlight that justice does not automatically transfer from the international to the implementation level. They advocate for the establishment of rigorous, strong, and binding safeguards to guarantee justice in NbS.

Prioritising justice is essential to confront the inequalities and marginalisations ingrained in neoliberalism. This entails support for empowerment, inclusivity, and self-determination of IP&LCs in NbS at various levels. However, to achieve justice, power imbalances must be addressed through knowledge and governance, which are fundamental aspects of any transformative pathway. Justice is not only practical or legal, but also epistemological (that is, recognitional justice). For transformation towards justice to occur, space for other worldviews, including those held by IP&LCs, must be integrated at every level of NbS.

Bringing in other views in turn embeds empowerment, inclusivity, and self-determination in NbS design to ensure ‘successful and sustainable’ interventions [8,134]. The roles of Indigenous knowledge and decision-making are increasingly recognised and lauded as fundamental for NbS [8,136]. Yet, as highlighted by Chomba et al. (2016), the incorporation of distributive justice and equity in NbS by design may be insufficient in the face of marked power differentials and colonial legacies [137].

Transforming international governance as a path to decolonisation

Creating just NbS requires the transformation of international governance systems where barriers to equity, justice, and decolonisation remain. Pascual et al. (2021) argue for the combination of short-term policy actions and long-term institutional changes in the governance of biodiversity, climate, and society, integrating equitable governance approaches [77].

NbS proponents have emphasised the potential NbS offer for policy integration at the intersection of various issues [43]. Additionally, NbS present an opportunity to foster equity, including procedural equity, so that global policies acknowledge and integrate diverse cultures and knowledge systems, and promote distributional equity by encouraging more collaborative forms of governance (McDermott, NbS Conference 2022). Power sharing rests in decision-making: who makes decisions, for whom, for what, and where. As Rachel Garrett (NbS Conference 2022) points out, for NbS to be transformative, they must benefit the most marginalised, and participation should not be co-opted by those in power to the exclusion of the most marginalised [97]. Rights-based approaches and the recognition of tenure lie at the heart of transformative solutions [37].

Transforming governance in this way can be a step towards decolonisation, and changing how NbS are financed internationally is one pragmatic step in this direction. There is a lot of focus on the amount of finance needed in international

negotiations (for example, UNFCCC and CBD), but little discussion on the quality of the finance, including who should get it, where it should be spent, and who decides (Dilys Roe, NbS Conference 2022). Revenue is not flowing to where it is needed most because of the power imbalance between the Global North and South (Musonda Kapena, NbS Conference 2022). The Food and Agriculture Organization of the United Nations (FAO) estimates that less than 2% of global climate finance reaches smallholders and IP&LCs in the Global South [138].

Issues of agency and power in decision-making have crucial implications for addressing power imbalances. For example, instead of founders or leaders (usually from the Global North) setting rules for those receiving finance in the Global South, many suggest that local communities should be allowed to decide their own priorities and plans [97]. This would be a transformative shift away from the conditional modes of finance, such as the International Monetary Fund- and World Bank-led structural adjustment programmes of the 1980s, which placed substantial economic and social burdens on the Global South [139,140]. In response to the failures of market-based modes of finance to halt biodiversity loss, proposals for alternative finance mechanisms have emerged, such as ‘conservation basic income’ and unconditional cash transfers [141,142]. For example, Cool Earth is implementing unconditional direct transfers to local communities through context-specific, people-led tropical forest protection [143]. These bottom-up mechanisms shift away from inherently inequitable, conditional, Global North-led, top-down structures.

5. Conclusions

This report analysed NbS narratives, encompassing worldviews, values, and associated actor groups, while clarifying the opportunities for and limitations to transformative change. The framing and application of NbS, together with stakeholders, significantly impact policies and actions on the ground. The narratives were critically examined to assess their potential to deliver effective and equitable NbS. Along the rapid rise of the NbS concept in climate and biodiversity policies and the private sector, the report found that NbS are associated with both critical and proponent narratives. Reflecting on these narratives, the report also explored challenges and opportunities in the hope that this would foster shared understanding, build bridges across different perspectives, and support collective exploration of future pathways for regenerative relations between people and nature.

While proponents advocate for NbS as cost-effective tools for societal challenges – predominantly the climate crisis – many critics are concerned that the concept acts as a front to enable business as usual, delaying decarbonisation while risking further marginalisation of IP&LCs. Supporters see the concept as wide-ranging and welcoming, but critics argue it is too vague, fearing it might neglect biodiversity. This concern arises because discussions on NbS in biodiversity often follow the lead of climate policy discussions.

Critics also fear the imbalanced power

relations between the Global North and Global South emerging through NbS, notably in relation to global corporations and local communities. Ultimately, the report found that these divergences stem from different problem framings; for example, critics emphasising structural drivers (of climate change, biodiversity loss, and injustice) that are rooted in capitalism and the associated geopolitical power dynamics. However, the report also found some nuance in proponent perspectives that picked up on these issues, particularly from actors concerned with place-based vulnerability, in contrast to framing those as an opportunity to reduce greenhouse gas emissions through carbon markets.

Considering these viewpoints in the examination of opportunities and obstacles to transformation, it becomes apparent that NbS often serve as a platform for narratives centred on natural capital accounting, valuation of ecosystem services, and the coding of natural capital assets. This is especially evident in the context of market-based mechanisms, which critics view with caution.

The report contends that framing NbS through a neoliberal lens impedes structural transformation by perpetuating a binary view of humans and nature while neglecting justice and equity in governance. This approach also risks reinforcing power imbalances between the Global North and Global South. In addition, NbS can facilitate

transformations by embracing frames that incorporate relational thinking. These frames advocate for moving beyond the binaries perpetuated by neoliberalism, such as the human–nature dichotomy, which hinders progress towards equitable, regenerative futures for both people and nature. It is imperative that NbS acknowledge and integrate diverse value systems to empower various ways of knowing, thus enabling effective action.

Although the report does not advocate for or against NbS as a concept, it

acknowledges the potential for NbS to promote a shift towards more interconnected thinking among actors in the biodiversity, climate, and justice spaces. Effective use of NbS as a concept to bring groups together requires careful management of power relations and attention to the worldviews through which NbS frames are born. Below, we outline recommendations for organizations like Uneathodox to effectively engage with the NbS concept and promote dialogue among diverse actors.'

The report explored challenges and opportunities in the hope that this would foster shared understanding, build bridges across different perspectives, and support collective exploration of future pathways for regenerative relations between people and nature.



Recommendations

We recommend that organisations like Uneathodox do not take an advocacy position on NbS, as they should retain a plural vision of ‘solutions’ to address the biodiversity crisis. Taking a normative position (or being perceived to) is likely to make it difficult to engage key actor groups and challenge dialogue among different perspectives. Our position as authors is that the NbS term and concept can bring actors together, fostering increasing awareness of different worldviews and values underpinning narratives. However, it is crucial to first explicitly acknowledge that predominant NbS framings lack knowledge and plurality, which erects a barrier to engaging a broader collective of actors in actions to tackle the biodiversity and climate crises. We believe Uneathodox and similar organisations can help address that by fostering collective appreciation for this issue and collective reflection on equitable NbS frames while supporting exercises in collaboration through managing power relations (for example, between Global North NGOs and IP&LC groups).

Work with organisations that advocate for and implement NbS to strengthen their capacities for just and transformative implementation, in policy and practice

Organisations that promote and implement NbS in policy and practice

(including conservation NGOs) should be supported to fully recognise potential NbS pitfalls. It is critical for these actors to ensure that their actions address power imbalances and foster transformative pathways; this goes beyond following free, prior, and informed consent,²⁴ towards securing just and equitable design and implementation of NbS.

Establish discussion platforms that foster various ways of knowing and values

Discussion platforms on NbS should be established to make space for various ways of knowing and values, overcoming the power differentials of colonial legacies.²⁵ Dominant frames are currently characterised by a dualistic interpretation of humans and nature and a narrow market-based lens. Facilitating discussion is key to ensuring that NbS discourses, policy, and practice create space for alternative understandings of human–nature relations (and relational thinking more broadly), which underpin regenerative futures. Such a platform would seek to promote dialogue across actor groups, such as between IP&LCs and grassroots organisations and international conservation NGOs, as well as interregional and intergenerational discussion. A key focus should be on empowering marginalised voices, which tend to be sidelined in international discourses. This empowerment starts by including IP&LC representatives as

24. Free, prior, and informed consent is an ethical and legal principle designed to ensure the participation and consultation of Indigenous populations before any activities are undertaken on their ancestral lands. It aims to protect Indigenous peoples’ rights and encourage their participation in decision-making processes related to projects that affect their lives and resources. This principle is critical for safeguarding their way of life [144].

25. This action would require a more fine-grained stakeholder assessment than provided in this report.



decision-makers in the design of the discussion platform, ensuring that it will be of use to them and that they will be compensated for their time and expertise.²⁶

Harness discussion platforms to promote representative and meaningful policy

Dialogue mechanisms should be supported to ensure that policy relating to NbS reflects the various needs and concerns of stakeholders and rights holders, and to foster strategies and

interventions that are meaningful and representative. This is key to making sure that ‘global knowledge’ does not overpower local perspectives. Safeguards in international policy, although crucial, are unlikely to uphold the rights of IP&LCs, notably in governance contexts characterised by imbalanced power relations and lack of tenure recognition.

Run a Three Horizon Frameworks workshop to foster collective reflection on the transformative potential of the concept

A Three Horizons workshop (see the Three Horizon Frameworks [101]) should be organised to explore the barriers and opportunities the NbS concept presents for transformation. The workshop would provide the opportunity to engage various stakeholders in NbS policy and practice, including Indigenous people, the private sector, government, and civil society organisations. Although engaging critics of NbS may be challenging, critical proponents might be a useful starting point. While such a workshop would focus on NbS as a conceptual object to engage participants, ultimately it may serve to foster deeper reflection and engagement on the barriers to and opportunities for a more just and equitable future for people and nature.

Engage multilateral and country aid funds to foster funding mechanisms rebalancing power relations

26. There is an appetite for this among certain Indigenous groups, as highlighted by Tebtebba, an Indigenous peoples’ organisation from the Philippines: “It would be great to organise and finance exchange visits between Indigenous peoples who have demonstrated positive and successful practices in managing their territories and resources using Indigenous knowledge in the perspective of Nature-based Solutions” [145].

Multilateral funds²⁷ should be engaged to explore funding mechanisms that address power relations and incorporate robust safeguards to make sure the funds reach the right people while avoiding harm to local people and biodiversity. Multilateral and bilateral funds should foster the development of empowering policies and strategies. For example, Cool Earth is implementing unconditional periodic direct cash transfer payments, akin to a universal basic income [143]. This approach is specifically designed to empower IP&LCs as direct recipients, allowing them the autonomy to decide how to use the funds. This avoids the rigid requirements often associated with conditional mechanisms or ‘results-based aid.’ There is an opportunity to explore the effectiveness of these mechanisms through ethical, mixed-method approaches. Multilateral and country aid funds should also position representatives of fund recipients as advisors and decision-makers in the funding and grant-making process to support more inclusive and just processes.

Foster innovation in valuation for policy appraisal

It is important to foster innovation in valuation for policy appraisal (and for decision-making in general) to tackle the power asymmetries that prevent the incorporation of diverse values into policymaking [130]. Valuation methods beyond financial ones are required, incorporating plural benefits and held values (for example, through multi-criteria analysis [146] or risk–opportunity analysis beyond cost–benefit analyses [147], and embedding a focus on sustainability and wellbeing. Potential partners include the World Resources Institute, which is currently exploring valuation through the lens of novel economic paradigms (Erin Gray, NbS Conference 2022).

Support further research to investigate NbS narratives in the biodiversity space

NbS narratives for biodiversity should be further investigated, and in particular the connection between these narratives and colonial legacies in conservation, such as in the context of protected areas. Additionally, more research is needed to understand how narratives shape perceptions of risks and opportunities in biodiversity finance and policy integration related to NbS.

27. For example: the Global Environment Facility, Green Climate Fund, and Adaptation Fund; country agencies such as Germany’s Federal Ministry of Economic Cooperation and Development (BMZ) and Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU), the Norwegian Agency for Development Cooperation, and the UK’s Foreign, Commonwealth & Development Office; and finally, country aid funds such as the United States Agency for International Development (USAID), French Development Agency (AFD), and UK Aid.

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Appendix 1:

Methodology

This report focuses on frames, narratives, and discourse coalitions. Frames shape narratives, which are promoted by discourse coalitions. Narratives are detailed stories, emerging through frames, which emphasise particular worldviews, frameworks or lenses (for example, ecosystem services or justice). What is left out of the frame is just as important as what is included. Discourse coalitions represent ensembles of actors who shape and further these storylines [148]. What binds these actors together are the storylines or narratives that play out across many mediums. However, these actors may or may not share common interests or goals.

To explore these frames, narratives, and the various actors underpinning them, we undertook a mixed-methods approach, consisting of key informant interviews and document analysis, restricting our analysis to 2020–2022. We build on the work of Melanidis and Hagerman (2022) who explored NbS discourse coalitions in 2019 (in relation to COP25 and the UN Climate Action Summit in New York) to explore possible shifts in narratives and discourse coalitions [14]. Whereas Melanidis and Hagerman restricted their analysis to international climate policy, we also explored narratives and discourse coalitions in the biodiversity space. To do so, importance was given the CBD COP15 and negotiations towards the Global Biodiversity Framework, as well as the

Fifth UN Environment Assembly, which focused on the importance of nature in achieving the Sustainable Development Goals (SDGs). This scope allowed us to contrast emerging narratives and themes between international climate and biodiversity spaces.

For the interviews, we selected a sample of actors who represent a variety of organisational types from different geographies and who engage in advocacy or policy development. We sought to provide a balance between proponents and critics of the concept while striving to incorporate under-represented voices, including those of Indigenous people and organisations (see Appendix 2 for more detail). We conducted semi-structured interviews with available respondents to examine individual and organisational perspectives and narratives associated with NbS. Although there are gaps among interviewees for certain organisational types (for example, government negotiators), the document search, as well as an exploration of thematic sessions and presentations at the NbS Conference in Oxford in July 2022, provided an opportunity to overcome these.

Documents (non-academic literature including research and policy reports and briefs, blogs, commentaries, and opinions) were sourced from Google Scholar and Google through a set of

structured keyword search targeting terms related to NbS, as well as from international events in biodiversity and climate policy that took place in 2021 and 2022 (see Appendix 2). Documents were selected by systematically applying a set of selection criteria at the title and full-text level. We restricted the selection of results to the first five pages of both Google and Google Scholar searches, as the relevance of searches drastically decreased in trial runs in subsequent pages. We also included peer-reviewed journal articles explicitly focusing on implementing and framing NbS, as well as critical analyses of NbS frames that were identified through a targeted search of Google Scholar and our own knowledge, although the search was not systematic.

Finally, we pooled together reports from civil society, including NGOs and advocacy groups that were not captured in our document search but were known to the report authors, and captured relevant material from sessions at the NbS Conference 2022. This conference gathered a range of actors (policy, civil society, private sector, and government) engaged in the NbS space, providing a timely opportunity to gauge narratives and frames.

A structured framework was devised to analyse interviews and documents (see

Appendix 2 for the full coding protocol). The framework allowed us to capture the actors' geographies, the targeted policy spaces, stances on NbS, NbS frames, and associated actor coalitions. The framework also captures missing actors and perspectives; emerging material on the topics of justice, empowerment, inclusivity, and decolonisation; and other mentioned concepts integrating climate and biodiversity to tackle societal challenges. Flexibility was applied to explore emerging themes. The coding framework was used to synthesise the results, focusing on NbS frames and narratives, how NbS is defined, the actors involved in the narratives, and the problem NbS is portrayed to solve.

In addition, we analytically explored relationships between themes, and between themes and actor groups. We unpacked narratives while making explicit associations between narrative attributes and actor groups, where appropriate. Where reported in the results, numbers and proportions (for example, of groups or group attributes) are drawn only from the document analysis. The interviews are used to provide more depth of understanding of narratives and associated actor groups. Supporting quotes from the interviews are anonymised, but show which actor group or organisation type the respondent was associated with.

Exploring the evolution of NbS in the climate policy space and contrasting climate and biodiversity narratives

To explore how narratives may differentiate between climate and biodiversity policy spaces, we conducted a comparative reading of all interview transcripts from respondents in the biodiversity policy space (self-identified

by the respondents). Emerging themes were then contrasted with themes characterising narratives in the climate space. To explore how narratives may have evolved in the climate space since 2020, we then contrasted emerging

themes with the findings from Melanidis and Hagerman (2022), who focused solely on climate policy space narratives and discourse coalitions [14]. These insights were complemented with personal

knowledge from the authors, as scholars and actors engaging in NbS discourses, as well as insights from the NbS Conference 2022, which was attended by two of this report's authors.

Exploring the transformational potential of NbS as a concept

To explore barriers to and opportunities for transformation in relation to NbS, we harness the Three Horizons Framework [101]. This framework was designed to explore complex structures and the interconnected problems and opportunities that fall within them. Three Horizons thinking “offers a methodology and practice of seeing things from multiple perspectives and valuing the contribution that each perspective makes to the way we bring forth the world together” [101]. The author team harnessed this approach to frame a collective reflection through a brainstorming exercise. This method allowed us to bring in perspectives gathered throughout the report in combination with our own knowledge.

usual practices dominating, and where transformation is required to sustain life. We defined H1 as the stage before NbS emerged, where neoliberalism is a reigning ideology presenting challenges for environmental and human wellbeing. Horizon 2 (H2) is where disruptive innovations respond to the world in crisis. Although some of these may represent seeds of transformation, most do not achieve it. They remain grounded and framed through H1's ideologies and structures. While not transformative, these disruptive NbS innovations may pave the way for Horizon 3 (H3), which envisions a transformative, viable world for sustaining life and regenerating human–nature relationships of interbeing and interdependence.

We characterised Horizon 1 (H1) as the world in crisis, with business-as-

Appendix 2:

Supplementary methodology

Respondent sampling and interview approach

We defined an actor as a person with expertise and direct experience working in research, policy or practice who engages with NbS and/or has publicly spoken or written about NbS and engaged on NbS at any of the four key events in the 2020–2022 timeframe covered in this report. We targeted respondents who are well embedded in their organisation and more likely to have a well-developed understanding of organisational perspectives on NbS, and individuals from the selected policy spaces, who are familiar with NbS discourses and actors intersecting with these spaces.

Interviewees were purposely sampled considering the following dimensions: gender, organisational type, geography, and association with under-represented groups and potentially marginalised voices in international policy. We attempted to balance individuals with different known stances on the NbS concept (that is, critics, proponents, and neutral). The author team sourced interviewees through their knowledge and awareness of the stakeholders engaging with the NbS concept in 2021 and 2022, as well as recommendations from other interviewees and peer reviewers.

Organisational categories included academia, IP&LC organisations, international government organisations, international non-governmental organisations, national government organisations, national non-governmental organisations, and youth organisations.

A snowball approach (i.e. chain referral method whereby one interviewee recommends another) was used to expand the pool of respondents [149] who fell within qualifier categories. Interviews were prearranged by email and an information sheet was sent to potential interviewees outlining the study team and purpose, the interview procedure, how the findings would be used, potential risks and benefits, and confidentiality. Free, prior, and informed consent was obtained before each interview, and respondents were informed that they could stop the interview at any point.

Interviews followed a discussion guide, administered in English, by Abraham Bugre and Femke Spiegelenberg. The discussion guide content, question order, and wording were refined through piloting to ensure relevance to the report's aims so that the questions were clear and understood. Interviewers strove to remain neutral during the interviews to avoid influencing them with personal biases.

Document search

The following terms were selected for searches in Google and Google Scholar. Search strings were compiled in various combinations, such as combining each conceptual term with the policy event terms.

Terms related to NbS

- **Keywords:** ‘Nature-Based Solution,’ ‘Nature based Solution,’ ‘Natural Climate Solution,’ ‘NCS,’ ‘Nature based climate solution,’ ‘Nature-based climate solution’

Terms related to the four main events (CBD COP15, UNFCCC COP26, UN Environment Assembly 5.2, and Stockholm+50)

- **Keywords:** ‘COP26,’ ‘Glasgow Climate Conference,’ ‘Glasgow Summit,’ ‘CBD COP15,’ ‘Convention on Biological Diversity COP15,’ ‘Stockholm +50,’ ‘UNEA 5,’ ‘UNEA-5’

We restricted title screening to the first five pages of Google Scholar and Google, including titles containing NbS or analogous terms, and excluding all others. At the full-text screening stage, we included documents that explicitly included at least one of the four key events in the full text (Table 4).

Table 4. Document selection criteria

Inclusion criteria	The document was published between 2020 and 2022 Title contains ‘NbS’ or an analogous term The full text refers to at least one of the four key events Articles on the first five pages of Google Scholar PDF files for Google
Exclusion criteria	Non-English language literature, media reports, social media posts, and academic journal literature (Note: academic journal literature was used as supporting references throughout the text)

Document and interview coding methodology

The coding is guided based on the concepts of frames and narratives. Frames are ways of looking at a concept or issue, shaped through one’s worldviews and ideas. These frames are what form certain assumptions about environmental issues and natural solutions [73,93]. Such frames and their underlying assumptions can develop into

narratives, which are assumption-driven stories about problems, solutions, and pathways forward, often employed to give meaning to social phenomena [148]. These assumptions in frames and ideas create a story about cause-and-effect relations within these phenomena, which are often accepted as factual by the group adhering to a narrative [150].

The articles and interviews were coded for frames and narratives around NbS for multiple groups of elements: general information, frames, narrative, and other concepts. The coding framework allowed the authors of this report to explore how NbS is framed, what actors and knowledge are featured in the NbS space, who is participating and who is excluded, and how frames and narratives are related to actor coalitions, their geographies, and stances on NbS.

We identified NbS frames by analysing the documents and interviews for

underlying assumptions. First, we coded actors and documents for their overall stance on NbS: convinced supporter, cautious supporter, convinced critic, or cautious critic (see Table 5). Next, the documents were coded for how that particular actor defined NbS and what NbS were perceived to be a solution to. The documents were then coded based on their framing of nature, including (but not limited to) whether it is seen as a tool or whether there is a more mutual relationship between humans and nature [151].

Table 5. Stances on NbS

Convinced supporter	Undoubtedly positive of the role of NbS
Cautious supporter	Positive of the role of NbS but with caveats on potential negative impacts
Convinced critic	Undoubtedly negative of the role of NbS
Cautious critic	Negative of the role of NbS but with caveats on potential positive impacts

For the narratives, we explored how actors describe the role of NbS and the possible causal relations between, for example, NbS and climate change, as well as how frames and narratives are related to actor coalitions, their geographies, and stances on NbS. The coding of the narratives is based on how NbS are seen to contribute to climate change

mitigation, their future, and how they are formed and shaped through discourse and policy. While the coding of narratives was done inductively, examples of codes to look for were, among others, the relationship between NbS and climate change, and different actors involved in the process, the definition and use of NbS, or the proposed future of NbS.

Appendix 3:

Supporting quotes

From Section 3: Pushback

Reference from main report: *The concern is that, as a climate-focused idea and an idea born out of Global North institutions and colonial worldviews, NbS will repeat past injustices.*

One interviewee identified the influence of colonial legacies on NbS as a key barrier to facilitating global environmental governance more broadly:

“Nature-based Solutions are very much founded on a long history of coloniality, and until that history and the consequences of that history [are] properly and fully acknowledged, then I feel like there will be no real progress, and that will ultimately get in the way of trust that people need to feel that they, the global community needs to feel, vis-à-vis these global environmental processes.” (Interview 2, NGO)

From Section 4: NbS and transformation

Reference from main report: *Proponents argue that a key strength of the NbS concept is its potential to bring together these innovations.*

“The concept of NbS more explicitly brings and is effectively a catch-all term for recognising and valuing ecosystem services, and so we go towards natural capital stocks and flows. It is a useful concept when we engage businesses and policymakers. By taking this integrated NbS approach, they start to think, ‘Oh wait, nature is related to climate, water provision, welfare [and] economic

opportunities, and therefore provides a channel and entry point to start thinking about valuing and accountability from everyone in society around the externalities that no one takes into account currently.’ I think the concept of Nature-based Solutions combined with natural capital accounting approaches and then improved accountability and regulatory investor scrutiny and engagement is a powerful tool for broader changes in how we manage resources globally and how we value.” (audience member, NbS Conference 2022)

From Section 4: Relational and more-than-human epistemologies


Reference from main report: *Significantly, this transformative approach repositions humans in a broader context, challenging the dualistic notion of nature serving humans. It enables humanity to view nature not merely as a tool, but as a teacher or partner.*


“[We are] using nature as a resource, but I feel like we’re doing very little learning from nature if that makes sense and I think this is a very important distinction because there is a field of words such as biomimicry that comes in and should come in on a global level.” (Interview 2, NGO)


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