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Can Innovations That Are Good for Environment Be Also Good Business? A Case Study on Biodiversity Loss Mitigation

H. Taimisto[1] | V. Tiitola[1] | G. Pigatto[2] | A. Hirvensalo[3] | T. Laine[1] | T. Korhonen[1]

[1]Industrial Engineering and Management, Tampere University, Tampere, Finland | [2]Sant'anna School of Advanced Studies, Institute of Management, Pisa, Italy | [3]Information and Knowledge Management, Tampere University, Tampere, Finland

Correspondence: V. Tiitola (vesa.tiitola@tuni.fi)

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ABSTRACT

The adoption of biodiversity loss mitigation innovations (BLMIs) in business markets depends on customers recognizing their value. Current literature lacks sufficient understanding of the decision processes, through which suppliers and customers make the ecological value of BLMIs visible, credible, and economically actionable. This paper explores decision-making concerning and development of BLMIs at the supplier-customer interface, using an interventionist research approach. The paper combines the switching path analysis technique (SPAT) and the Gioia method to analyze interview data on how decisions on BLMIs are currently being made and how these innovations could be developed to accelerate their adoption. Our results suggest that BLMI decisions currently rely on identifying cost-efficient approaches that sufficiently address the biodiversity-related concerns, while merely hoping to also capture the more ambiguous but broader ecological value in economic terms. Moreover, our study suggests that in addition to introducing the BLMIs themselves, the measurement of the ecological value and its translation into economic customer value need to be developed to enhance the adoption of BLMIs. The paper contributes to literature on biodiversity innovations and customer value by identifying the core business challenges related to BLMI.

1 | Introduction

Biodiversity loss is a critical threat to planetary health and to the socio-economic systems that depend on ecosystem services such as pollination, clean water, raw materials, and cultural value (WEF 2026; Dasgupta 2021; IPBES 2026). The relationship between biodiversity and business is therefore dual: businesses contribute to biodiversity loss through pressures such as land-use change, pollution, resource over-exploitation, invasive species, and climate change, while also depending on biodiversity for the provisioning, regulating, and cultural services that support economic activity (Cinquini et al. 2026).

Businesses can help mitigate biodiversity loss by changing practices and adopting innovations that reduce negative impacts or support conservation and restoration. In our empirical setting, these innovations concern tailored industrial remediation and restoration solutions, including site-specific interventions such as vegetation restoration, contaminated soil remediation, reduced use of virgin wastelands and materials, improved land-use practices, and the monitoring of ecological impacts.

The adoption of such innovations depends on whether companies perceive benefits (i.e., value) compared with business as usual (Anderson et al. 2006; Dowell and Muthulingam 2017; Jones and Solomon 2013). Yet, current regulation and market dynamics rarely provide strong incentives for biodiversity-loss mitigation (Bebbington et al. 2020). As a result, adoption often depends on whether intrinsic ecological value for nature can be translated into economic value for the customer business.

This translation is difficult. Since broader shifts away from shareholder-primacy logics towards more eco-centric approaches (Bebbington et al. 2020) are not necessarily realistic, acute acceleration of adoption requires direct economic mechanisms such as reduced lifecycle costs (Fromm 2000). Such approaches call for practical and theoretical insight into how biodiversity-related outcomes can be specified, measured, justified, and embedded in supplier–customer value creation, preferably with real economic implications for both businesses (Cinquini et al. 2026; Grönroos and Helle 2010; Keränen and Jalkala 2013; King and King 2026; Panwar et al. 2025; Tiitola et al. 2023; Wouters and Kirchberger 2015).

The challenge is intensified by the multidimensional character of biodiversity. Unlike climate change, where CO2eq is widely used as a proxy, biodiversity lacks a single, easily understood measure. Firms may assess pressure indicators such as pollution, deforestation, or water use, or state-of-nature indicators such as mean species abundance, habitat fragmentation, or soil microbiology (Cinquini et al. 2026). The issue is not that biodiversity cannot be measured, but that different measures capture different ecological referents, scales, and value assumptions. This creates uncertainty because actors must decide which indicators are credible, comparable, cost-efficient, and relevant enough for procurement, reporting, and investment justification (Addison et al. 2020; Westerlaken 2024; Pigatto et al. 2026).

Existing research has examined the difficulty of accounting for biodiversity impacts and the slow uptake of biodiversity-oriented business practices (Pigatto et al. 2026; Schaltegger et al. 2023). However, *a remarkable research gap* remains in the actual decision-making processes, through which suppliers and customers make the biodiversity-related value (both ecologic and economic) of concrete BLMIs visible, credible, and economically actionable to facilitate and accelerate their adoption. This study addresses this gap by examining how biodiversity-positive, or less-negative, innovations are co-developed and evaluated in a B2B setting, where intrinsic ecological value for nature and economic value for business are debated, contested, and negotiated within the customer decision-making process.

Specifically, our paper answers the following research questions:

RQ1. How are tensions between ecological value and economic value negotiated in customer decision-making concerning biodiversity loss mitigation innovations?

RQ2. How can suppliers and customers make biodiversity-related value visible and actionable when developing biodiversity loss mitigation innovations in B2B settings?

To answer these questions, we conducted an interventionist case study (Lukka and Wouters 2022; Tiitola et al. 2020; Lyly-Yrjänäinen et al. 2017) of a company developing biodiversity-friendly innovations with its customers. We understand these offerings as innovations not only because they introduce alternative ecological practices, but because they require suppliers and customers to jointly develop new ways of specifying, measuring, justifying, and economically embedding biodiversity-related outcomes in business decisions. Our analysis approach is twofold. Regarding the meetings and interviews with the company and its clients, (1) we use the switching path analysis technique (SPAT) (Roos 1999) to identify drivers, triggers, and barriers in customer decision-making, and (2) the Gioia method (Gioia et al. 2013) to develop themes that explain how biodiversity-loss mitigation can be further specified, communicated, and developed to support customer adoption. Our analysis was strengthened by improved contextual understanding and case company participant validation through participant observation meetings (Lindheim 2022).

Our results suggest that BLMI decisions currently rely on identifying those cost-efficient approaches that sufficiently address the biodiversity-related concerns, while merely hoping to also capture broader ecological value in economic terms beyond mere cost savings. Moreover, our study suggests that in addition to introducing the BLMIs themselves, the measurement of the ecological value and its translation into economic value for the customer needs to be developed to enhance the adoption of BLMIs. Some approaches already exist, but not enough to really drive the adoption of biodiversity positive innovations.

Our study contributes to biodiversity innovation and customer value literature by showing how biodiversity-positive innovations become difficult to adopt when ecological value remains weakly specified, measured, or translated into economic value. We highlight the need for qualitative and quantitative measures that make biodiversity-related outcomes credible for business decision-making, and we show how supplier–customer co-development can help make ecological value more visible, actionable, and economically meaningful.

2 | Literature Review

The literature review builds on: (1) conceptual background and the current state of biodiversity innovations, (2) how such innovations are reflected in the businesses of companies aiming to improve biodiversity, and (3) what we know about the economic translations of ecological value to economic value as a way to connect the two. Since the paper mobilizes rather ambiguously and loosely used concepts, especially *biodiversity, innovation,* and *customer value* (see e.g., Grönroos and Voima 2013), the paper first provides a conceptual foundation by defining the core concepts.

2.1 | Conceptual Background for Biodiversity, Innovation and Customer Value

Biodiversity in the paper is treated as a multi-layered relational concept shaped by ecological, socio-economic, and technological factors. Ecologically, biodiversity does not only include the number of species and individuals in a specific place and time, but also how the living organisms interact with each other and with abiotic resources to give life to diverse functioning ecosystems (Dasgupta 2021). Socio-economically, biodiversity and biodiversity ecosystem services are contested, measured and valued through the lens of human beings that might bring different sets of values to the table ranging from pure utilitarian to eco-centric values (IPBES 2019; Atkins et al. 2023; Gómez-Baggethun et al. 2010). Technologically, what counts as 'biodiversity' is dependent on the technological advances such as digital monitoring, remote sensing, environmental DNA (eDNA), and artificial intelligence that are transforming how biodiversity is measured and managed (White et al. 2021; Westerlaken 2024). For example, the use of digital twins and automated monitoring platforms enables large-scale, real-time biodiversity data collection, but also risks reinforcing reductionist approaches if not designed to capture the full complexity of ecological relationships happening within ecosystems (Westerlaken 2024).

These three layers (ecological, socio-economic, and technological) make biodiversity a complex phenomenon to measure, hindering businesses means to propose or adopt biodiversity-friendly innovations (Pigatto et al. 2026). In fact, biodiversity can be measured not only for its ecological status and properties (e.g., number of individuals, genetic variability), but also for its ability to generate valuable services for societies and economies (e.g., nature's contribution to people) (IPBES 2019). Moreover, different technologies provide different *measures* of the same *measurand* (i.e., biodiversity) since bioacoustics, photo-traps, satellite imagery, or eDNA measure different aspect of the same phenomenon that is biodiversity and ecosystem health.

While the paper acknowledges the complex, multi-layered nature of biodiversity, it focuses on a specific aspect of such conceptualisation that is the impact-dependency relationship between business and biodiversity (Cinquini et al. 2026) as means to accelerate adoption (Dasgupta 2021; Dasgupta and Levin 2023; White, Mukherjee, et al. 2023). Therefore, the paper does not dwell into the ecological inter-relationships among species and within ecosystems, nor on the technological advancements of biodiversity monitoring. Rather, we focus on the role of innovation in addressing the impact-dependency relationship between businesses and biodiversity.

The concept *innovation* has a dyadic role in the paper. In the paper, we refer to the biodiversity loss mitigation solutions themselves as *biodiversity loss mitigation innovations (BLMIs)*, and the process of developing those offerings as the *development process*. First, the biodiversity loss mitigation solutions can be considered innovations per se, since they are not simple off-the-shelf services sold to the customer but tailored ones that adapt to the context of each customer to improve their environmental performance (Oltra and Saint Jean 2009; Schiederig et al. 2012). Second, to develop these solutions the paper also examines the process of co-development, here referred to as the process of improving BLMIs with customers and other relevant stakeholders to provide improved or more transparent positive implications for both nature and a customer's business (Bossink 2002).

In this paper, the concept of *customer value* refers to customer perceived value in business markets (e.g., Anderson et al. 2006; Wouters and Kirchberger 2015). In the business market context, the term concerns mostly the real concrete implications for business and its operations, that is, value for the firm itself (Anderson et al. 2006; Kleinaltenkamp et al. 2022) instead of actors' subjective value perceptions of such implications (Tiitola et al. 2023). Thus, the paper focuses primarily on understanding whether BLMIs can create such measurable positive implications for nature that can realize as positive implications for customer business as well.

Therein, the paper distinguishes two perspectives on value: *ecological value* and *economic value*. With *ecological value*, we refer to the intrinsic health implications that the BLMIs have for the broader natural capital including flora and fauna (i.e., the diversity of the biosphere), as well as the climate, water, and soil, especially in the space directly affected by the customer's business (cf. Amador-Cruz et al. 2021; Feger and Mermet 2020). Directly, the recipient of ecological value is the nature affected (including humans), and as such, it holds intrinsic value outside human utilitarian value (Amador-Cruz et al. 2021). However, the paper examines whether ecological value generated by the biodiversity-friendly innovations can be translated into economic value for the customer business. There, we are interested in the *economic value*, which is the monetary and non-monetary implications that the BLMIs have on the customer's business especially in terms of long-term profitability (cf. Anderson et al. 2006; Tiitola et al. 2023; Wouters and Kirchberger 2015). The paper also acknowledges actors' subjective value perceptions—that is, expectations and experiences (Kleinaltenkamp et al. 2022)—as key parts of customer decision-making but focuses on understanding the ecological and economic implications as the 'change', for which actors perceive value on (see e.g., Tiitola et al. 2023).

2.2 | Biodiversity-Driven Innovations in Businesses: A Slow Uptake

The intersection of innovation and biodiversity has become a critical research and policy frontier, as the accelerating loss of biodiversity demands transformative solutions and innovative approaches that go beyond traditional conservation (CBD 2022; Xie et al. 2022). The updated EU Bioeconomy Strategy, for example, explicitly identifies in the scaling-up of innovations a key pillar for achieving a fossil-free, biodiversity-friendly economy.

Innovation encompassing technological, organizational, and business model changes is essential for halting and reversing biodiversity loss, and for achieving global sustainability goals (Feger and Mermet 2020; Xie et al. 2022; Westerlaken 2024). For example, companies need to find ways to readjust their capabilities and devise innovative solutions to address and reduce their pressures on biodiversity (Tao 2025; White et al. 2021). Also, emerging market multinationals, for example, are building innovation capabilities by combining open innovation with collaborative nonmarket strategies, leveraging local resources and addressing institutional voids (Lopez-Vega and Lakemond 2022).

Nevertheless, the adoption of biodiversity-driven innovations has been slow, due to the difficulty in making a feasible business case out of biodiversity loss mitigation. While economic value is not the only factor driving adoption of environmental innovations (Dowell and Muthulingam 2017), it can greatly enhance its rate (Fliaster and Kolloch 2017). Innovations with significant impacts on biodiversity are rather new, and while compliance has pushed the adoption of such innovations (Gray and Milne 2018), tangible and widespread R&D efforts are waiting for legislation to provide the means to bring volume (and direct funds) towards such innovations (European Commission 2025).

Still, the urgency to mitigate biodiversity loss offers immense potential for innovation-enabled new business, a topic that has received scant attention (Singh et al. 2025). In fact, more research is needed on the complex relationship between biodiversity risk mitigation, product innovation, and economic performance (Bach et al. 2025). New kinds of products, services and business models are needed to make sense of how to generate new regenerative business—especially related to the monitoring, conserving, restoring, and valorising of natural resources in a sustainable manner (Cricchio et al. 2025). This requires visibility into the business benefits related to BLMIs.

2.3 | Economic Incentives for Adopting Biodiversity-Loss-Mitigation Innovations: The Role of Customers

Businesses providing biodiversity-related innovations are building up capabilities to position themselves as providers of biodiversity loss mitigation, no net loss, or even nature positive solutions while other competitors that have little concerns for biodiversity and ecosystems preservation (Feger and Mermet 2020). Therefore, they are targeting those customers that might be interested in solutions that are good for biodiversity. A major challenge, however, is the uncertainty of the economic consequences of doing good for biodiversity (Jones and Solomon 2013) to drive customer adoption and thus provider growth (Fliaster and Kolloch 2017).

If companies were able to untangle the economic benefits of providing 'no net biodiversity loss' or nature positive solutions, they would provide the business case for biodiversity preservation and scale up mitigation activities and the adoption of biodiversity-related innovations (White, Mukherjee, et al. 2023; European Commission 2025). However, when not compelled by laws and rules, businesses might be reluctant to adopt biodiversity-friendly solutions that go beyond mere compliance (cf., Gray and Milne 2018; Jones and Solomon 2013), unless the *good for biodiversity* manifests itself in *good for the business*, as well. Thus, it becomes fundamental to understand the effects and changes that businesses' biodiversity-related innovations and offerings have for their customers (cf. Kleinaltenkamp et al. 2022; Sairanen et al. 2024; Schaltegger et al. 2023; Tiitola et al. 2023, 2025; Wouters and Kirchberger 2015). It is crucial that we try to make the business impacts on biodiversity explicit, instead of not acknowledging them and implicitly accepting the loss of biodiversity (Fromm 2000).

In supplier-customer relationships, both the inability to quantify monetary benefits, the lack of clear mechanisms, and the disconnect between biodiversity and traditional economic logics hinder the adoption of biodiversity-loss-mitigation solutions (Dasgupta 2021; Dasgupta and Levin 2023; Fliaster and Kolloch 2017; White, Mukherjee, et al. 2023). Distinction of value elements helps provide transparency to the complex impacts (Sairanen et al. 2024), but providers of said solutions might find beneficial a deeper understanding of the financial and non-financial implications their offerings have for their clients (Anderson et al. 2006; Kleinaltenkamp et al. 2022) as they develop appropriate business models to capture value efficiently (Feger and Mermet 2020). Notwithstanding the multiple calls for clear measurement and economic translations of ecological value, only limited tools are available to do that in practice (Anderson et al. 2006; Wouters and Kirchberger 2015). Therein, measuring the implications of biodiversity-related innovations for business operations, society, and environment provides the foundation to understand how those implications can be managed and offerings developed and scaled-up further (Tiitola et al. 2025).

3 | Methodology

The paper utilizes a rich interventionist case study (Lukka and Wouters 2022; Lyly-Yrjänäinen et al. 2017) for studying a company developing new business based on biodiversity remediation. As such, our paper takes a pragmatic constructivism view of knowledge, action, and valuation (see e.g., Nørreklit 2017). The qualitative data stems from meetings and interviews with the case company and its customers. The meetings provided contextual understanding of the BLMIs and remediation business, while the customer interview dataset examines the decision-making and development of BLMIs. A combination of the Switching Path Analysis Technique (SPAT) and the Gioia method was used to reveal the decision paths of customers, and the areas that were deemed to require more development.

3.1 | Research Context

The research was conducted as a part of a bigger, publicly funded research project, where multiple companies are exploring the connections between environmental sustainability and business profitability. This paper represents one case study within the project. The case company specializes in providing industry-leading circular economy (CE) solutions to its customers in the Nordic countries. As such, it provides a critical case (Flyvbjerg 2026) to understand the status of BLMIs business and areas of development therein. The case focuses on the industrial services of the company, providing the B2B customers' point of view on BLMIs.

First, the researcher conducted a pre-study about the case company's customers, regulation, market situation and the way of doing business with CE and biodiversity-related solutions. The study indicated that customers were increasingly showing interest in environmental loss mitigation innovations, such as biodiversity restoration, and seeking more information about available solutions. The case company had seen this as a business opportunity to develop their industrial services towards more nature driven solutions and had started developing BLMIs to address market demand. These innovations mainly concern restoring and managing various wastelands of customer companies in ways that enable biodiversity loss mitigation. This includes biodiversity enhancing approaches such as meadows for wastelands and landfills, instead of typical high maintenance lawns, as well as the remediation of contaminated soil for new construction instead of using virgin wastelands already rich in biodiversity. On key aspect of such innovations is so called 'active neglect' where biodiversity is introduced and left to neglectfully flourish, but with active supervision for, for example, intrusive species. This approach currently enables cost-efficient delivery of biodiversity loss mitigation. A main characteristic of the BLMIs is the joint search with the customers to identify the best, most cost-efficient approaches for biodiversity and tailor the activities towards biodiversity loss mitigation unique for each biosphere and customer case.

3.2 | Data Collection

The data was collected through 15 participant observation meetings and 14 semi-structured interviews. The observation data provided the contextual understanding for the case and participant validation, while the interviews were used as primary source of data in the analysis. As shown in Table 1, the data collection was conducted on a continuous basis during the 7-month research period in 2024–2025. Both realized and potential decisions are being examined in the interviews, and thus, the researchers' intervention mainly concerns the development of BLMIs. Additionally, the decisions were examined from both case company (6 interviews) and customer (8 interviews) points of view, enabling *emic* and *etic* back-and-forth that is the strength of interventionist research (Lyly-Yrjänäinen et al. 2017). A detailed list of all data collection events is provided as Table A1.

One of the researchers facilitated all the events while three other researchers participated in most case company meetings as participant observers. The researchers positioned themselves in-between the case company and the customer organizations as a mediator (see Tiitola et al. 2020), trying to understand the significance of various implications and identify development opportunities to help both organizations create and capture the ecological value for nature in their business. This shared goal helped them maintain their independence (see McSweeney 2004) from the case company, since their development efforts depended on improved understanding of the significance of ecological value to the customer. At the same time, such approach and positioning provided a rich case study as the researchers could gain unique expertise in-between the dyad (Flyvbjerg 2026; Tiitola et al. 2020; Lukka and Wouters 2022).

The participant observation data consists of online meetings with the case company and one seminar arranged by the case company for external consultants. The online meetings were recorded and transcribed, and meeting notes were summarized. In addition to this the researcher utilized the research diary at the beginning to write abstracts focusing on developing theoretical ideas and research focus, as Lukka and Wouters (2022) suggest. Participant observation provided important insight about the BLMIs and their business logic, which helped us have sufficient practical understanding about the context to enrich our interview analysis process. Moreover, participant observation events in-between interviews were used for participant validation, through discussing the preliminary results of the analysis together with case representatives (cf. Lindheim 2022).

The interviews were conducted according to the semi-structured design. The interview questions were developed together with the case company for accessing practical and theoretical insights into the complex relationship of biodiversity and business (Panwar et al. 2025). There the case company helped tailor questions with the richness of the complex case context in mind, while the researchers ensured practical relevance with theoretical ambition (cf. Lukka and Wouters 2022). Thus, the internal interviews and meetings with the case company helped the researcher gain valuable knowledge of the customer's business projects, which enabled tailoring the customer interview questions (Lindheim 2022). Moreover, the customer interviews were held iteratively one customer company at a time, and the results were reflected upon with the case company in-between interviews. This approach followed abductive reasoning logic of interventionist studies (Dubois and Gadde 2002; Lukka and Wouters 2022), and enabled participant validation to triangulate and validate the interpretations of the researchers and results of the analysis together with the case company representatives (Lindheim 2022).

3.3 | Data Analysis

The data was analyzed from two perspectives: (1) to understand the current decision-making processes of customers by using switching path analysis technique (SPAT) by Roos (1999), and (2) to identify areas where the BLMIs of the case company could be developed using the Gioia method (Gioia et al. 2013). While both analyses were performed distinct from each other, they were performed concurrently, with preliminary SPAT results introducing the need to better identify the development areas using GIOIA, and the distinction of ecological and economical value in GIOIA driving the iteration analysis round of SPAT. This, combined with the iterative round of interviews and case company meetings enabled

TABLE 1 | The data collection process.

Time	Phase	Purpose	Events	Organizations
November 2024	Pre-study	Access to context	2 Meetings	Case company
January to March 2025	Participant observation	Case knowledge	9 Meetings	Case company
February to April 2025	Interviews	Data collection	14 Interviews	Case company, 3 Customers, 1 Consultant
April to June 2025	Validation meetings	Triangulation	3 Meetings	Case company

a rather abductive approach (Dubois and Gadde 2002) for the case study to capture and make sense of the complex research setting around biodiversity and business.

First, the switching path analysis technique (SPAT) presented by Roos (1999) aims to identify the reasons behind actual decisions by identifying the events associated with the processes of making the decision (i.e., a switch). SPAT origins from consumer context but has been recognized to be useful in examining the B2B and B2G relationships featuring ecological and economical values and valuations (see e.g., Kuperstein Blasco et al. 2021; Saukkonen et al. 2017). As part of our SPAT analysis, triggers were considered to appear at the beginning of the process, while drivers and barriers were considered as part of the decision-making process (cf. Roos 2002). The decisions studied in our paper address the issue of engaging in biodiversity loss mitigation within the customers' larger environmental remediation projects. A switch examined in this case study concerns purchasing the remediation solutions with positive biodiversity impacts, instead of purchasing the traditional alternative, where biodiversity is pretty much left unconsidered. As such, the SPAT analysis responds to the RQ1.

As the second analysis method, we used the qualitative research technique of Gioia et al. (2013) for inductive reasoning towards identifying the themes and relationships laying out in the data. The Gioia method presents a three-step template for reasoning and visualizing the data and its analysis steps by starting from individual codes towards aggregate dimensions with reduced complexity of information to illustrate theoretical reasoning (Gioia et al. 2013). The Gioia template provided us means to reason by structuring individual data points to identify latent development areas. The first order codes of Gioia built on the barriers identified by SPAT, while triggers and drivers provided significance for the identified areas of development. As such, there are obvious linkages between the two, but with both providing their unique perspective for the data analysis. Overall, the Gioia analysis addresses the RQ2.

The first round of analysis was done by the author who facilitated the case company meetings and customer interviews. Then the preliminary analysis that focused on highlighting contextual data points instead of more aggregate findings was iterated further in collaboration with the case company and two of the other authors of this paper to synthesize a more general level results that combine individual data points. Finally, the whole author team still revisited the analysis to move towards a more balanced structuration of the rather complex and holistic phenomenon examined. The coding was done by using ATLAS.ti software for both analysis methods. Throughout analysis, the first order coding remained the same, but the results, their priority and structuration were co-developed further by the author team as well as case company representatives. As an example, the first round of Gioia analysis, focused on customer value elements, while the second round of analysis on development streams first identified uncertainty as its own dimension in the Gioia analysis, later to be considered as part of the key development challenges in both dimensions in the final analysis round (see Figure 1).

4 | Economic Value of Biodiversity Loss Mitigation in B2B Sector

4.1 | Drivers, Triggers, and Barriers in Decision-Making

Our SPAT analysis reveals the complexity of the decision-making landscape, highlighting how internal pioneers, regulatory pressures, and supplier initiatives can act as triggers for action, how financial and reporting opportunities as well as expertise and collaboration drive such decisions, while challenges such as lack of standardized metrics and financial justification may hinder progress. Table 2 synthesizes the key findings from the SPAT analysis by illustrating the drivers, triggers, and barriers of the customer decision-making on BLMIs.

The SPAT analysis identified that the decision to pursue loss mitigation was usually initiated by few key persons inside the companies. The triggers for switching from 'traditional' to remediation with biodiversity gains were indeed made by *pioneering individuals*, who emphasized 'the cause' and moving beyond compliance in doing good for the environment. They thought that biodiversity work could be used to *affect brand image and differentiate in the markets*. Being an early mover with environmental sustainability was sometimes seen even as a societal obligation, and company representatives were extremely proud of the work so far and plans to reach even further.

> We have a clear role and a clear opportunity—, and perhaps even a duty to promote it [biodiversity].
>
> Customer Executive

In addition to the brand image, *compliance with the legislation* was triggering initiatives. Legislation promoted awareness of the nature impacts, which triggered the actions towards internal studies mapping the current state of impacts and possibilities to contribute for nature, that is, CO_2 sequestration or other biodiversity gains. These kinds of studies were also later conducted to identify the potential of contributing to strategic goals like number of initiatives including biodiversity restoration elements.

> There are already certain legal obligations for us to be aware of those nature values and not at least to harm them.
>
> Customer Executive

Suppliers promoting the remediation solutions with biodiversity gains triggered the restoration actions in some customer cases. The focus on emphasizing cost effectiveness was found to be effective in value propositions towards operative level and acted as a notable contribution to increase the attractiveness of biodiversity work, especially as the cost savings opportunities were rather significant. Cost savings were associated with the maintenance activities in surface vegetation debate, but initiatives addressing the overall design of land remediation while saving virgin lands and materials were found to be also effective. There,

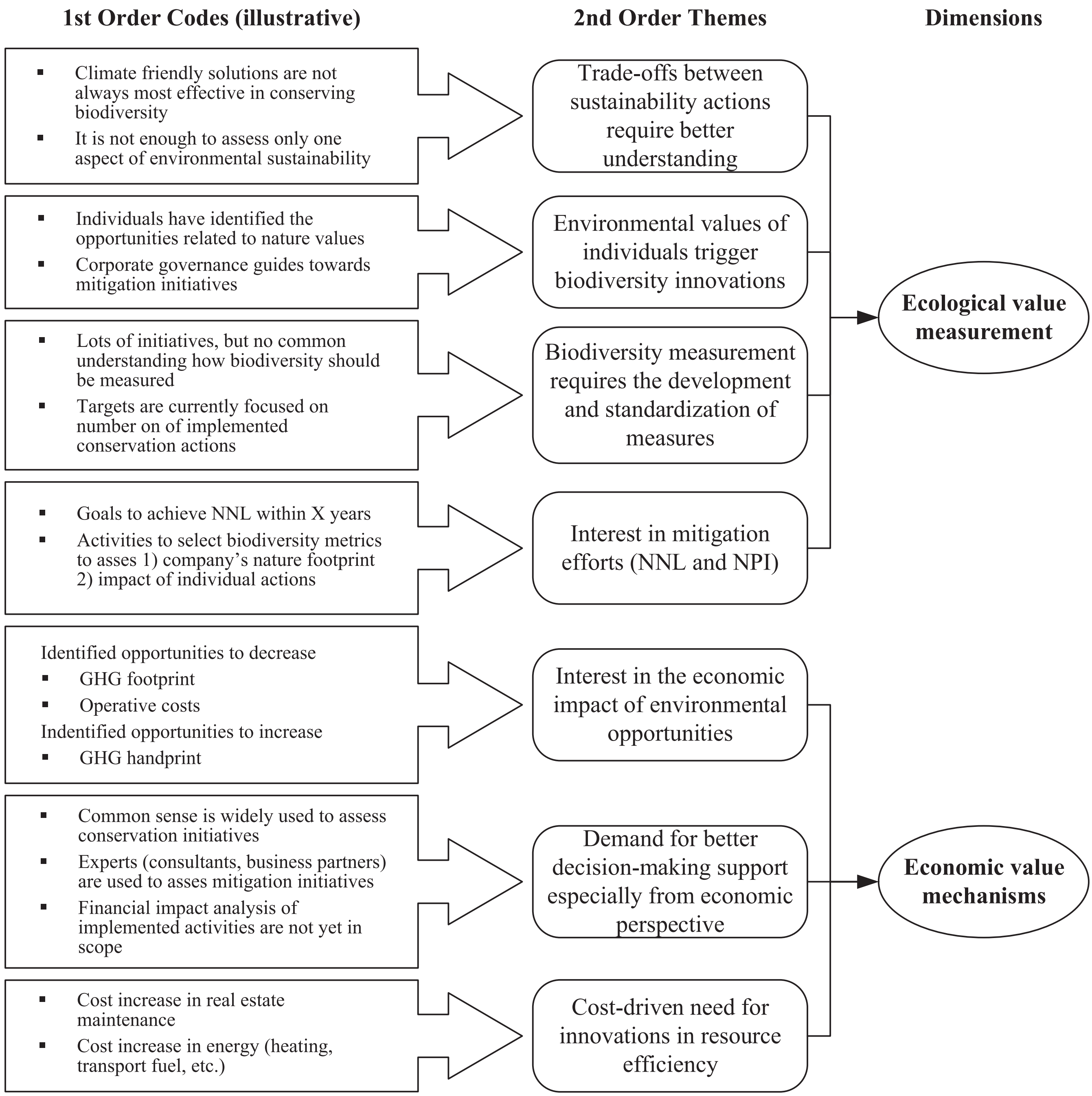

FIGURE 1 | Development streams of biodiversity innovations using Gioia data structure. The figure illustrates our analysis process using the Gioia method, showcasing illustrative first order codes, second order themes, and aggregate dimensions. As aggregate dimensions the figure shows 'Ecological value measurement' and 'Economic value mechanisms'.

indirect biodiversity gains stem from cost savings concerning land use when utilizing less virgin raw materials.

As drivers towards loss mitigation activities, the *sustainability reporting* was seen important. Companies are trying to figure out how to select the proper indicators for overall biodiversity work but also how to embed these indicators to, for example, Corporate Sustainability Reporting Directive (CSRD) reporting. The CSRD was seen to accelerate the transition towards indicator development and reporting, giving the companies the *opportunity to communicate ambitions and performance* in biodiversity work to a broader audience. While not everyone is obligated to participate in CSRD reporting, voluntarily reporting requires some kind of parameters for the measurable indicators and their development work.

> CSRD creates additional pressure, and we are certainly not the only ones, but more and more it needs to be integrated into all other activities.
>
> Customer Employee

When considering the novelty of biodiversity loss mitigation activities, the active role of *supplier and customer collaboration* in

TABLE 2 | Customer decision-making triggers, drivers, and barriers for biodiversity remediation solutions.

Influential factors	Description
Triggers	Values of pioneering individuals Brand image and differentiation opportunities Environmental legislation compliance Suppliers promoting their remediation alternatives
Drivers	Opportunities in reporting ambitions and performance Supplier and customer collaboration in tailoring Customers' strategic biodiversity targets Cost savings especially in operative expenditure Life-cycle greenhouse gas savings synergies
Barriers	Complexity of measuring biodiversity impacts Lack of commonly agreed standards for measures Lack of direct economic incentives and mechanisms Restrictions within the customers' sourcing processes Knowledge for nature preservation is disconnected and scattered

designing biodiversity loss mitigation activities as well as ways to measure, report, and economically incentivize such activities was identified to be important for promoting such practices. Supplier-customer collaboration was seen critical for developing the BLMIs for both the customer and for nature. Therein, the trust in the expertise of individuals who had worked with biodiversity-related topics for years was one of the core things that drove supplier and stakeholder selection.

The customers' *strategic targets*, that such biodiversity actions could be linked with, and connections to *cost savings*, for example related to maintaining the areas being remediated, were accelerating the decisions. In addition, the connections to greenhouse gas *(GHG) savings* with for example CO_2 sequestration opportunities, were found promising way to link with climate change mitigation targets. The indicator development is already further with GHG emissions, and the companies were interested in CO_2 handprint implications of biodiversity initiatives.

The biggest barriers concerning biodiversity initiatives are the *lacking standards for biodiversity impact metrics* and the *lack of direct economic incentives* of biodiversity loss mitigation. These hinder the extent of customer ability to measure nature impacts and thus justify biodiversity loss mitigation decisions economically. The lack of quantification is also making it difficult to communicate the ecological gains to the stakeholders. The societal discourse and legislation are currently not strong enough to steer towards selecting common metrics, which the companies could use to manage the performance of the biodiversity actions.

> When we do this kind of nature work relatively intensively, but we don't really find metrics to measure our own progress, it's a bit of a difficult combination.
>
> Customer Executive

In some cases, the restrictions inside the *customers' sourcing processes* hindered the adaptation of these new solutions. The local legislation could be setting some boundaries to guide the public procurement. For example, the metrics for biodiversity could not be straightforwardly implemented inside public tendering key purchasing criteria, as the standardization of the metrics is required for the competition to be fair for all participants. This is especially the case if only one supplier in the market can provide such information.

> We can measure it [biodiversity] internally and create a metric for it but getting it into the tendering system—I don't really see that as something that would succeed.
>
> Customer Manager

In many cases, the decision-makers who have the power to influence and implement BLMIs are not experts with the ecological aspects. Moreover, the decision-making power and *knowledge needed to preserve nature are usually disconnected and scattered* even intra-organizationally. Moreover, many customers are using external consultants and experts to provide knowledge about effective solutions to restore biodiversity. While the external consultants could hinder the implementation and effectiveness of the activities and at least make it more complex—thus, acting as a barrier—they are an important stakeholder with their own incentives that can positively influence the co-development process as a driver as well.

Overall, the current status of decision-making on BLMIs seems to rely on the interest in doing good for the environment, as long as it is still economically viable to do so. Ecological value is assessed mostly through commonsense, expert judgment, or context-specific metrics that are hard to standardize, while economic value—mostly in the form of cost efficiency of such innovations—drives adoption at the moment.

> We examine the opportunities and try to identify the commonsense, easy to implement, not-too-expensive procedures, and there, one of the big things is to change our practices by leaving some parts without care or lesser care.
>
> Customer Executive

At the same time, the interviewees share a common goal and hope in being able to justify greater ecological value also in economic terms in the future.

4.2 | Ecological and Economical Value of Biodiversity for Customers

To address the hopes to find economic justification for the ecological value created, further analysis with Gioia method on how to develop the BLMIs identified two core dimensions: (1) ecological value and its measurement, and (2) economic value and mechanisms driving them. Present in both dimensions is a common factor: uncertainty. Figure 1 presents the data structure for BLMI development analysis. Within the figure, the first order codes provide syntheses of the coded quotations, while illustrative quotes are presented in the discussion that follows.

The first perspective, ecological value measurement, focuses on measuring the direct effects of BLMIs for nature. There currently, measuring the biodiversity impacts is focused on the number of initiatives or areas under restoration, which currently do not take into consideration their effectiveness. Some customers even indicated the trade-offs when choosing actions for environmental sustainability.

> Now we have to understand that in sustainability there are always trade-offs.—We want to go from oil-based or fossil-based raw materials towards renewable materials. It's obviously a trade-off between the CO_2 emissions and then the biodiversity impact.
>
> Customer Manager

Currently, environment is included either through customers' individuals' personal interest or through business targets related to NNL and even net positive impact (NPI) of the operations. Tied together, this aspect emphasizes the importance of measurable impacts from two aspects: mitigation efforts must be somehow managed to achieve desired impact, and the environmental impacts should be quantified to gain transparency and communicability.

> We want to have some other positive things to communicate about this project and potentially use those in our external communications as well. To concretely show our stakeholders what we are doing.
>
> Customer Manager

For customers to be aware of the overall environmental impacts and make data-driven decisions to choose the best alternatives, the impacts should be holistically addressed. Some customers showed effort on assessing biodiversity impacts on certain key operations, but the integration into decision-making and sourcing activities remains under development. Some customers emphasized life-cycle analyses (LCA) as a potential tool to assess the environmental sustainability comprehensively, though it was identified to be very time consuming, and the applicability lies in identifying the most impactful aspects. "I think LCA studies are really good there [comparing trade-offs], although usually one LCA study takes a lot of time"—Customer Employee.

Second, the elements wrapped around economic value mechanisms dimension focus on emphasizing the economic implications, particularly the cost saving as well as opportunities and risks associated with the business itself. In our case example, the biodiversity restoration and real estate maintenance could go hand in hand. Customers were interested in the cost-saving opportunities, and it was relatively easy for suppliers to back up their claims using common sense logic. At the same time, the interest in and potential of ecological value was acknowledged. Currently, CO_2 and other GHG emissions and their compensation with CO_2 sequestration and credit markets could provide opportunities for the customers, as well as savings in GHG emissions derived from the maintenance activity optimization.

> Carbon neutrality targets now have relatively easy metrics—we measure our emissions and, going forward, also how much carbon sequestration we can achieve.
>
> Customer Manager

To make justified decisions about where to put the money on, customers would need to better know the effectiveness of restoration to also evaluate the cost-effectiveness of such actions. It seems that currently the decisions are made based on common sense, or trusting expert judgment, and no clear metrics are used to select, for example, between two different options both addressing biodiversity restoration.

> It [biodiversity restoration] wasn't modelled any further—maybe in the early stages it was approached more with common-sense reasoning.
>
> Customer Executive

Also, as a market trend, real estate maintenance costs had been significantly increasing during the last 3 years. Customers were actively seeking ways to reduce the maintenance costs and improve resource efficiency to both justify such actions as well as manage them appropriately, promoting cost-efficient alternatives. These linkages provided ample ground for economic value, while they could be considered side effects of BLMIs.

> When you add it all up, the maintenance costs [in real estate] have increased by over 30% just in the last 10 years. That's an unsustainable situation for service providers—meaning us. We haven't been able to raise prices nearly in proportion to what would be necessary, because for property owners, the biggest increase has been in energy-related costs, which are, in a way, part of the maintenance costs.
>
> Case Company Manager

Overall, the economic value of biodiversity remains wrapped around instrumentality. Cost-effective solutions in real estate maintenance, such as a flourishing meadow instead of a well-maintained lawn, are linked with biodiversity restoration, which currently incentivises investments in BLMIs. Biodiversity restoration and other loss mitigation activities are seen as a way to differentiate in the markets, futureproof, and gain early mover advantage. Companies are eager to quantify biodiversity impacts but lack proper metrics, which hinders the ability to measure the ecological impacts of different actions, but also the communication of created nature positive impacts. However, even the measurement and reporting of biodiversity is not enough unless we have the mechanisms to translate such ecological value into concrete economic value for business that could help justify such actions in business sense.

5 | Discussion and Conclusions

Biodiversity-loss mitigation innovations are not blocked simply because customers lack environmental concern, but because ecological value remains difficult to make visible, credible, and translatable into decision-relevant economic value. Therefore, we conceptualize the adoption challenge as a visibility–translation gap: biodiversity benefits may be locally meaningful and practically recognized, but they do not become actionable in procurement and investment decisions unless they are rendered visible through credible indicators and translated into economic consequences. In fact, in the case company innovation depends not only on new ecological practices, but also on the development of valuation infrastructure such as indicators, calculative routines, supplier–customer narratives, and economic mechanisms that allow ecological improvements to travel into business decision-making (Blanco-Zaitegi et al. 2022; Schaltegger et al. 2023; Pigatto et al. 2026; King and King 2026).

In response to the RQ1, on how tensions between ecological value and economic value are negotiated in customer decision-making, our findings suggest that *tensions are currently negotiated by identifying the most cost-efficient approaches that address the biodiversity-related concerns, while hoping to also capture broader ecological value in economic terms beyond mere cost savings*. In response to the RQ2 on making biodiversity-related value visible and actionable, our analyses highlight how *in addition to the BLMIs themselves, both measurement of the ecological value and its translation into economic value for the customer need to be developed and made evident*. Figure 2 synthesizes our core findings.

Thus, our study highlights the need for (1) improved, standardized metrics for measuring biodiversity health, and (2) mechanisms for translating innovations' ecological value into economic value. In fact, reducing the uncertainty in both measurement and translation should help the adoption of BLMIs. In our research, we highlight how current mechanisms such as brand value, differentiation strategies, compliance risk, opportunities of futureproofing, and even green financing remain rather intangible and difficult to evaluate. However, even before we get there, businesses need to be able to transparently make ecological value visible by solving the measurement challenges. The bottom line of the measurement problem is that the complexity of biodiversity, the uniqueness of local biospheres and ecosystems, the expert judgment and common sense as proxies for impact evaluation, and the legislation and standardization lacking behind, make it difficult for businesses to find a

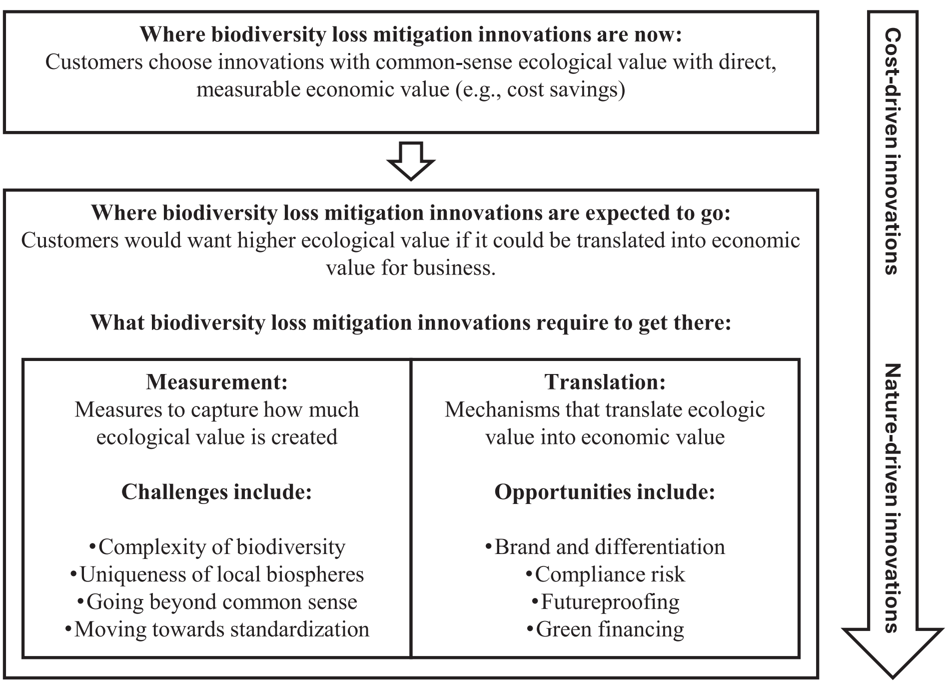

FIGURE 2 | Transitioning from cost-driven biodiversity loss mitigation innovations towards nature-driven innovations. The figure provides a conceptual framework to synthesize our findings concerning where BLMIs are now, where they are expected to go, and what is required to get there. The figure shows measurement and translation as the two domains of future development required to improve the adoption of BLMIs and move from cost-driven innovation into nature-driven innovation.

coherent direction for measurement development. And difficulties in measuring might be a consequence of being confused about what to measure (i.e., the *measurand*) in the first place (Boiral 2016; Jones and Solomon 2013).

Our findings therefore reposition BLMIs as a process of innovating under ecological uncertainty. The innovation is not limited to the restoration practice itself, but it includes the joint work through which suppliers and customers define what counts as biodiversity improvement, decide which indicators are credible enough, and identify whether these improvements can affect costs, risks, legitimacy, reporting, or future financing. This explains why customer adoption remains fragile: when ecological value is visible only through expert judgment or common sense, it can motivate experimentation, but it rarely becomes strong enough to reshape procurement criteria or investment priorities. Efforts towards quantifying the benefits are important part of the process, as we know they can effectively reduce the uncertainty organizations experience (e.g., Saukkonen et al. 2017) and make implicit impacts explicit (Fromm 2000).

Our study has important theoretical contributions for both biodiversity innovation literature and customer value research. *For biodiversity innovation literature*, we explain why biodiversity-positive intentions and commitments do not automatically translate into the adoption of BLMIs. We position BLMIs as a specific form of green/environmental innovation: they seek to reduce environmental harm while also creating customer and business value, but they are harder to operationalize than many established green innovations because biodiversity outcomes are local, multidimensional, difficult to standardize, and contested in valuation terms (Schiederig et al. 2012). This also extends green innovation implementation research, which shows that environmental innovations must satisfy both sustainability and economic expectations and are shaped by stakeholder relationships during implementation (Fliaster and Kolloch 2017). Our findings show that the difficulty is not only that firms lack concern for biodiversity, but that biodiversity must be made sufficiently visible, credible, and economically actionable inside concrete organizational decisions. Even when customers recognize the ecological desirability of restoration, remediation, or reduced land disturbance, they may struggle to compare alternatives, justify additional expenditure, or embed biodiversity criteria into procurement when evidence remains local, qualitative, supplier-specific, or weakly standardized (cf. Saukkonen et al. 2017). This shifts attention from whether firms value biodiversity in principle to how biodiversity becomes specified, evidenced, and translated into decision-relevant value at the supplier–customer interface.

For customer value research in the domain of B2B marketing literature, our study problematizes the decoupling of ecological value and economic value, that have been typically considered as different value elements of customer value (see e.g., Sairanen et al. 2024). There, our study argues, that for ecological value would have to be translated into economic value to make ecological value an important value element for the business. Many calls for monetary quantifications of customer value have been made (Anderson et al. 2006; Kleinaltenkamp et al. 2022; Wouters and Kirchberger 2015), but such calls fall short concerning ecological value if we lack the mechanisms to translate how ecological value affects the finances of customer businesses. Collaborative efforts within the supplier-customer interface towards documenting realized biodiversity impacts and their economic value are indeed desirable, but not an easy task (see e.g., Anderson et al. 2006; Wouters and Kirchberger 2015). While attempts to measure the impact might not provide exact answers (Jordan and Messner 2012), they provide understanding that can help develop and manage those offerings further (Tiitola et al. 2025; Wouters and Kirchberger 2015). While pioneering suppliers can propose value (Anderson et al. 2006), agency from customer organizations is still always required (see e.g., Saukkonen et al. 2017) to realize the impacts (Kleinaltenkamp et al. 2022; Tiitola et al. 2023). These kinds of collaborations create an excellent setting to both co-develop BLMIs and deepen our understanding of their implications in reducing their perceived economic and biodiversity risks for customers (Tiitola et al. 2025; Bach et al. 2025).

Our case study is specific for BLMIs, but its implications can be analytically generalized (see Parker and Northcott 2016) to other biodiversity innovations as well. However, unlike climate change that uses CO2eq as a proxy for measurement, biodiversity lacks a similar unique measure. Moreover, biodiversity is spatially specific with local biospheres, and its legislation is lagging climate change. On the other hand, the effects of biodiversity loss mitigation are very visible to the local population, for example in terms of loss of pollinators and soil microbiology.

As managerial implications, there are two tracks that managers and regulators could pursue. The first track is to reduce the uncertainty related to the impacts of BLMIs, for example, by documenting the realized impact and the economic implications of such impact in pilot cases (see e.g., Anderson et al. 2006; Keränen and Jalkala 2013; Wouters and Kirchberger 2015). It is critical to holistically understand the impacts of biodiversity innovations to make them more feasible for customer businesses. BLMIs could also benefit from new kinds of business models that better capture the ecological value (cf. Feger and Mermet 2020).

The second track is developing the business and societal mechanisms of how ecological value might directly impact the customers' businesses, both in terms of motivational economic instruments such as credit markets, green financing, and enhanced regulation. While there is an increasing stream of literature on societal valuation of biodiversity, such valuations need to flow into the organizations making those biodiversity efforts as real economic value to push adoption (cf. Dasgupta 2021; Dasgupta and Levin 2023; White, Mukherjee, et al. 2023). Otherwise, we continue lacking the economic justification for biodiversity loss mitigation that would make such decisions easier for managers.

There are multiple future research avenues that benefit from attention. While our paper identifies the development opportunities to address the challenges that make biodiversity loss mitigation decisions hard to make, we welcome conceptual, philosophical and even ethical measurement research on the activities—such as measurement both in ecological and economic terms—that reduce the uncertainty related to biodiversity innovation adoption. Future research should focus on the development of practical proof of concept innovations that address the challenges of both measurement and translation. Moreover, our study is limited to a single-case company and leaves non-adopters absent. Thus, further comparability and ways to address customers who choose to opt out from BLMIs would provide interesting avenues as well. Finally, we call for cross-sectional partnerships, such as public-private-academia collaboration, that try to tackle these issues by combining multitude of perspectives. Whichever the approach, the development efforts should go beyond greenwashing and really help our society move towards green transition when still, the use of virgin materials and instrumental view of biodiversity remain easier and cheaper alternatives.

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Consent

All participants provided informed verbal consent prior to their involvement in the research.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data include personal information and are therefore confidential and cannot be shared.

References

Addison, P. F. E., P. J. Stephenson, J. W. Bull, et al. 2020. "Bringing Sustainability to Life: A Framework to Guide Biodiversity Indicator Development for Business Performance Management." *Business Strategy and the Environment* 29, no. 8: 3303–3313. https://doi.org/10.1002/bse.2573.

Amador-Cruz, F., B. L. Figueroa-Rangel, M. Olvera-Vargas, and M. E. Mendoza. 2021. "A Systematic Review on the Definition, Criteria, Indicators, Methods and Applications Behind the Ecological Value Term." *Ecological Indicators* 129: 107856. https://doi.org/10.1016/j.ecolind.2021.107856.

Anderson, J. C., J. A. Narus, and W. van Rossum. 2006. "Customer Value Propositions in Business Markets." *Harvard Business Review* 84, no. 3: 90–99.

Atkins, J. F., F. Doni, K. McBride, and C. Napier. 2023. "Exploring the Historical Roots of Environmental and Ecological Accounting From the Dawn of Human Consciousness." *Accounting, Auditing & Accountability Journal* 36, no. 6: 1473–1502.

Bach, T. N., K. Hoang, and T. Le. 2025. "Biodiversity Risk and Firm Performance: Evidence From US Firms." *Business Strategy and the Environment* 34, no. 1: 1113–1132.

Bebbington, J., H. Österblom, B. Crona, et al. 2020. "Accounting and Accountability in the Anthropocene." *Accounting, Auditing & Accountability Journal* 33, no. 1: 152–177. https://doi.org/10.1108/AAAJ-11-2018-3745.

Blanco-Zaitegi, G., I. Álvarez Etxeberria, and J. M. Moneva. 2022. "Biodiversity Accounting and Reporting: A Systematic Literature Review and Bibliometric Analysis." *Journal of Cleaner Production* 371: 133677. https://doi.org/10.1016/j.jclepro.2022.133677.

Boiral, O. 2016. "Accounting for the Unaccountable: Biodiversity Reporting and Impression Management." *Journal of Business Ethics* 135, no. 4: 751–768. https://doi.org/10.1007/s10551-014-2497-9.

Bossink, B. A. 2002. "The Development of Co–Innovation Strategies: Stages and Interaction Patterns in Interfirm Innovation." *R&D Management* 32, no. 4: 311–320.

CBD. 2022. *Kunming-Montreal Global Biodiversity Framework*. Convention on Biological Diversity.

Cinquini, L., G. Pigatto, and A. Tenucci. 2026. "A Systemic Model for Understanding Business Interactions With Biodiversity and Ecosystems." *Business Strategy and the Environment*: 1–19. https://doi.org/10.1002/bse.70680.

Cricchio, J., V. Cucino, A. Di Minin, G. Ontano, and A. Piccaluga. 2025. "Towards a Biodiversity Positive Business Strategy: The Monitoring, Conserving, Restoring, Valorizing (MCRV) Framework." Sant'anna School of Advanced Studies, Institute of Management Paper Series.

Dasgupta, P. 2021. *The Economics of Biodiversity: The Dasgupta Review: Full Report*. HM Treasury.

Dasgupta, P., and S. Levin. 2023. "Economic Factors Underlying Biodiversity Loss." *Philosophical Transactions of the Royal Society, B: Biological Sciences* 378, no. 1881: 20220197. https://doi.org/10.1098/rstb.2022.0197.

Dowell, G. W. S., and S. Muthulingam. 2017. "Will Firms Go Green if It Pays? The Impact of Disruption, Cost, and External Factors on the Adoption of Environmental Initiatives." *Strategic Management Journal* 38: 1287–1304. https://doi.org/10.1002/smj.2603.

Dubois, A., and L.-E. Gadde. 2002. "Systematic Combining: An Abductive Approach to Case Research." *Journal of Business Research* 55, no. 7: 553–560. https://doi.org/10.1016/S0148-2963(00)00195-8.

European Commission. 2025. "Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions." In *A Strategic Framework for a Competitive and Sustainable EU Bioeconomy*. European Commission. https://environment.ec.europa.eu/strategy/bioeconomy-strategy_en.

Feger, C., and L. Mermet. 2020. "New Business Models for Biodiversity and Ecosystem Management Services: Action Research With a Large Environmental Sector Company." *Organization & Environment* 35, no. 2: 252–281. https://doi.org/10.1177/1086026620947145.

Fliaster, A., and M. Kolloch. 2017. "Implementation of Green Innovations–the Impact of Stakeholders and Their Network Relations." *R&D Management* 47, no. 5: 689–700.

Flyvbjerg, B. 2026. "Five Misunderstandings About Case-Study Research." *Qualitative Inquiry* 12, no. 2: 219–245. https://doi.org/10.1177/1077800405284363.

Fromm, O. 2000. "Ecological Structure and Functions of Biodiversity as Elements of Its Total Economic Value." *Environmental and Resource Economics* 16, no. 3: 303–328. https://doi.org/10.1023/A:1008359022814.

Gioia, D. A., K. G. Corley, and A. L. Hamilton. 2013. "Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology."

Organizational Research Methods 16, no. 1: 15–31. https://doi.org/10.1177/1094428112452151.

Gómez-Baggethun, E., R. De Groot, P. L. Lomas, and C. Montes. 2010. "The History of Ecosystem Services in Economic Theory and Practice: From Early Notions to Markets and Payment Schemes." *Ecological Economics* 69, no. 6: 1209–1218.

Gray, R., and M. Milne. 2018. "Perhaps the Dodo Should Have Accounted for Human Beings? Accounts of Humanity and (Its) Extinction." *Accounting, Auditing & Accountability Journal* 31, no. 3: 849–874.

Grönroos, C., and P. Helle. 2010. "Adopting a Service Logic in Manufacturing: Conceptual Foundation and Metrics for Mutual Value Creation." *Journal of Service Management* 21, no. 5: 564–590. https://doi.org/10.1108/09564231011079057.

Grönroos, C., and P. Voima. 2013. "Critical Service Logic: Making Sense of Value Creation and Co-Creation." *Journal of the Academy of Marketing Science* 41, no. 2: 133–150. https://doi.org/10.1007/s11747-012-0308-3.

IPBES. 2019. *Global Assessment Report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, edited by E. S. Brondízio, J. Settele, S. Díaz, and H. T. Ngo, 1144. IPBES secretariat.

IPBES. 2026. *Summary for Policymakers of the Methodological Assessment Report on the Impact and Dependence of Business on Biodiversity and Nature's Contributions to People*, edited by M. Jones, S. Polasky, X. Rueda, et al. IPBES Secretariat. https://doi.org/10.5281/zenodo.15369060.

Jones, M. J., and J. F. Solomon. 2013. "Problematising Accounting for Biodiversity." *Accounting, Auditing & Accountability Journal* 26, no. 5: 668–687. https://doi.org/10.1108/AAAJ-03-2013-1255.

Jordan, S., and M. Messner. 2012. "Enabling Control and the Problem of Incomplete Performance Indicators." *Accounting, Organizations and Society* 37, no. 8: 544–564. https://doi.org/10.1016/j.aos.2012.08.002.

Keränen, J., and A. Jalkala. 2013. "Towards a Framework of Customer Value Assessment in B2B Markets: An Exploratory Study." *Industrial Marketing Management* 42, no. 8: 1307–1317. https://doi.org/10.1016/j.indmarman.2013.06.010.

King, T., and T. King. 2026. "Accounting for Biodiversity: A Systematic Literature Review." *Journal of Accounting Literature* 48, no. 5: 456–476.

Kleinaltenkamp, M., K. Prohl-Schwenke, and J. Keränen. 2022. "What Drives the Implementation of Customer Success Management? Antecedents of Customer Success Management From Suppliers' and Customers' Perspectives." *Industrial Marketing Management* 102: 338–350. https://doi.org/10.1016/J.INDMARMAN.2022.02.003.

Kuperstein Blasco, D., N. Saukkonen, T. Korhonen, T. Laine, and R. Muilu-Mäkelä. 2021. "Wood Material Selection in School Building Procurement–A Multi-Case Analysis in Finnish Municipalities." *Journal of Cleaner Production* 327: 129474. https://doi.org/10.1016/j.jclepro.2021.129474.

Lindheim, T. 2022. "Participant Validation: A Strategy to Strengthen the Trustworthiness of Your Study and Address Ethical Concerns." In *Researching Values*, edited by G. Espedal, B. Jelstad Løvaas, S. Sirris, and A. Wæraas. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-90769-3_13.

Lopez-Vega, H., and N. Lakemond. 2022. "Tapping Into Emerging Markets: Emnes' Strategies for Innovation Capability Building." *Global Strategy Journal* 12, no. 2: 394–417. https://doi.org/10.1002/gsj.1429.

Lukka, K., and M. Wouters. 2022. "Towards Interventionist Research With Theoretical Ambition." *Management Accounting Research* 55: 100783. https://doi.org/10.1016/j.mar.2022.100783.

Lyly-Yrjänäinen, J., P. Suomala, T. Laine, and F. Mitchell. 2017. *Interventionist Management Accounting Research: Theory Contributions With Societal Impact*. Routledge.

McSweeney, B. 2004. "Critical Independence." In *The Real Life Guide to Accounting Research: A Behind-The-Scenes View of Using Qualitative Research Methods*, edited by C. Humphrey and B. Lee, 207–226. Elsevier. https://doi.org/10.1016/B978-008043972-3/50015-3.

Nørreklit, H. 2017. *A Philosophy of Management Accounting: A Pragmatic Constructivist Approach*. 1st ed. Routledge.

Oltra, V., and M. Saint Jean. 2009. "Sectoral Systems of Environmental Innovation: An Application to the French Automotive Industry." *Technological Forecasting and Social Change* 76, no. 4: 567–583.

Panwar, R., F. Testa, J. L. Walls, J. Bebbington, J. S. H. Lee, and R. M. Turaga. 2025. "Biodiversity Conservation and Restoration as a New Research Frontier for Business Scholars." *Organization & Environment* 38, no. 1: 84–88. https://doi.org/10.1177/10860266241297472.

Parker, L. D., and D. Northcott. 2016. "Qualitative Generalising in Accounting Research: Concepts and Strategies." *Accounting, Auditing & Accountability Journal* 29, no. 6: 1100–1131.

Pigatto, G., L. Cinquini, A. Tenucci, and N. Braico. 2026. "A Critical Evaluation of Research Into Accounting for Biodiversity and Ecosystems to Inform Future Research Pathways." *Accounting, Auditing & Accountability Journal* 39, no. 3–4: 495–527.

Roos, I. 1999. "Switching Processes in Customer Relationships." *Journal of Service Research* 2, no. 1: 68–85. https://doi.org/10.1177/109467059921006.

Roos, I. 2002. "Methods of Investigating Critical Incidents: A Comparative Review." *Journal of Service Research* 4, no. 3: 193–204. https://doi.org/10.1177/1094670502004003003.

Sairanen, M., L. Aarikka-Stenroos, and J. Kaipainen. 2024. "Customer-Perceived Value in the Circular Economy: A Multidimensional Framework." *Industrial Marketing Management* 117: 321–343. https://doi.org/10.1016/j.indmarman.2024.01.006.

Saukkonen, N., T. Laine, and P. Suomala. 2017. "How Do Companies Decide? Emotional Triggers and Drivers of Investment in Natural Gas and Biogas Vehicles." *Energy Research & Social Science* 34: 49–61. https://doi.org/10.1016/j.erss.2017.06.005.

Schaltegger, S., D. Gibassier, and K. Maas. 2023. "Managing and Accounting for Corporate Biodiversity Contributions. Mapping the Field." *Business Strategy and the Environment* 32, no. 5: 2544–2553.

Schiederig, T., F. Tietze, and C. Herstatt. 2012. "Green Innovation in Technology and Innovation Management–an Exploratory Literature Review." *R&D Management* 42, no. 2: 180–192.

Singh, N., D. Sim, H. Khan, Z. Khan, and C. Ascencio. 2025. "Nature: The Silent Architect of Firm Performance Through Biodiversity Management Strategies." *Business Strategy and the Environment* 34, no. 7: 8742–8758. https://doi.org/10.1002/bse.70044.

Tao, M. 2025. "Navigating Ecological Risk: Firm-Level Innovation Responses to Biodiversity Risks in the United States." SSRN 5562719.

Tiitola, V., J. Lyly-Yrjänäinen, M. Apell, M. Rönkkö, and J. Holmström. 2025. "Value Creation and Retention Through re-Servitization: Product Service System for Prescription Medication Dispensing in Homecare." *Technovation* 140: 103162. https://doi.org/10.1016/j.technovation.2024.103162.

Tiitola, V., J. Lyly-Yrjänäinen, and T. Laine. 2020. "The Three Positions for Interorganizational Interventionist Researcher: Navigating in the Supplier-Customer Dyad." *Electronic Journal of Business Research Methods* 18, no. 2: 115–128. https://doi.org/10.34190/JBRM.18.2.004.

Tiitola, V., M. Marek, T. Korhonen, and T. Laine. 2023. "Enabling Value-In-Use With Digital Healthcare Technologies: Combining Service Logic and Pragmatic Constructivism." *Journal of Management and Governance* 27: 841–871. https://doi.org/10.1007/s10997-022-09631-y.

WEF. 2026. *The Global Risk Report 2026*. 21st ed. World Economic Forum.

Westerlaken, M. 2024. “Digital Twins and the Digital Logics of Biodiversity.” *Social Studies of Science* 54, no. 4: 575–597. https://doi.org/10.1177/03063127241236809.

White, T. B., N. Mukherjee, S. O. Petrovan, and W. J. Sutherland. 2023. “Identifying Opportunities to Deliver Effective and Efficient Outcomes From Business-Biodiversity Action.” *Environmental Science & Policy* 140: 221–231. https://doi.org/10.1016/j.envsci.2022.12.003.

White, T. B., L. R. Viana, G. Campbell, C. Elverum, and L. A. Bennun. 2021. “Using Technology to Improve the Management of Development Impacts on Biodiversity.” *Business Strategy and the Environment* 30, no. 8: 3502–3516. https://doi.org/10.1002/bse.2816.

Wouters, M., and M. A. Kirchberger. 2015. “Customer Value Propositions as Interorganizational Management Accounting to Support Customer Collaboration.” *Industrial Marketing Management* 46: 54–67. https://doi.org/10.1016/j.indmarman.2015.01.005.

Xie, L., H. Bulkeley, and L. Tozer. 2022. “Mainstreaming Sustainable Innovation: Unlocking the Potential of Nature-Based Solutions for Climate Change and Biodiversity.” *Environmental Science & Policy* 132: 119–130. https://doi.org/10.1016/j.envsci.2022.02.017.

Appendix A

TABLE A1 | Data table.

Date	Type of interaction	Attendants' roles	Hours
5.11.2024	Provider meeting	Biodiversity & Strategy Managers; Business Director	1.0
15.11.2024	Provider meeting	Biodiversity & Strategy Managers	1.0
9.1.2025	Provider meeting	Biodiversity & Strategy Managers; Business Director	1.0
14.1.2025	Provider meeting	Biodiversity & Strategy Managers; Business Director	1.0
24.1.2025	Provider meeting	Biodiversity & Strategy Managers	0.5
3.2.2025	Provider interview	Local Business Manager	1.0
3.2.2025	Provider meeting	Biodiversity & Strategy Managers	1.0
6.2.2025	Customer interview	Construction Manager	0.8
7.2.2025	Customer interview	Environmental Specialist	1.0
7.2.2025	Customer interview	Sustainability Manager	1.0
12.2.2025	Customer interview	Project & Environmental Managers; Constructor Engineer	1.2
13.2.2025	Provider interview	Customer Account Director	1.0
14.2.2025	Customer interview	Manager	0.5
17.2.2025	Customer interview	Project Director; Environmental Specialist	1.0
3.3.2025	Provider meeting	Biodiversity & Strategy Managers; Business Director	2.0
6.3.2025	Provider meeting	Biodiversity Manager	1.0
10.3.2025	Provider meeting	Biodiversity Manager; Business Director	1.5
17.3.2025	Provider interview	Business Director	1.0
17.3.2025	Customer interview	Division Manager	1.0
24.3.2025	Provider meeting	Biodiversity Manager	1.0
25.3.2025	Provider meeting	Biodiversity Manager	4.0
28.3.2025	Provider interview	Strategy Manager	1.0
31.3.2025	Provider interview	Corporate Relations and Responsibility Executive	1.0
10.4.2025	Provider interview	Biodiversity Manager	0.8
17.4.2025	Customer interview	Sustainability Specialist & Manager	1.5
22.4.2025	Provider meeting	Biodiversity & Strategy Managers; Business Director	1.0
5.5.2025	Provider meeting	Biodiversity Manager	1.0
16.6.2025	Provider meeting	Biodiversity & Strategy Managers; Business Director	1.0
Sum.			31.8