Motivations and organizational models for private sector biodiversity engagement

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Abstract

Private sector engagement is increasingly recognized as critical for addressing global biodiversity loss, yet the recent IPBES global assessment of business and biodiversity confirms that current economic conditions remain largely incompatible with the transformative change required. We conducted 30 semi-structured interviews with business leaders and sustainability practitioners across multiple sectors in Australia to understand the individual and organizational dynamics driving biodiversity engagement, analyzing data using thematic analysis grounded in motivational theory and stakeholder theory. Our analysis identified a spectrum of business models ranging from compliance-driven risk mitigation to regenerative enterprises that strive to deliver biodiversity

gains as core outputs. Individual motivations were primarily intrinsic, such as early nature connections, cultural obligation, and entrepreneurship, but required translation into an organizational business case. Key barriers included technical complexity of measuring biodiversity outcomes, opacity of supply chains, inadequacy of offset markets, and perceived absence of coordinated government leadership. Participants articulated theories of change centered on demonstration projects, knowledge sharing, and multi-actor coalitions. Our findings advance understanding of the interplay between individual agency and organizational context in nature-positive business innovation and offer actionable insights for conservation practitioners seeking to engage the private sector.

Introduction

Transformation of society is fundamental to achieving global biodiversity targets and a more sustainable future (IPBES 2019; Chan et al. 2020). Given the outsized footprint of the private sector, mainstreaming sustainable business practices is a key part of this transformation (Loorbach 2013; Grumbine & Xu 2021; Booth et al 2024). While sustainable business focus has historically centred on climate change, human rights, and water, businesses are increasingly concerned about biodiversity loss (WEF 2022; IPBES 2026). This concern stems from: 1) growing recognition that biodiversity and ecosystem services underpin the long-term health of the global economy (Dasgupta 2020; WEF 2022), and 2) the emergence of new global policy and disclosure expectations, most notably the Kunming–Montreal Global Biodiversity Framework and its Target 15 on monitoring and disclosing biodiversity-related risks, dependencies, and impacts (CBD 2022). Despite this momentum, a gap remains between rhetoric and material change. Understanding how the private sector can most effectively respond to its biodiversity impact is

key to closing this gap (Chapin et al. 2010) and central to achieving the GBF's 2050 Vision for Biodiversity.

Businesses of all sizes impact and depend on biodiversity and ecosystem services, and many are increasing their examination of ecosystem interdependencies in their operations and supply chains (Caldera et al. 2022). At the same time, the current wave of business engagement remains dominated by disclosure, risk management, and emerging nature-related governance frameworks such as the Taskforce on Nature-related Financial Disclosures (TNFD), Science Based Targets Initiative Nature, and natural capital accounting initiatives. While these developments are important, they have not yet translated into widespread integration of biodiversity into core business decision making (Addison et al. 2019; zu Ermgassen et al. 2023;). The push for a 'Nature Positive' economy (Leclere et al. 2020) therefore runs counter to current practice, with businesses primarily addressing risks to their own operations rather than generating genuine biodiversity gains (Smith et al. 2020; White et al. 2024). Few businesses have integrated biodiversity as a fundamental business model component (Addison et al. 2018; Waddock 2020), and the risk of greenwashing in this space is significant (Bull et al. 2024; zu Ermgassen et al. 2023). Genuine integration of biodiversity into business models needs to rapidly speed up to generate systemic change (Waddock 2020; Grumbine & Xu 2021) and achieve the GBF's 2050 Vision for Biodiversity.

Business models and engagement with biodiversity

A business model is the method by which a business creates value (Stubbs and Cocklin 2008; Geissdoerfer et al. 2018). A sustainable business model is one where social and environmental priorities reshape a business's purpose and decision-making (Stubbs and Cocklin 2008). A basic categorization divides businesses by increasing sustainability measures from business-as-usual

through shareholder risk management, triple bottom line approaches, and finally businesses that use resources to directly address environmental and social issues (Dyllick and Muff 2016). Rarely do sustainable business models focus on biodiversity (Buchmann-Duck and Beazley 2020). Hahn and Tampe (2021) identify a spectrum from businesses that maximize shareholder value while managing environmental risk, through those that operate within ecological boundaries, to 'regenerative businesses' whose core purpose is to generate net positive outcomes for biodiversity and ecosystems. Others distinguish whether biodiversity action occurs before or after a business activity that impacts biodiversity and whether conservation occurs on- or offsite (Panwar et al. 2022); akin to dividing practices into land-sharing or land-sparing approaches (Selinske et al. 2023). Recent reviews further suggest that firms differ not only in the extent of their engagement, but also in how deeply they internalise their dependence and impacts on nature (Testa et al., 2025).

Many current business responses remain concentrated in the less transformative parts of this spectrum where action is oriented toward disclosure, compliance, risk management, or symbolic positioning rather than toward business models that deliver measurable biodiversity gains (Bebbington et al., 2024; zu Ermgassen et al., 2022; Mair et al., 2024). Even when firms adopt nature-positive language, the underlying logic frequently remains defensive: biodiversity is framed as a reputational, regulatory, or operational issue to be managed (White et al. 2024; Testa et al., 2025). Research has identified a gap between the growing business attention to biodiversity and the depth of organizational and practice change required to address biodiversity loss (Liu et al., 2025; Trim & Jones, 2025; Testa et al., 2025).

Individuals, organisations, and multi-scale drivers

Individuals in decision-making roles are potential leverage points for biodiversity conservation (Walker 2006; Amel et al. 2017). Internal corporate social responsibility (CSR) drivers suggest

managers make sustainability decisions to align with organizational value creation or their own values (Mellahi 2016), and previous research has demonstrated that individuals in leadership roles drive innovation and initiate businesses designed with sustainability in mind (Rauter et al. 2017). Emerging biodiversity research points in the same direction: favourable managerial attitudes, perceived business relevance, employee involvement, and governance capability can all shape whether firms commit to biodiversity action (Krause et al. 2020; Boiral et al. 2019; Velte 2022). Yet most studies still focus on one level of explanation at a time, some emphasising disclosure regimes and institutional pressures (Bassen et al. 2024; Hassan et al. 2020; Sun & Lange 2022), other research focusing on organizational capabilities and governance arrangements (Krause et al. 2020; Velte 2022), or considering broader shifts in finance and accountability (Bebbington et al. 2024; Ingram et al. 2024). Few studies examine both individual and organizational perspectives on biodiversity integration simultaneously (Wright et al. 2025).

Business engagement with biodiversity is shaped by multiple interacting external forces, including regulation, investor pressure, stakeholder expectations, and businesses own exposure to biodiversity-related risks and dependencies (Liu et al. 2025; Testa et al. 2025; Trim & Jones 2025). Empirical studies show that pressure from customers, employees, communities, NGOs, and investors can shape biodiversity engagement and disclosure (Ali et al. 2023; Krause et al. 2020; Sun & Lange 2022), and that these external dynamics may activate, reinforce, or constrain the internal motivations of individual champions (Ali et al. 2023; Tapaninaho et al. 2025). Some work extends the frame further, treating species or nature itself as stakeholders in questions of corporate accountability (Lambooy et al. 2024; Roberts et al. 2021).

The Australian context offers a useful setting in which to examine these dynamics. Existing scholarship points to the importance of disclosure frameworks, sectoral risk exposure, and

regulatory settings in shaping biodiversity engagement (Bhattacharyya & Yang, 2019; Smith et al., 2021), but provides less insight into how organizational change is actually initiated and sustained. We investigated the current state of the biodiversity–private sector interface in Australia through interviews with 30 individuals considered leaders in this space, with the aim of understanding not only the organizational models through which businesses engage with biodiversity, but how individuals translate external pressures and personal values or motivations into organizational strategy, and how broader system conditions shape the space in which such translation can occur.

The interviews aimed to understand: 1) what motivates individuals engaged in integrating biodiversity and business, and how these motivations interact with organizational drivers; 2) what barriers they face; 3) how they account for or measure biodiversity impacts, both negative and positive; 4) their theory of change regarding the scaling of their business model; and 5) how society might support broader private sector transformation. By focusing on leading-edge practitioners, the study captures a part of the private sector that is already attempting to move beyond compliance and symbolic engagement and is therefore particularly useful for understanding pathways toward more transformative nature positive businesses.

Methods

Context

Interviewees operated in organizations based in Australia. Australia is a megadiverse country with one of the world's highest extinction rates and the highest per capita biodiversity footprint globally; government biodiversity spending is not commensurate to the scale of the challenge (Kitzes et al.

2017; Wintle et al. 2019). Its colonial past is marked by dispossession of Aboriginal and Torres Strait Islander peoples, whose communities had and continue to have intertwined, reciprocal relationships with country and the natural world (Cresswell et al., 2021). Australia is a signatory to the CBD and, as part of its commitments under the Kunming-Montreal Global Biodiversity Framework (CBD 2022), has set out a national Nature Positive Plan with targets to halt and reverse biodiversity loss by 2030. At the time of the interviews, voluntary biodiversity markets were nascent and fragmented across state-based offset schemes; the Nature Repair Market Act was subsequently passed in 2023, establishing Australia's first national framework for voluntary biodiversity credits. Several national initiatives also support business–biodiversity integration, including the Responsible Investment Association of Australasia, and national taskforces on Science-Based Targets for nature (SBTN) and TNFD adoption.

Approach and participants

We adopted an exploratory qualitative approach using semi-structured interviews (Bryman 2016), chosen for the low availability of published information on the research themes at the time of the study. RMIT Human Research Ethics Approval #2021-23865-13308 was obtained; all participants provided prior informed consent. From January–November 2022 we interviewed 30 people who were key decision-makers in a private company or 'purpose ecosystem' organizations (Dahlmann et al. 2020); consultants, law firms, NGOs, and membership organizations supporting business engagement in biodiversity. Participants were recruited through purposive and snowball sampling via the authors' networks, online searches of news articles, and webinar participants from the Australian Government's National Environment Science Program's Threatened Species Hub, who were considered leading-edge practitioners working towards embedding biodiversity into business strategy and operations. Interviewees were selected based on their leadership or influence within

158 their sector, and active contribution to adopting and advancing nature-positive practices (e.g.
159 through partnerships, frameworks, or implementation at scale). Represented sectors, with numbers
160 of individuals from the sector in brackets, included: agriculture (4), architecture (2), commercial
161 property (1), ecological consultancy (4), insurance and finance (5), forestry (2), landscape
162 restoration (2), law (1), mining (1), retail (1), residential development (2), utilities (1),
163 superannuation (1), natural capital accounting (2), and conservation NGOs (2).

164 **Data collection and analytical approach**

165 Each interview was conducted online (27) or face-to-face (3) for approximately 1–1.5 hours.
166 Responses were transcribed via Otter.ai and verified by the lead author (MS). Transcripts were de-
167 identified prior to analysis using thematic analysis (Braun and Clarke 2006, 2023). Coding was
168 done in Microsoft Word using preset codes derived from prior business and biodiversity research,
169 (Self-Determination Theory, SDT; Ryan and Deci 2000), and Stakeholder Theory (Freeman 1984).
170 Triangulation was achieved by providing co-authors with randomly selected interviews coded
171 using the developed coding manual. The lead author engaged in reflexivity journaling throughout
172 data collection and coding.

173 Codes were grounded in SDT which distinguishes intrinsic motivation, behaviour driven by
174 inherent interest, personal values, and a sense of autonomy and purpose, from extrinsic motivation,
175 which is regulated by external forces such as rewards, social recognition, or regulatory obligation.
176 SDT posits that there is a continuum between intrinsic and extrinsic motivations, where external
177 goals are adopted as one's own through a process of integration (Ryan and Deci 2000). This
178 distinction was applied to identify whether participants' engagement with biodiversity arose from
179 intrinsic sources such as childhood nature connections, cultural identity, or a personal sense of

stewardship, or from more externally regulated motivations such as career advancement, investor expectations, or reputational risk management. SDT also draws attention to three fundamental psychological needs – autonomy, competence, and relatedness - whose satisfaction sustains long-term motivation (Deci and Ryan 2000). Codes derived from these constructs were used to identify, for example, expressions of self-directed agency in establishing a biodiversity focussed business, the satisfaction of demonstrating technical competence in with biodiversity, and the sustainment of relationships with sector peers and co-workers who shared conservation values.

At the organisational scale, coding drew on Stakeholder Theory (Freeman 1984) which provided a lens for identifying the external actors, investors, regulators, employees, clients, communities, and civil society organizations, whose interests and pressures shaped organizational engagement with biodiversity. Codes derived from this framework captured how participants described the demands, expectations, and relational dynamics that created opportunities and organisational movement for biodiversity action beyond what individuals alone could drive.

Together, these frameworks enabled a systematic multi-level reading of interview data, distinguishing between the personal drivers of participants and those things their organizations were incentivized to do, and highlighting how these two levels of motivation interacted to produce different models and levels of biodiversity engagement.

Results

Models of business engagement with biodiversity

Interviewees described multiple models of biodiversity engagement ranging from compliance-driven to fully regenerative (Figure 1). Drawing on the typology of Hahn and Tampe (2021) and

the continuum described by Panwar et al. (2022), we identified four positions along a spectrum: compliance, risk management, opportunity, and regenerative, each associated with distinct organizational logics and biodiversity outcomes. The depth and combination of engagement varied considerably across the compliance-to-regenerative spectrum.

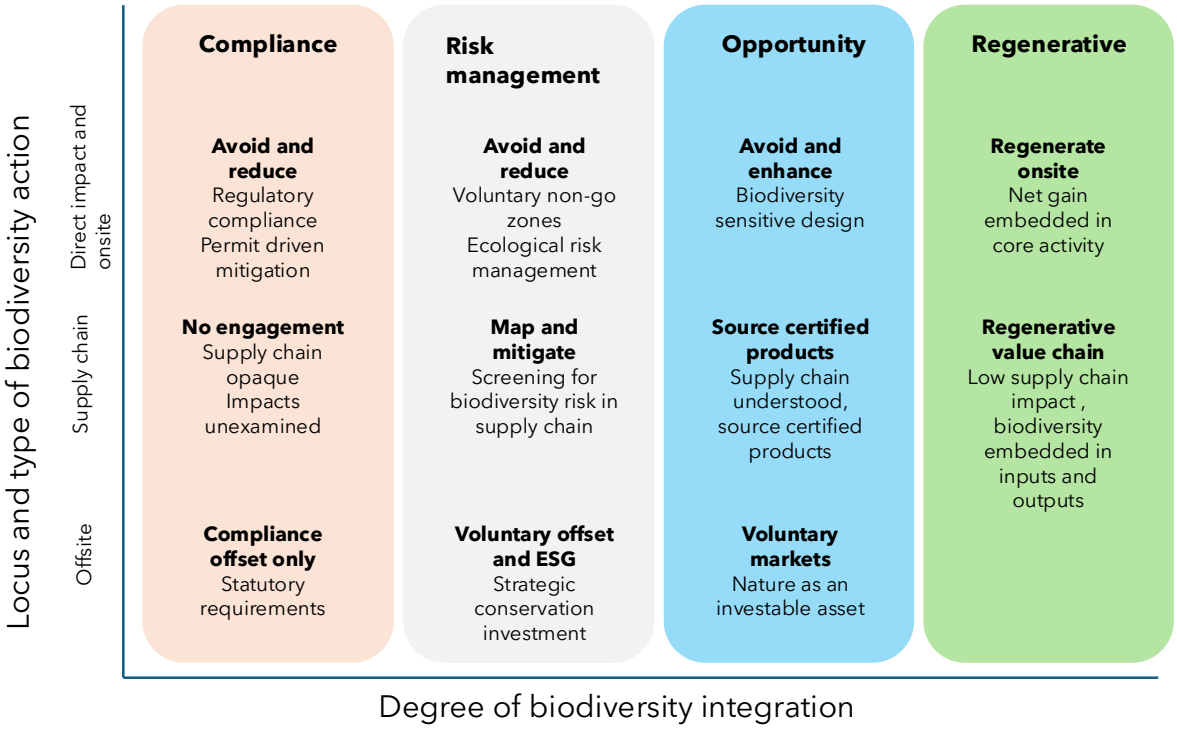


Figure 1. *A framework for understanding private sector biodiversity engagement, integrating the spectrum from compliance to regenerative business models (Hahn and Tampe 2021) with the locus and type of biodiversity action (Panwar et al. 2022). Note: regenerative businesses typically generate biodiversity gains through their core productive activity rather than through separate offsite conservation investments. The lower-right cell is intentionally left blank to reflect that offsite voluntary action is not a defining feature of this model; where it does occur, it tends to be an extension of the core business rather than a compensatory or reputational gesture.*

At the compliance end, concern for/action for biodiversity was almost entirely legislatively driven and confined as almost entirely confined to the direct operations: managing impacts at the site of development to satisfy a regulatory approval, with supply chains unexamined and offsite action limited to statutory offset requirements. A biodiversity consultancy representative reinforced that for most clients, legal compliance remained the primary driver: '*If the legislation didn't exist to support and protect biodiversity, we would pick up very little work.*' In this compliance-focused environment, the mitigation hierarchy (see Maron et al. 2024) was frequently bypassed in favour of offsets. As the same participant observed: '*The mitigation hierarchy has got lost, because too often we jump straight to offsets... Avoidance, the genuine evaluation of all the options, is not well undertaken*.'

Interviewees described businesses actively seeking to move beyond compliance and towards risk management. Participants described beginning to look beyond the operational footprint. For instance, the banking participant described the challenge of interrogating biodiversity risks embedded in agricultural lending portfolios. Participants were just beginning to use screening and risk mapping tools, to consider supply chain risks but offsite voluntary action remained limited to ESG-framed initiatives such as the real estate fund's conservation reserve which was described explicitly as a philanthropic investment packaged within a broader sustainability strategy rather than a financially motivated conservation decision:

> *"It was always the long shot in our sustainability strategy, packaged up with a lot of really economically viable stuff... If I'd had to put up a standalone business case for this as an isolated policy, I think it may not have gone up, because it is effectively a philanthropic investment."* (Real estate finance participant)

This example also illustrates how a single initiative or decision-making can occupy multiple positions on the spectrum simultaneously. The conservation reserve was framed by the participant as philanthropic and values-driven in origin, as anticipatory risk management in investor relations "*when an investor asks the question, we already have the answer for them* [regarding nature risks]", and as a market differentiation opportunity in client and staff engagement, suggesting that as biodiversity integration deepens, it blurs the distinction between risk management and opportunity.

A participant from a responsible investment membership body described how biodiversity risk had emerged as a top concern in a most recent member survey, a notable shift reflecting what the participant described as a recognition that finance needs to be aligned with global biodiversity commitments.

An environmental consultant with nearly 25 years' experience in oil, gas, and mining described the trajectory from compliance to seeing nature conservation as an opportunity for some businesses and sectors:

> *"Early on in my career, considerations of biodiversity were genuinely always attached to some kind of regulatory process... What's really happened in the last five years is that biodiversity has moved away from just being a regulatory compliance consideration and is now more attached to concepts of social licence and broader ESG. There has been a real shift from compliance, then risk, and now more around value."* (Mining sector participant)

Participants that discussed biodiversity as an opportunity were notable for beginning to use the supply chain row as a lever rather than just a source of risk. The coffee retailer described sourcing practices that actively preferred certified producers, while the NGO participant working on natural capital accounts described a vision in which stewardship payments to wool farmers would

eventually flow through the supply chain itself rather than from charity: "*stewardship payments should just be a stepping stone before the supply chain actually pays for that stewardship, not charity, not philanthropy*."

At the regenerative end of the spectrum, several interviewees described businesses where biodiversity gain was a central design principle. A regenerative forestry operator described how eucalypt plantations managed over time evolved into functional forest ecosystems with bearded dragons, phascogales and rainbow bee-eaters, species absent before the forests were established. A biodiversity-sensitive residential developer had set aside 50% of a housing estate for ecological restoration, with residents reporting kangaroos, bandicoots, and seven frog species on-site. A specialist in regenerative agricultural land management built a business model bundling biodiversity offset credits, carbon sequestration, and native vegetation protection on purchased properties. An environmental water and irrigated farming investor described how the firm had maintained 55% of their landscape in ecological protection while intensifying agricultural production on the remainder, demonstrating that intensification and biodiversity restoration could be mutually reinforcing when designed as a system: '*Building a biodiversity component has always been a key feature of our landscapes. We'd hoped to be paid for it* [through biodiversity and carbon credits]. *We haven't really been yet. But it's paid for itself in other ways* [ecosystem services].'

A distinct category within our sample, and sitting outside of the framework in Figure 1, was comprised of 'purpose ecosystem' organizations (Dahlmann et al. 2020): consultancies, natural capital accounting firms, responsible investment membership bodies, NGOs with corporate programs, and biodiversity market-making initiatives. These interviewees were not themselves moving along the compliance-to-regenerative spectrum but were working to support and shape the conditions under which other organisations could do so. They offered insights not only into the

drivers and barriers facing the businesses they worked with, but in several cases into their own organisational aspirations, particularly where participants operated hybrid or profit-seeking models in which supporting other businesses and centring nature within their own business model were pursued simultaneously.

An additional complexity revealed by the interviews was that seemingly opposed production models can both represent potential reductions in biodiversity impact, depending on the spatial and systemic logic through which they operate. Several interviewees were reducing or working to reduce their footprint through production intensification alongside biodiversity restoration, for instance by concentrating productive activity on already-modified land in order to free up space for ecological recovery elsewhere. A farmer seen as a leader in agricultural sustainability and with a concentrated animal feeding operation dairy discussed that they were able to generate better biodiversity outcomes at the landscape scale than extensive low-stocked grazing spread across large areas of remnant vegetation, provided the land freed from grazing pressure is genuinely restored and managed. This intensification-and-restoration pairing sits in tension with the deintensification logic of other participants, such as the regenerative forestry operator who argued that reducing stocking density, slowing down silvicultural intervention, and working with natural regeneration processes was the route to biodiversity gain.

Individual motivations and their organisational context

Consistent across nearly all participants was a description of early formative connections to the natural world as the seedbed of their professional orientation. A natural capital accounting specialist described their work as indistinguishable from leisure: '*If I could get paid just to go and watch birds and regenerate landscapes for wildlife, that's what I [would] do. My spare time is the*

same as my work time.' An agricultural investor described childhood as the source of a lifelong commitment: '*There is a sort of solace you get in [the] bush... I think it can evolve for most kids if you give them that opportunity. I was really fortunate and privileged to be given that opportunity*.'

A participant from a superannuation fund described their motivation to engage in nature conservation through investment developing over time:

> *I wouldn't say from a young age…The more time you spend in nature, the more time you go hiking and camping and you naturally develop an affinity with it. When you're in a position like mine, you can move capital around to protect the things that you're interested in…it's being in nature, a part of nature, being connected to it in some form… I think will foster a willingness to want to do something*

A First Nation's landscaping practitioner described his business as an expression of cultural identity and intergenerational obligation:

> *As an Aboriginal man and businessman, I really want to keep nature and biodiversity and Aboriginal culture front and centre to my business practice... My grandfather talked a lot about getting permission to do certain things as an Aboriginal person. For me, this work is doing without asking permission, something his generation was unable to do.* (First Nations landscaping participant)

Similarly, a participant working on connecting First Nations communities and remote Aboriginal lands with corporate buyers described a motivation rooted in the experience of seeing the transformative power of such relationships in northern Australia, where carbon projects connecting communities to corporate buyers generated financial flows, cultural connection and cross-sector learning.

A theme running through many of the interviews was the relationship between business and nature that could be themed as relational values, where one is embedded in, responsible to, and in relationship with nature. This was most explicit among participants with First Nations backgrounds or strong cultural ties to Country. Similar relational sensibilities surfaced among non-Indigenous participants. The regenerative forestry operator articulated a philosophy of people working with nature rather than on it, explicitly rejecting the dominant conservation paradigm of exclusion: "*...if you want to do best by nature, get the people out; that's the dominant paradigm, and it's wrong."* An agriculture participant described how they felt a duty of care that was explicitly intergenerational: "*I've got five kids and 11 grandkids. To me, I have a duty of care to try and pass on to them as much as I possibly have had for myself."*

Participants consistently described how intrinsic motivations were necessary but insufficient to sustain organisational engagement. Almost universally they described the need to '*build a business case'* as the mediating challenge between personal values and organisational action. A sustainability director at a listed real estate company described this directly: '*I cannot quantify the benefit... but I think it will be a really positive, non-financial benefit for our business and ultimately financial*.' Several described *'empowerment through challenge*' as a sustaining motivation:

> *I don't understand why this isn't standard practice, because you're creating a system that's resilient. You have multiple revenue streams, so you've got optionality. Whether it's climate change or regulation or changing terms of trade, you can adapt the system so that it continues to build value.* (Regenerative forestry participant)

There was a desire among participants to demonstrate that a different way of doing business was possible, and to make that demonstration visible enough to shift what others believed was achievable. Several described operating in a space where the primary barrier was not technical or

financial but imaginative; others in their sector did not know that the model existed. The regenerative forestry operator described a disbelief from landholders, investors, and government officials when confronted with a multifunctional forestry system that generated biodiversity, carbon, and commercial timber in tandem. The residential developer had turned demonstration into an explicit theory of change, open-sourcing house designs and design guidelines so that proof of concept could propagate beyond his own projects. The biodiversity marketplace participant articulated the political logic most clearly: voluntary first-mover leadership was not an end in itself, but a mechanism for pulling government regulation in behind, showing what was possible before asking the state to require it. What is notable is that this demonstrative impulse was not primarily about competitive advantage or market differentiation, though participants acknowledged those benefits. It was closer to a sense of responsibility to make visible what had been invisible — to prove, as the real estate sustainability director put it, that "*no one's done it before... that's what leadership looks like."* For these participants, being first was not incidental to their motivation; it was constitutive of it.

Organisational drivers of biodiversity engagement

While individual motivations were predominantly intrinsic, organisational drivers were predominantly external, reflecting stakeholder pressure, regulatory risk, and market dynamics. Across sectors, participants identified key drivers in approximate order of prevalence: regulatory compliance and risk management; social licence and reputational risk; ESG reporting and investor expectations; market differentiation; employee recruitment and retention; and, less commonly, recognition of genuine ecosystem service dependencies.

A water utility representative described how ecosystem dependency had become explicit in long-term planning: *'We depend on the environment immensely. Our long-run forecasts say we will need $24 billion in additional infrastructure if we can't use the natural systems we currently rely on. Suddenly we realised we're not a pipes company, we are an environmental company*.' Market differentiation emerged as particularly important in competitive consumer markets: a coffee retailer described how biodiversity-friendly sourcing enabled access to key commercial contracts, while a natural capital accounting investor described rapidly growing investor interest: '*We speak to a lot of people overseas and we hardly get asked about financial returns... Tell us what you're doing about climate change and about nature and natural capital protection*.'

A responsible investment membership body representative described the growing institutional momentum through their lens: '*The last two or three years has been this massive acceleration in the recognition that there is stuff that's off-balance-sheet, not monetized, that has massive implications for valuation*.' Multiple participants described how biodiversity ambitions helped attract and retain staff who shared these values, the forestry operator noting that his youngest staff were specifically drawn to the organisation's ethos.

Participants also began to frame nature as a stakeholder that was driving their business decision-making. Several described both their business philosophies as being part of and responsible to nature, rather than separate from it. They framed this as a business obligation to nature rather than a personal motivation, although this was intertwined. For instance, one participant working in biodiversity-sensitive housing development spoke about non-human species as entities whose needs must be considered and accommodated within the design process. The water utility representative mentioned that "*We accept now in our new strategy that we have to think as if we're part of nature, rather than separate*."

Multiple participants mentioned that "*it just makes sense*" from a financial perspective due to a number of the aforementioned reasons and believed that they would benefit from the early adoption but expected others in their sector to move forward and for their investors to start asking questions around biodiversity impacts and mitigation or opportunities. A sustainability lead in a real estate investment fund stated:

> *...a proactive manager stays across these issues and understands the themes and is ahead of the market, and we want to be in it. That's what leadership is, you know? We're ready with the answer, by the time our investor has formed the question"*

Barriers to greater biodiversity integration

Technical, knowledge and measurement challenges

Unlike carbon, biodiversity lacks standardized, scalable metrics. This created particular difficulties for organisations seeking to report on and be held accountable for biodiversity commitments. A natural capital accounting practitioner working on agricultural landscapes acknowledged the challenging work of building ecological condition scores across vegetation, water, soils, and fauna and translating this work for farmers or other private sector actors. A forestry sector participant described the saturation of competing frameworks:

> *"We've been signing on to one initiative after another: TCFD* [Taskforce on Climate Financial Disclosures] *reports, sustainability reports, natural capital accounting and FSC certification. There's like a dozen things. We can't just keep adding because it becomes too confusing."* (Forestry investment fund participant)

A responsible investment representative described the central measurement challenge: '*With carbon, you've got one metric, one measure. With biodiversity…how do we sort through this*?' Individuals with operations across multiple sites, both domestically and internationally, described it as a challenge to develop biodiversity indicators that would be comparable across multiple sites. Supply chain opacity compounded these challenges, the banking participant noted that while the bank's direct footprint was modest, biodiversity impacts mediated through its lending portfolio were vast and largely unmeasurable with available data.

Awareness and a genuine understanding of biodiversity was also detailed as a challenge. For instance, an agricultural investor with 16 years' experience described how the landscape for institutional investment had fundamentally shifted: '*When we started with the superannuation fund, we couldn't get a conversation with any of them* [investors]. *Biodiversity wasn't a word they understood. You could say sustainable.*' Multiple interviewees mentioned that awareness of biodiversity was increasing in the private sector but there was an insufficient uptake of assessment and reporting.

Economic and market failures

Participants described a market environment that systematically undervalues biodiversity. The biodiversity offset market drew criticism as an enabler of continued biodiversity loss. The biodiversity consultancy participant argued that offset prices undervalue the ecological service being lost: '*People are really focused on the 10-year cost of offsets, without thinking through the fact that you're protecting a site in perpetuity. I think we're undervaluing biodiversity quite significantly*.' A superannuation fund representative described the challenge of making biodiversity a viable investment asset class: '*The capital is going to go to where there's less risk. If there's a lot of uncertainty, capital just won't go there*.'

A biodiversity market-building initiative participant articulated the broader structural problem: '*Nature is always seen as somebody else's responsibility. And that's because we've never had to put it on the balance sheet*.' At the same time, a biodiversity restoration entrepreneur who had been pioneering business models for 15 years expressed scepticism about voluntary biodiversity markets: '*I don't see who's buying. A lot of the conferences are talking about it. But there are a few groups that have tried to sell credits without much success. You've got to have a buyer*'. Combined, these comments highlight a gap between the promise of biodiversity markets and current reality.

Governance and policy gaps

Government was described across sectors as both a critical partner and a significant barrier, lagging behind private sector innovation rather than leading it. The biodiversity consultancy participant described governments as lacking the courage to say 'no' to damaging developments, areas that with extremely threatened vegetation but were cleared regardless. A housing developer argued that there should be more rigid policies directing development toward degraded rather than intact land could dramatically reduce the spatial footprint of urban growth. A legal practitioner pointed to a coordinated biodiversity-carbon offset policy as a model: '*Having coordinated policy and outcomes which are specifically designed to produce both carbon and biodiversity outcomes produces better results*.' A farmer and agricultural innovator described the problem of policy volatility: *'You need certainty in income to be able to deliver the types of returns and the change needed. If you've got a volatile policy and revenue goes up and down, it's really difficult for community to adapt*.' Agriculture sector interviewees discussed that most in their sector were wanting to see significant direction and commitment from the government before they will consider biodiversity initiatives or enter environmental markets.

Measuring and accounting for biodiversity outcomes

Biodiversity measurement was both a technical challenge and a strategic priority. The most advanced participants had developed bespoke monitoring approaches, some at great expense, typically in partnership with ecological consultants or research institutions. A regenerative agricultural land manager described using the statutory biodiversity offset framework voluntarily, retiring rather than selling credits, to generate independently verified improvements on purchased properties. An NGO working at the interface of supply chains and natural capital described a vision of placing biodiversity on the corporate balance sheet: '*It's like putting it on the books like financial accounts. We just put it there, neutral. No one's making judgements about it. You make the judgements from there.'*

The proliferation of competing frameworks was itself identified as a barrier. As an agricultural investor and long-term practitioner noted: '*You've got the SDGs, the global reporting initiative metrics, the accounting for nature framework, and they're all asking the same questions in different ways.*' A responsible investment representative and former conservation economist identified the risk of pushing everything to a single monetary metric: '*If you monetize it and the grassland scores low on a cost-benefit analysis, you dig anyway. So, I think we need to get more sophisticated, we need a dashboard of indicators. You can't just measure based on one thing*.'

Multiple interviewees noted there were signs of progress. An agricultural innovator with board experience in international standards noted the growing momentum: '*I think the direction of travel is clear. I think the momentum has never been greater. Corporates are running ahead of governments, which is important. One would hope that governments can come in very quickly behind*.' This sequential view, private sector demonstrating, government following, was a consistent feature of participants' theories of change.

Theories of change and ideal policy scenarios

Participants articulated rich theories of change centred on demonstration projects, knowledge sharing, and government as a 'fast follower'. The residential developer described a deliberate open-sourcing strategy: '*We apply all the best design and emerging technologies as demonstration projects, then we open-source the knowledge so you can download house designs for free. They've been downloaded 40,000 times.'* The regenerative forestry operator described a threshold effect:

> *"I think if there's a critical mass, even a small minority, with a united voice saying 'actually we've got something here, you should take notice', that's a flashpoint where we appear as something on the radar screen worth investigating."* (Regenerative forestry participant)

The biodiversity marketplace participant articulated a theory of change directly parallel to the carbon market trajectory: voluntary demonstration leads to regulated market formation, which reduces investment risk, and attracts capital at scale. Multiple participants described their role as '*showing government what's possible'* rather than waiting for government to lead. An agricultural board member with international standards experience added: '*You do it by raising the bar all the time. Certification agencies, bodies, and standards, when they're the right ones, are genuinely part of that journey of giving connectivity and valuing biodiversity*.'

The First Nations food production participant articulated a theory of change rooted in recognition, knowledge transfer, and economic empowerment: '*The accumulation of knowledge is very important, but also the spread of public decency in recognising the true history of the country. The will of the people will affect government policy*.' The NGO participant working on connecting communities and corporates described a theory of change based on relationships rather than

transactions: '*It wasn't so much the buying and selling, it was the relationship underpinning it, the shared values, the work that could be done beyond just transacting one unit of carbon*.'

Discussion

The private sector landscape is in an active but uneven transition to engaging with biodiversity. Our interviews reveal that many of the leading innovators had moved beyond the dichotomy of market- and non-market strategies that characterises much CSR research; in the most advanced cases, these strategies were integrated and mutually reinforcing. This aligns with arguments that biodiversity can simultaneously generate social licence, competitive differentiation, and genuine ecological value (O'Gorman 2020; Feger and Mermet 2020). Despite growing engagement, current market conditions remain largely incompatible with the transformative change required to achieve global sustainability goals (IPBES 2026), making our study of leading-edge practitioners particularly important for understanding what pathways to transformation could look like from the inside.

A spectrum of business models: from compliance to regenerative

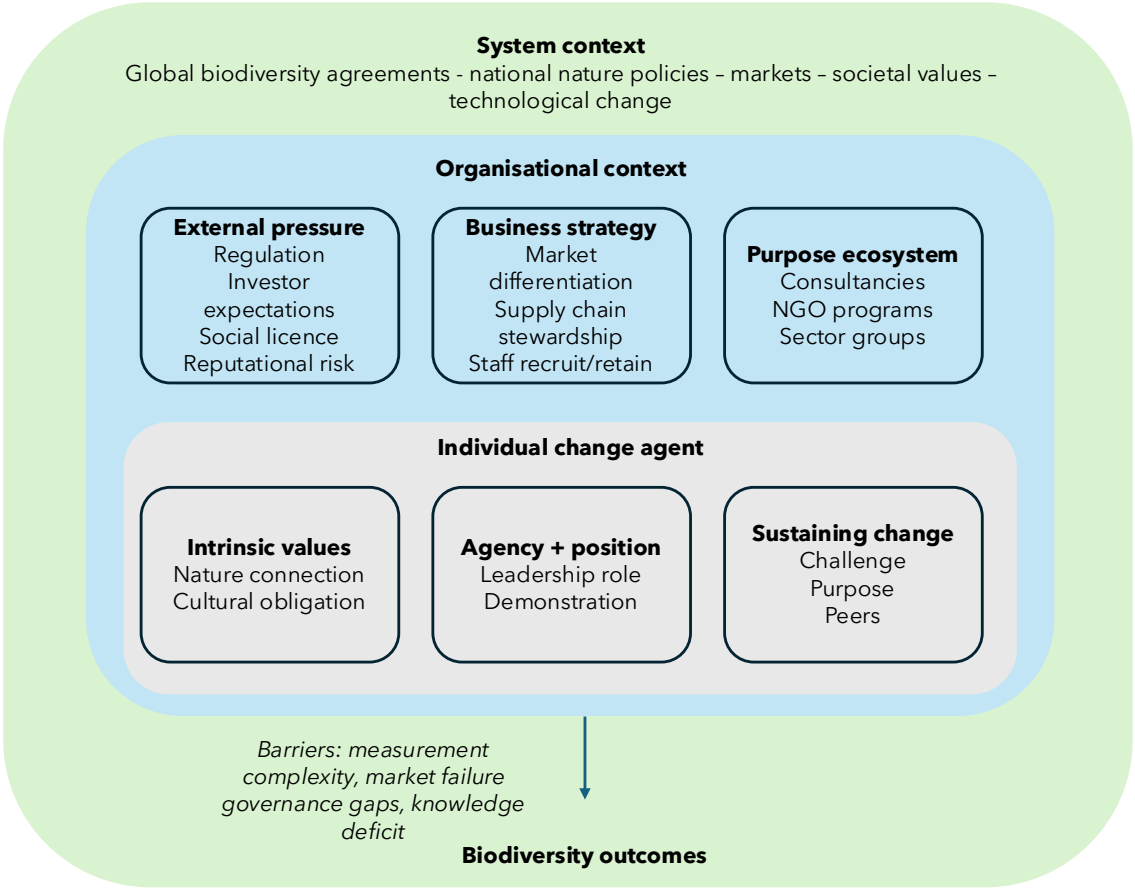
Our empirical spectrum of business models (Figure 1) extends the typology of Hahn and Tampe (2021) and Panwar et al. (2022). We found that the spectrum is not linear: organisations can simultaneously occupy multiple positions depending on which operations are considered. A mining company can be compliance-driven in its direct operational footprint while being a market-opportunity actor through its voluntary ESG investments. The compliance-to-regenerative spectrum is not a set of mutually exclusive categories but overlapping business rationales.

Movement along the spectrum may be less a matter of replacing one driver with another than of an accumulation of drivers. This finding supports arguments that biodiversity-business typologies should be understood as dynamic rather than fixed categorical states (Liu et al. 2025).

Some of our interviewees were reducing or trying to reduce their footprint through production intensification alongside biodiversity restoration, or deintensification practices such as regenerative forestry and agriculture. Given the opaqueness of supply chains, a relatively small group were focussed on mitigating their supply chain impacts. Yet few measured these gains robustly enough to qualify as 'nature positive' in the sense articulated by Milner-Gulland (2022) and Smith et al. (2026). Despite some offsite conservation actions, many participants actively eschewed biodiversity offsetting as a primary strategy, viewing it as providing poor ecological outcomes and potentially a reputational risk, a critique consistent with evidence on offset market design failures in Australia (zu Ermgassen et al. 2023; Gordon et al. 2025). Additionally, purpose-ecosystem organizations (Dahlmann et al. 2020) were important translators between ecological and economic domains, shaping how businesses understand and integrate biodiversity into their decision-making.

Individual and organisational interactions: a multi-scale model

A key contribution of this research is a comprehensive and empirical understanding of the interplay between individual motivations and organisational dynamics, a dimension underrepresented in previous business-biodiversity scholarship (White et al. 2023; Liu et al. 2025; Galleli and Amaral 2026). Figure 2 presents a multi-scale model of the drivers and barriers we observed aligning with initial research on the influences of biodiversity initiatives in business (e.g. Wright et al. 2025; Booth et al. 2024).



546

547 Figure 2. *Multi-scale model of drivers and barriers for private sector biodiversity engagement.*

548 Much of the impetus for integrating biodiversity into organisational decision-making was initiated
549 by individuals in senior management or embedded in sustainability roles, consistent with previous
550 research on change agents (Walker 2006; Rauter et al. 2017) but also potentially an artefact of our
551 interviewee selection criteria. These individuals while motivated intrinsically, translated their
552 conservation values into the language of competitive advantage and reputational risk. They also
553 fostered internal cultures that prioritize ecological values and long-term stewardship, translating
554 into greater organizational commitment to nature-based solutions (IPBES 2026).

555 Despite the arguments that CSR detracts from business profits (Friedman 1963; Willness and
556 Grygoryeva 2026), our interviewees broadly demonstrated that biodiversity conservation can be
557 pursued concurrently with economic, social, and environmental value creation, a finding consistent
558 with other empirical evidence (Eccles et al. 2014). While some admitted they could potentially
559 have gained greater profits with less focus on biodiversity, many believed their focus was a
560 financial benefit rather than a hindrance.

561 Purpose ecosystem organisations (Dahlmann et al. 2020) played a critical role in helping
562 businesses interpret regulatory requirements, develop measurement frameworks, construct supply
563 chain analyses, and articulate sustainability narratives to investors and clients. Their position at the
564 interface of science, finance, policy, and practice makes them important leverage points for
565 conservation science to engage. By working with and through these organisations, conservation
566 researchers can influence how businesses understand and act on biodiversity, and also influence
567 the design and implementation of sector-wide accountability frameworks such as TNFD (2023)
568 and science-based targets for nature, ensuring business practices reflect robust ecological science
569 and include accountability mechanisms sufficient to deter greenwashing (Bull et al. 2024; zu
570 Ermgassen et al. 2023).

571 First Nations participants added a dimension largely absent from previous business-biodiversity
572 scholarship: participants' conservation motivation were grounded in cultural obligation,
573 intergenerational responsibility, and the assertion of sovereignty over Country. Several
574 interviewees' statements underscored that business can function simultaneously as a site of cultural
575 reclamation and ecological stewardship. The participant working in First Nations community-
576 corporate biodiversity market connections described how the most transformative outcomes arose
577 not from transactions but from relationships built on shared values, pointing to the relational, non-

transactional foundations of genuinely transformative biodiversity engagement. These findings align with growing evidence that First Nation-led conservation models deliver outcomes comparable to formal protected areas and are essential for achieving GBF targets (Dawson et al. 2021; Schuster et al. 2019). Supporting First Nations land management and enterprises at scale increases the likelihood that these sectors achieve meaningful biodiversity gains (Selinske et al. 2026).

Barriers and how they interact

Our three main barriers: technical, economics/markets, and governance reveal a system in which these constraints compound one another. The absence of standardized biodiversity metrics prevents market formation; the absence of robust markets reduces incentives for businesses to invest in measurement; weak measurement inhibits regulatory accountability; and poor accountability reduces public and investor pressure on government to act. This reinforces the argument for systemic rather than incremental change (Waddock 2020; Taylor et al. 2023). The saturation of sustainability frameworks (TCFD, TNFD, SBTN, natural capital accounts) was itself identified as a barrier, consistent with findings by Liu et al. (2025) that businesses struggle to navigate competing frameworks. The Accounting for Nature approach described by several participants is outcome-based, ecologically grounded, and capable of integration with financial accounts, and offers a promising model that conservation scientists should engage with and help develop (Smith et al. 2026; Ingram et al. 2024). However, our interviewees suggest that feedback loops are not deterministic: individual change agents and purpose-ecosystem organizations can disrupt them by demonstrating alternative business models, co-developing measurement standards, and building the institutional infrastructure (e.g. standardised metrics, market frameworks, norms and standards) that systemic change requires.

While government was not seen as a role model but as a laggard, several participants described a potential inflection point: as demonstration projects accumulate and market demand for biodiversity-positive products grows, the political economy of biodiversity regulation may shift. This sequential model, voluntary market demonstration precedes regulated market formation, directly mirrors the trajectory of Australian carbon markets that several participants had been involved in. Despite this benefit of pushing the government to do something, it can be argued that market and incentive-based governance is characterised by economic efficiency and responsiveness to individual preferences but that it falls short on the processes of legitimacy, accountability, transparency, and coherence that are essential for addressing complex, multiscalar environmental problems (Lemnos and Agrawal 2006; Streck 2021). For transformative change to occur, government cannot afford to be a follower. It must move aggressively by funding species recovery at the scale the crisis demands (Wintle et al. 2019), providing the regulatory backbone and standardised metrics that markets alone cannot generate, and investing in the environmental market infrastructure.

Future research and limitations

This study draws on a purposive sample of leading practitioners in the Australian business-biodiversity space. It is not representative of the broader business community but deliberately targets innovators, making it relevant for global audiences seeking to understand pathways to transformation. Future research should broaden the focus internationally, examine supply chain transparency tools in depth, investigate how biodiversity conservation is integrated into corporate storytelling, and explore how the framework proliferation problem identified here might be addressed through streamlining and standardization. There are opportunities for future studies to

test the drivers and barriers identified here against more representative samples across jurisdictions.

It is also worth noting that interviews were conducted prior to the passage of Australia's Nature Repair Act 2023, which established a national voluntary biodiversity certificate market; the perspectives participants expressed on the barriers to biodiversity market formation and government leadership may therefore reflect a transitional moment that has since shifted, and future research could usefully revisit these same practitioners to assess how the legislative landscape has changed their engagement.

Conclusion

Our research contributes to the emerging business and biodiversity literature by moving beyond classifications of drivers and barriers and highlighting how biodiversity engagement is produced through interactions across levels from individuals to organisations. We demonstrate that among industry sustainability leaders there is a drive to integrate biodiversity and business but is not uniform, nor is it driven solely by regulation or financial self-interest. Rather, it is being initiated and sustained by individuals who have found ways to align personal conservation values with organisational strategy, building business models that treat biodiversity not as a constraint but as a design opportunity. A multi-scale perspective, attending simultaneously to individual change agents, organizational dynamics, and system-level governance and market conditions, is essential for understanding where momentum for biodiversity-positive business is coming from and where the key barriers to its mainstreaming lie. Current conditions are largely incompatible with the transformative change required to reach global biodiversity goals (IPBES 2026); the individuals and organizations documented here represent early signals of what that transformation could look

like. Conservation science and practice have a critical role to play in providing the measurement tools, policy analysis, and visible proof of concept that can convert the efforts of pioneering individuals into sector-wide and ultimately systemic transformation.

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Author contributions

Matthew Selinske: Conceptualization, Data Curation, Writing – original draft, Methodology, Investigation. Georgia Garrard: Conceptualization, Methodology, Writing – review & editing. Sarah Bekessy: Conceptualization, Methodology, Writing – review & editing. Prue Addison: Conceptualization, Methodology, Writing – review & editing. All authors are based in Australia or have deep professional roots there, ensuring that the research is embedded in the national conservation and business context.

Data availability

Interview transcripts are held securely by the lead author under RMIT Human Research Ethics Approval #2021-23865-13308. De-identified summary data are available upon reasonable request.

Conflicts of interest statement

The authors declare no conflicts of interest. No funding was received from commercial or other organizations with a direct interest in the outcomes of this research.

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