



Caring policy-relevant knowledge? The case of the Brazilian Platform for Biodiversity and Ecosystem Services

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ABSTRACT

Science-policy interfaces like the Brazilian Platform for Biodiversity and Ecosystem Services (BPBES) aim to provide policy-relevant knowledge that guides decision-makers in addressing the current biodiversity crisis. At the same time, dominant approaches to policy-relevant knowledge have been widely challenged for relying on a misguided linear model that treats science and policy as separate domains, presenting the former through depoliticized ideals of neutrality and objectivity while prioritizing efficiency, standardization, and measurable outputs over transdisciplinary collaboration, inclusivity, and plurality of knowledge systems. This article focuses on “care” as an embodied, situated, and relational practice that could open pathways to policy-relevant knowledge that is inclusive and responsive to diverse human and non-human needs. Through semi-structured interviews and analysis of Summaries for Decision-Makers (SDMs) in BPBES, we investigate how different forms of care shape the content, creation process, and impact of SDMs. Our findings reveal that care is present across all of these dimensions but also that systemic barriers limit its practices. In particular, we argue that the legacy of the linear model often creates tensions with care perspectives as they can often be seen as too subjective and as threatening the credibility of BPBES. We, therefore, conclude that there remain substantial challenges to articulating a vision and practice of “caring policy-relevant knowledge” that embraces care as central to shaping relations between science and policy.

1. Introduction

Brazil is the most biodiverse country on the planet (Abranches, 2020; Inoue and Mendes, 2024), “comprising at least 10–20 % of the world’s species described to date” (Brazil, 1999). The Brazilian Platform for Biodiversity and Ecosystem Services (BPBES) was created in 2015 to link science and policy for protecting this diversity (Azevedo-Santos et al., 2017; Karam-Gemael et al., 2018). BPBES follows the model of the Intergovernmental Platform on Biodiversity and Ecosystem Services

(IPBES), aiming to create science-policy interfaces (Jagannathan et al., 2023) that produce policy-relevant knowledge and thereby allow for more effective responses to biodiversity loss at national and global scales.

BPBES and IPBES respond to the urgency of biodiversity crises with a vision of evidence-based environmental policy that has become increasingly contested because of its reliance on a linear understanding of science-policy relations. Framing science and policy as separate domains, the linear model presents scientific evidence as a neutral and

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objective basis for political decision-making (Beck, 2011). While such a framing aims to increase the epistemic authority of science by disassociating it from overt political agendas, it has also been extensively criticized for misrepresenting the complex interplay between science and society (Mahony and Hulme, 2018; Gustafsson and Lidskog, 2023) and obscuring the role of science as an instrument of modernist control that reduces nature to an object to be exploited, conserved, or managed (Turnhout and Lynch, 2024). Framing environmental sciences as neutral and objective also fails to recognize how the field has been shaped by neoliberalism, often reinforcing a narrow focus on values of productivity and efficiency (Santiago et al., 2017; Hartman and Darab, 2012; Lorenz, 2012; Temper et al., 2019; Stengers, 2016).

The linear model also creates tensions with growing attempts to embrace epistemic plurality in environmental policy (Pascual et al., 2021), including Indigenous methodologies (Chilisa, 2017, 2019; Absolon, 2022), transdisciplinary approaches (Bammer, 2016; Lang et al., 2012; Ludwig and Boogaard, 2021), co-production (Matuk et al., 2023; Tengö et al. 2017; Turnhout et al., 2020) and participatory action research (Enria, 2016; Moriggi et al., 2020; Kindon et al., 2007; Long et al., 2016). These approaches highlight that knowledge is always entangled with diverse standpoints and challenge decontextualized appeals to neutrality and objectivity as obscuring the political dimensions of knowledge production (Longino, 1990; Harding, 1993). Therefore, emphasis on epistemic plurality puts questions about the inclusion and exclusion of diverse forms of expertise into the spotlight (Ludwig et al., 2024; Turnhout et al., 2019) and challenges simplistic understandings that separate alleged non-political science and political decision making.

These contestations of the linear model point towards a fundamental challenge for science-policy interface (SPI) platforms such as BPBES and IPBES. On the one hand, both organizations increasingly aim to embrace epistemic plurality. For example, “IPBES recognizes and respects the contributions of Indigenous and local knowledge to the conservation and sustainable use of biodiversity” (IPBES, n.d.), and BPBES highlights the central role of Indigenous peoples’ knowledge of wild resources and their contribution to environmental preservation (Menezes, 2019). On the other hand, both BPBES and IPBES tend to follow institutional legacies grounded in a linear model of science-policy relations and legitimize their epistemic authority through the allegedly neutral and objective character of their research (Stålhammar, 2021; Díaz-Reviriego et al., 2019; Lahsen and Turnhout, 2021).

In this article, we address this challenge in BPBES by introducing “care” as a theoretical-methodological lens. We analyze how forms of care emerge in BPBES, and in the production and impact of Summaries for Decision Makers (SDMs). Informed by feminist (Puig De La Bellacasa, 2015; Tronto, 2013; Krzywoszynska, 2019, among others) and Indigenous and local perspectives on care (Takuá, 2022; Losito, 2022; Ressorio et al., 2024a; Ressorio et al., 2024b; Weitzman et al., 2024), we understand that SDMs involve forms of care and are more than just neutral and objective summaries of facts. Such an interpretation suggests a vision and practice of “caring policy-relevant knowledge” that embrace subjectivity and plurality as constructive elements at the interface of science and policy rather than as distorting factors that need to be eliminated in the quest for neutrality and objectivity. Yet, our findings show that prevailing norms of the linear model obscure the forms of care in BPBES. While care - for example, about preserving biodiversity and the policy impact of SDMs - is salient across our results, the expression of care is often seen as problematic and sidelined in attempts to emphasize the epistemic authority of SDMs as factual summaries free of subjective bias. As such, we find that care turns out to be both present and precarious in BPBES. Caring policy-relevant knowledge can, therefore, not be taken for granted but requires the explicit challenging of the legacy of the linear model in science-policy interfaces.

2. Theoretical framework

Care is often both ubiquitous and invisible in the creation of policy-

relevant knowledge. As Fisher and Tronto (1990, p.40) argue, care is “everything that we do to maintain, continue, and repair our ‘world’ so that we can live in it as well as possible.” Indigenous and local epistemologies frequently focus on care as integral to knowledge production, centering relational understandings that connect humans and non-humans through caring knowledge practices (Takuá, 2022; Ressorio et al., 2024b; Weitzman et al., 2024; Losito, 2022). Furthermore, feminist thinkers highlight that care is a matter of public concern and expose “how [the] social and political institutions permit some to bear the burdens (and joys) of care and allow others to escape them” (Tronto, 2013, p.32–33). Care can be unfair and unequally distributed along class, gender, and race, making care a political matter (Hankivsky, 2014; Bartos, 2018; Silberzahn, 2024; Raghuram, 2016; Barnes, 2012).

Both Indigenous and feminist care debates have emphasized relationality, reciprocity, and interdependence across species, communities, and ecosystems (Puig de la Bellacasa, 2017; Cañada et al., 2022; Silberzahn, 2024; Krzywoszynska, 2019; Ressorio et al., 2024a and 2024b). Care has been centered on “transformative thinking, politics, and alternative forms of organizing” (Puig de la Bellacasa 2017, p.8) and it can challenge the neoliberal norms of “fast science” that often bypass careful and reciprocal practices (Staffa et al., 2022; Sellberg et al., 2021; Stengers, 2016; Temper et al., 2019). In contrast to dominant neoliberal rationalities that favor autonomy, individuality, and reason, care theories prioritize well-being and relational practice that embraces emotions like empathy, responsiveness, and sensitivity (Held, 2006; Manzi et al., 2024).

The ongoing burgeoning literature on care constitutes a promising entry point for rethinking policy-relevant knowledge beyond the legacy of the linear model. Care is neither neutral nor objective but still drives scientists and shapes their engagements with environmental policy. Highlighting the forms of care at the interface of science and policy may help to foreground the subjectivities involved in these forms without undermining the epistemological importance of environmental science for environmental policy. Understanding care as shaping the interface of science and policy requires analysis of its many dimensions, including attentiveness, reciprocity, maintenance, and repair. Attentiveness involves observing and responding to the needs of others — both human and non-human — while maintaining a reflexive awareness of power relations (Krzywoszynska, 2019; Bartos, 2018). Attentiveness, therefore, requires more than attention to the data and metrics that inform biodiversity policy; it also involves the interpersonal relations and the lived realities and values of those impacted by policies.

Reciprocity emphasizes relational interdependence, acknowledging that care involves giving something back, often spanning asymmetrical power relations (Ojeda et al., 2022; Van de Pavert and Ressorio, 2023; Ressorio et al., 2024a). It connects to ideals of empathy and putting oneself in the shoes of others (Ressorio & De La Rosa, in press). Maintenance and repair are about sustaining and recovering ecosystems, practices, and relations, among others, to allow both humans and non-humans to live well in the world. Within BPBES, these could become evident in the (inter)personal relations that need to be maintained or repaired. Other forms of repair concern the practices of restoring ecosystems and bridging knowledge systems, as well as the attempts to address the gaps between science, policy, and society. BPBES itself and the people sustaining the platform could be seen as both aiming towards the maintenance of life on Earth as well as trying to repair our damaged planet through knowledge production and action in the science-policy interface.

While attentiveness, reciprocity, maintenance and repair are essential, they do not exist separate from politics. Care is political and is also permeated by unequal power relations and ethical dilemmas. Care requires constant negotiation and adaptation. Puig de la Bellacasa (2015, p.707) points out that care, although necessary, is also “messy and dirty,” often involving ethical dilemmas and moral conflicts. These dilemmas arise especially in relation to what knowledge is considered relevant, who decides, what methods are used to decide, and under what

conditions the policy-relevant knowledge is created. The decisions about which perspectives, approaches, and rationality shape what is included or excluded (Giraud, 2019) have real consequences on the impact of the assessments. Analyzing BPBES through a care lens, therefore, highlights the complexity of relations between Summaries for Decision-Makers and processes that shape their creation. While summaries are often presented as neutral and objective summaries of facts, their creation is shaped by messy relations of care that are permeated by tensions, efforts, and political ambitions.

3. BPBES: an overview

During the IPBES Americas Regional Assessment in Bogotá (July 19 to July 23, 2015), a group of Brazilian experts decided to produce a national assessment using IPBES's pre-established concepts and structure (Padgurschi and Joly, 2017). BPBES emerged from this initiative and included around 100 scientists from various Brazilian universities and research centers - currently, the number of scientists involved fluctuates according to the needs for specific assessments. BPBES operates as a bottom-up initiative led by scientists and independent of direct government control (Scarano et al., 2019). Although 85 % of its funding comes from government sources, BPBES maintains autonomy, relying on partnerships with organizations such as the Brazilian National Council for Scientific and Technological Development (CNPq), the BIO-TA/FAPESP Program (Fapesp, n.d.), and the Brazilian Academy of Sciences (ABC).

Initially conceived as a working group under the Brazilian Society for the Progress of Science (SBPC), BPBES evolved into a permanent platform emphasizing a decentralized and collaborative model (Padgurschi and Joly, 2017). The organization includes an executive coordination team, a techno-scientific council, and a diverse pool of volunteer researchers, apart from those receiving grants or employed for text revision and communication (BPBES, n.d.). In 2018, BPBES launched its first Brazilian Assessment on Biodiversity and Ecosystem Services, which highlighted the state of national ecosystems. Since then, it has produced

special reports on pollination, restoration, water resources, and other critical topics - see Table 1.

BPBES's independence from government and other institutions is central to its credibility and claims of objectivity and neutrality, but it is also a source of several challenges (Scarano et al., 2019). For example, fundraising and stakeholder engagement necessitate continuous efforts that can be resource-intensive, time-consuming, and may exceed the skill set of the participants, who work voluntarily and accumulate many other academic functions and responsibilities. While BPBES envisions producing a "living document" that fosters ongoing dialogue and adaptability (Scarano et al., 2019), this goal is difficult to sustain given the limited resources and the fact that the authors are overburdened with academic responsibilities. While BPBES executive coordination anticipated issues such as fatigue and disengagement among participants in 2019 (*ibidi*), from our research it seems that it remains a constant challenge. These challenges illustrate both the BPBES's objectives to connect science, policy, and civil society, offering valuable insights into science-policy interfaces in Brazil (BPBES, n.d.; Scarano et al., 2019), and the need for further reflection on how care practices might address these challenges and sustain its potentially transformative role for biodiversity conservation policies in the country (Scarano et al., 2019).

4. Methodology

To investigate the forms of care in BPBES's Summaries for Decision-Makers (SDMs), we employed qualitative methodologies comprising semi-structured interviews and document analyses. Ten online semi-structured interviews (Roulston and Choi, 2018; Hesse-Biber, 2013) were conducted by the first author between May and September 2024. She conducted interviews with four members of the Executive Coordination, two members of the Technical Coordination, one researcher who specialized in text revision and communication, and three authors who contributed to specific thematic SDMs. Nine out of ten interviewees were involved in BPBES's SDMs as co-authors, reviewers, or in other supporting roles. The one exception provided support to the main coordination team during the platform's early development, assisting in scoping its goals, coordinating with the main authors of the first assessment, and drawing from their experience with IPBES SDMs. The participants were invited for the interview via e-mail, and the online interviews lasted from 45 min to 2 h. Interviews were recorded and transcribed using Microsoft Teams® transcription software.

During the semi-structured interviews, participants were invited to share their personal understandings of care, their perspectives on the work of the SDM creation processes, their visions regarding the challenges and opportunities in working with BPBES and policy-relevant knowledge, among others. Key questions included: *What are the gratifying and challenging aspects of working with BPBES? What does care mean to you in the context of BPBES? What practices do you associate with care in creating the SDMs? How do you perceive the role of policy-relevant knowledge, and how does it differ from scientific knowledge?* (see full interview guide in Annex 1). The interview approach aimed to be flexible, allowing participants to discuss these topics, including understandings of care, on their own terms. Therefore, the interviewer provided minimal theoretical framing until the end of the interview questions.

In addition to the interviews, a qualitative content analysis (Leavy, 2017; Roller and Lavrakas, 2015) of seven SDMs published by BPBES - see Table 1 - was conducted. This analysis aimed to identify explicit and implicit expressions of care in the content, structure, and language of the documents. For that, we used direct quotations - translated into English - from the SDMs and interviewees. Interviewees were randomly numbered, and after each quote, we placed between parenthesis I and a randomized number (for example, I3 refers to interviewee 3).

The document analysis involved multiple rounds of reading: an initial review to familiarize ourselves with the documents (also to prepare for the interviews), followed by a detailed analysis process to extract themes and patterns related to care aspects such as maintenance,

Table 1
Summary for Decision-Makers Information and Reference Number.

Ref. n.	Assessment original name: Sumário para Tomadores de Decisão	Translation to English: Summary for Decision-Makers (SDM)	Year	N. of pages
1	1º Diagnóstico Brasileiro de Biodiversidade & Serviços Ecossistêmicos	1st Brazilian Diagnosis of Biodiversity & Ecosystem Services	2018	15
2	Relatório Temático sobre Polinização, Polinizadores e Produção de Alimentos no Brasil	Thematic Report on Pollination, Pollinators and Food Production in Brazil	2018	11
3	Relatório Temático Água: Biodiversidade, Serviços Ecossistêmicos e Bem Estar Humano no Brasil	Thematic Report on Water: Biodiversity, Ecosystem Services and Human Well-being in Brazil	2019	11
4	Relatório Temático sobre Restauração de Paisagens e Ecossistemas	Thematic Report on Landscape and Ecosystem Restoration	2019	20
5	Potência Ambiental da Biodiversidade: um Caminho Inovador para o Brasil *Mudanças Climáticas	Biodiversity Environmental Power: an Innovative Path for Brazil *Climate Change	2020	20
6	1º Diagnóstico Brasileiro Marinho-Costeiro sobre Biodiversidade e Serviços Ecossistêmicos	1st Brazilian Marine-Coastal Diagnosis on Biodiversity and Ecosystem Services	2023	36
7	Relatório Temático Sobre Espécies Exóticas Invasoras, Biodiversidade e Serviços Ecossistêmicos	Thematic Report on Invasive Alien Species, Biodiversity and Ecosystem Services	2024	24

attentiveness, reciprocity, repair, empathy, responsibility, among others. Special attention was given to the tensions between (a) expressions and terms such as “neutrality” and “objectivity”; and (b) relational aspects associated with and needed for a caring approach.

In addition, MSc thesis research was carried out by our second author in 2021 and 2022. This study draws on qualitative research including ten interviews and document analysis of twelve reports (including SDMs 1–6), to examine BPBES as a boundary organization and its engagement with Indigenous Peoples and Local Communities (IPLCs) (De Fusco, 2022). For this article, the secondary data from the MSc research was used, especially in the BPBES contextualization, analysis, and discussion. These data provided context to understand BPBES’s efforts to integrate diverse knowledge systems and foster inclusivity in its practices.

Inspired by feminist research methodologies, the authors engaged in continuous dialogue to reflect on how their positionalities influenced the questions, data interpretation, and writing process (Harding, 1993; Hesse-Biber, 2013). The first and the second authors are early-career women researchers: the first specializes in more-than-human care and feminist research approaches, while the second brings knowledge about boundary organizations and biodiversity governance. The third and fourth authors are senior men researchers with extensive experience in investigating knowledge diversity and addressing the ontological and epistemological challenges of putting different forms of knowledge into dialogue. Finally, the last author is a senior woman researcher with extensive experience and involvement in IPBES and science-policy interface debates and critiques. Two out of the five researchers are Brazilian, while the others are European. We considered how our standpoints influenced the questions we asked in the interviews, the document analysis, and the processing of the data (Hesse-Biber, 2013).

5. Care in BPBES

When investigating what forms of care emerge in BPBES’ production of policy-relevant knowledge, we focused on (5.1) the content in Summaries for Decision-Makers, (5.2) the processes of developing these summaries, and (5.3) their impact on policy.

5.1. Care in the content of SDMs

This section presents our key findings about care in the content of the SDMs. We argue that (1) care is present in SDMs through notions of maintenance, repair, and the plurality of perspectives they accommodate, that (2) explicit care terminology is largely absent, and that (3) the emphasis on efficiency and efficacy creates tensions with a more substantive care discourse in the SDMs.

In the SDMs, care most explicitly emerges through the emphasis on ecological restoration associated with notions of maintenance and repair:

“The maintenance and restoration of natural areas” (SDM 2, 2018, p.14)

“Investing in biodiversity conservation and restoration” (SDM 1, 2018, p.12)

“Maintaining the ecosystem service of pollination requires heterogeneous landscapes that are managed in a pollinator-friendly way, providing vital resources for these animals, such as a diversity of food sources and nest-building sites.” (SDM 2, 2018, p.11)

While the first two sentences express the maintenance and repair aspects of care, the third quote reflects the multifaceted nature of care, involving both human and non-human needs. Multifaceted needs are also highlighted regarding human communities, emphasizing the plurality of stakeholders in the process of biodiversity conservation.

“Good governance also requires objectivity, commitment, transparency, and comprehensiveness, ensuring inclusion and plurality of ethnicities, genders and generations. The ability to adapt and adjust to the scale of the problem at hand is essential, as is reducing the fragmentation of public policies, with a consequent increase in their efficacy, efficiency, and effectiveness. (SDM 6, 2023, p.8 & 9)

This quote exemplifies the tensions of an approach to care: on the one hand, it embraces plurality and inclusion as essential for environmental policy; on the other, it relates these efforts to the language of efficiency, efficacy, and effectiveness, which aligns with a technical and more linear approach to complex issues. This tension brings our attention to the broader challenges of integrating care into SDMs and BPBES more broadly - it highlights the challenge to balance relational, subjective, and inclusive aspects of plural care with policy and scientific standards and demands for measurable outcomes.

Other studies have also pointed to limitations in the ability of BPBES (De Fusco, 2022) and SPIs more generally to embrace plurality (Díaz-Reviriego, et al., 2019). Here, we highlight four challenges of inclusive co-production involving diverse knowledge holders and systems. First, BPBES does not carry out new research but documents and summarizes existing knowledge, thereby often reproducing epistemic exclusion and biases of existing research. Second, most researchers working in BPBES are biologists and ecologists who lack methodological training for co-production. Third, financial and other resources often limit co-production. Fourth, researchers struggle to establish and maintain long-term relationships required for substantial co-production with communities (De Fusco, 2022).

Beyond questions of plurality, care also emerges in the SDMs in relation to the well-being of humans and non-humans, including poverty reduction and multiple benefits of ecosystem services.

“Ecosystem-based adaptation, while conserving or restoring/repairing natural resources, sequestering or storing carbon, also has the potential to reduce poverty.” (SDM 1, 2018, p.18)

“The incorporation of the concept of ecosystem services in the implementation of enterprises has great potential to produce solutions that benefit multiple sectors. Various organizations that guide project financing have already instructed the adoption of the ecosystem services concept in studies that precede their implementation.” (SDM 3, 2019, p.14)

The complexity of navigating between demands for efficiency, care for biodiversity and plurality is not only apparent in the SDMs but is also reflected in the interviews. Some interviewees embraced the possibility of making these care aspects more explicit in the SDMs:

“Could it be that if we change our ways and bring affection, care, and reciprocity into our documents, we couldn’t we be able to touch more hearts and bring about broader changes in behavior?” (I10)

However, other interviewees expressed discomfort with this approach, suggesting that such concepts should remain implicit in their practice rather than explicitly stated in the reports. For example:

“I think it would fit, maybe, subliminally, you know? As something to keep in mind, right? Maybe, when it comes to thinking about the theme of choosing partners, thinking about messages. I don’t think it’s possible, as (the document) is more pragmatic, more technical. I don’t know to what extent they can absorb this, but I think subliminally it might be interesting to have this in the back of the mind.” (I1)

“I don’t think it would take away credibility, but it would make the conversation more difficult. Yes, because whether you like it or not, you’re inserting degrees of subjectivity and that’s always something that’s very complex. But I think it can be worked on. I, for example,

wouldn't have that ability. It's something I'd have to be trained in, I'd have to learn how to work" (I2)

With these mixed perspectives and tensions on the forms of care in the BPBES assessments, we shift our focus to the process.

5.2. Care in the SDM-making process

In analyzing care in the process of producing SDMs, we focus on (a) motivations, (b) institutional and epistemic structures, and (c) interpersonal dynamics. Considering (a) motivations in creating SDMs, many interviewees emphasized that care is central to the BPBES' mission and work of synthesizing trustworthy knowledge on biodiversity for a wider audience:

"So I think caring [within BPBES] is to think that there are people who are dedicating part of their lives voluntarily for a greater benefit, for as many people as possible. Because we take what the scientific community is saying, digest it, summarize it, organize it, and deliver it. Even though there are those challenges I told you about, I think that's care." (I7)

Similar perspectives were shared by all interviewees, who highlighted care for biodiversity, care for producing relevant knowledge, care for ensuring accessibility, among others. Many interviewees expressed personal gratitude for being part of this process, viewing their involvement as an investment in synthesizing knowledge that could influence change. It also became evident that individual and collective communication efforts went beyond the standard structure and procedures, showing personal and collective care and attentiveness to the process. To illustrate that, interviewees highlighted the importance of careful communication and empathy when making scientific knowledge accessible to a broader audience:

"We care when we make infographics. We care when we make videos explaining, when we make short videos. We care when we hire a communications advisor who is a specialist to help disseminate it on the radio, on TV, everywhere." (I3)

"I understood that the other person always has something important to say. So we need to listen to others in order to incorporate and exchange what is relevant in this process. [...] This process of dialogue based on what science produces is an effort of empathy — putting oneself in the other person's shoes." (I6)

The (b) institutional and epistemic structures discipline the SDMs into standardized procedures (following IPBES formats) while deemphasizing subjectivity, but care remains expressed through the production, synthesis, and communication of knowledge:

"We try to use easy language, try to be assertive, but you can't be prescriptive, so there's a whole pattern we follow" (I6)

These patterns are based on scientific platform rules that policy-relevant knowledge should be neutral, 'policy-relevant, yet not policy-prescriptive' (IPCC, n.d.; see also Watson, 2005; Beck, 2011; Turnhout et al., 2016). While this has been extensively criticized as depoliticizing (Turnhout et al., 2013, 2016; Turnhout, 2024; Beck, 2011, Beck et al., 2014; Karhunmaa, 2020; Räsänen et al., 2024), one interviewee argued that such approach is fundamental for policy-relevant knowledge:

"It is a transparent process, and it must *truly be independent*. The chapter coordinators lead the writing and manage the authors and collaborators. [...] It's approached with a *strong sense of neutrality*, right? We cannot have any political bias, so it's based on science — what key information we want to convey, whether it hurts or not, but that's it. [...] It was a *transparent, independent, and neutral process*." (I9)

Although this interviewee appeals to a "strong sense of neutrality," this sentiment is not shared among all interviews and documents analyzed. Indeed, the interviewees consistently highlight that policy-

relevant knowledge is different from academic knowledge in the format and communication strategies:

"I understand that it is a type of knowledge that, first of all, is very *synthesizing*, right? It brings up the main points. It brings up the main information, right? It has to use colloquial language while still being precise. I believe it also needs to be visually appealing and graphically attractive." (I8)

"I think that when it comes to building the summary, how you communicate your results is much more relevant because the data itself will be a tool. It won't be the central thing - I think communication is the central thing in the summary." (I5)

"Yes, it is (different). It's a more translated and simplified language [...]. The full scientific report with data is more robust and has a very scientific language that, in a way, only serves the academic community." (I9)

Although the SDMs look different from academic papers and aim to be more accessible, the authors also highlight that policy-relevant knowledge is always based on scientific knowledge and evidence. The following quotes highlight the usability and the trustworthiness some interviewees believe must be considered for policy-relevant knowledge:

"In ecology, there's always uncertainty [...] We bring a certain amount of information because these are complex systems with very particular dynamics, which is very difficult for the decision maker. They want to know, 'What do I do?', 'Do I release or not release this species?' 'Do I plant or not plant?' 'Am I going to get this result in the end or not?' [...] The effort is about how to operationalize this information so that it arrives in a format where the decision maker can make a choice, understanding the risks, opportunities, and possibilities from there." (I4)

"Scientists have difficulty in making complex and deep things *usable*. So I think we take great care in the production of the scenario, in the process, in providing information, in writing in a way that is understandable and trustworthy." (I6)

A care perspective invites reflexivity about what is considered relevant for decision makers. Knowledge is deeply tied to who creates it (Harding, 1993), and appeals to relevance are mediated by "how systems of domination shape or limit research questions, methodological decisions, conceptual frameworks, models, assumptions and interpretations of data" (Staffa et al., 2022, p. 49). Aware of such challenges, I10 discusses the difficulties of meeting the needs for what are considered absolute truths that could make decisions easier and more predictable:

"Whether we like it or not, science positions itself as an unquestionable truth, which we know it is not. [...] And decision makers, especially legislators and executives, want *truths*. They want you to tell them what the deforestation rate is, and how many species there are [...] they want absolute truths. What I think we can contribute is showing that this knowledge is also being constructed, deconstructed, and co-constructed throughout history, right?" (I10)

Four out of the ten interviewees explicitly expressed critical reflections about relevance and authority. However, our content analysis and interviews also indicate that they remain in tension with the prevalence of scientific approaches that tie trustworthiness to neutrality and the elimination of any subjective elements.

The (c) interpersonal dynamics add further complexity to the knowledge-making and summarizing process. The interviewees noted the challenges of working with diverse stakeholders, diverse disciplines, and difficulties in managing interpersonal dynamics within the Platform work:

"You can imagine when you get a group of researchers together — all senior researchers, all experts in their fields — there's an instant

clash of egos, which is also quite big and sometimes difficult to manage. We didn't have any serious problems, but you're often walking on eggshells. That was the hardest thing for me — to maintain a group where people brought their opinions, and those opinions were considered and evaluated." (I3)

"I found it quite challenging, this issue of having many authors, you know? People needed to understand what their role was because a lot of people think their role is to be a text editor, right? [...] 'I need you to send me a paragraph or half a paragraph. You're the specialist, so write the paragraph on this'." (I6)

The care literature emphasizes that tensions and conflicts are an integral part of care (Bartos, 2018; Cox, 2010). Puig de la Bellacasa further highlights that it is essential to ensure "accountable knowledge construction that does not negate dissent" (2017, p.79). Maintaining good interpersonal dynamics is a crucial part of the care embedded in BPBES, which, in our analysis, reflects both the rewarding and challenging aspects of collaborative work. While there seem to be different positions, perspectives, and opinions, interviewees often expressed the experience as meaningful, learning-full, and gratifying, based on what they described as a caring environment created between authors.

5.3. Care for policy impact

BPBES's mission to "produce syntheses of the best available knowledge," (BPBES, n.d.) for biodiversity conservation reflects its care for sustaining diversity of life in Brazil. While the impact on conservation is an essential component of the mission of BPBES, interviewees noted the challenges in tracking the influence of their work:

"We map very poorly the impacts of the platform [...] We don't have mechanisms for this." (I1)

"I never had time to map that out." (I9) - Referring to the impact of the actions taken based on the summaries.

Many interviewees recognize a need to spend more time and effort to increase and map impact after the report is published, including advertising and having workshops. In 2022, data retrieved from the platform showed that the majority of document downloads came from: 70 % universities, research institutes, and students; 9 % government sector; 7 % civil society; 6 % private sector; 1 % multilateral organizations; 1 % press/media; 6 % others (De Fusco, 2022, source: BPBES). This contributes to the understanding that the impact on decision- and policymakers has been more limited than planned.

Some interviewees provided concrete examples of how the reports have been used in policy discussions but also highlighted the challenges regarding policy influence. They talked about evidence that the Brazilian National Ministry of Environment has been using the reports and has been inviting some of the authors more frequently for meetings and consultations. One example is related to SDM 2 that resulted in an actionable policy minutes:

"We drew up a draft of a national pollination policy together with the Ministry of Agriculture, but later, with the new changes [in the National Government politics - referring to Bolsonaro's Mandate], it stopped. So, I really don't know how much progress has been made." (I4)

The quote reveals the challenges in ensuring that the care put into making the reports has long-term results, policy commitments, and real-world impact. External factors such as national politics and institutional limitations often interfere with the reach and effectiveness of the reports:

"We were unlucky in that. We were finishing our reports and launching when there was a change of government, so let's say that the environment wasn't very high on the previous government's agenda [referring to the Bolsonaro government mandate]." (I3)

These issues connect not only to structural and systemic politics but also to (inter)personal dynamics, as shown in the response below:

"I think that one of the platforms' challenges is the fact that it's not an institution, let's say, it doesn't have a CNPJ [National Register of Legal Entities], it doesn't have a Secretariat, it doesn't have that. This makes logistics very difficult for us to ensure that this operational effort that the platform requires can be made possible, for example, with more autonomy [...] if someone wants to invest in the platform, we can't receive that money. There's no legal mechanism to make it possible." (I4)

"The best people, the best data, the best design, I think everything is being done, but we still can't do the other step, which is to get this material to everyone. [...] Maybe we haven't launched it in the best way, have we? Maybe we haven't publicized it in the best way, and that's not because "Oh, people aren't interested?" No, it's because the platform has no resources, and the people working on the platform were volunteers. In addition to supervising X number of students, giving X number of hours, and being involved in the construction of public policies, we also have to coordinate a platform and make sure that the information reaches everyone. There's no way [we can do all of that]." (I6)

These reflections show that, despite the interviewees' and platform's best efforts, external political and financial constraints, as well as (inter)personal dynamics and procedural issues, significantly limit the ability of care to go beyond permeating the work put into the SDMs and the interpersonal relations. As a result, BPBES struggles to systematically impact and transform decision-making by means of policy-relevant knowledge, which limits, in turn, its impacts on biodiversity conservation.

6. Discussion: care and the legacy of the linear model

In environmental policy, linear understandings of science-policy relations shape organizations like BPBES, incentivizing them to frame policy-relevant knowledge as apolitical, neutral, and objective (Beck, 2011; Beck et al., 2014; Compagnon and Cramer, 2016; Mahony and Hulme, 2018; Gustafsson and Lidskog, 2023). As such framings sideline knowledge plurality and obscure political agendas deeply ingrained in environmental policy (Turnhout, 2024), this article has analyzed policy-relevant knowledge production in BPBES through the lens of care rather than as a neutral summarization of facts.

Regarding the **content** of the assessments, SDMs do not directly mention terms like "care," "reciprocity" and "empathy". Some interviewees suggested that introducing more explicit care terminology could 'touch hearts', meaning that it could gain the attention of new audiences and even shift practices. Others were concerned about overtly subjective language tainting the credibility or objectivity of the report as a factual synthesis of evidence and knowledge. The question of whether care-related terminology fits into the SDMs directly relates back to the tension of neutrality being simultaneously seen as limiting and as an essential component of conveying epistemic authority along the linear model of science-policy relations.

This is not to say that care-related terminology is entirely absent in the SDMs. Care is expressed through the use of terms like "repair", "maintenance", and "restoration". These terms reflect the commitment of BPBES members to sustaining socio-ecological systems and show some openness to making care for biodiversity an explicit part of SDMs. At the same time, this language remains tied to technical demands of efficiency in environmental policy, restricting care largely to contexts where it can be translated into standardized and scalable practices with quantifiable impact. Care, in its more substantive complexity, as outlined in our theory section, currently has a very limited place in the structures that shape the content of SDMs.

Similar tensions emerge regarding the **process** of producing BPBES

assessments. We noted that experts care deeply about ensuring that the assessments are relevant, accessible, and understandable for decision-makers. Our findings also show that these aspirations often reinforce a linear model in which appeals to the neutrality and objectivity of scientists become the core strategy for communicating authority to decision makers. As such, the process often puts aside overtly affective or political aspects of care while catering to what I10 described as decision makers' demand for "absolute truths." Yet, these appeals to "absolute truths" point to unresolved tensions with BPBES's ambition of inclusiveness towards plural forms of knowledge and perspectives. For example, it has been widely argued that the extraction of Indigenous knowledge for academic purposes often does more harm than good (Alcoff, 2022; Ludwig and Polisele, 2018; Kimmerer, 2012). If Indigenous knowledge is reduced to supplementary data for mainstream science and governance, it becomes detached from Indigenous and local practices and livelihoods. Recognizing that plural forms of knowledge are always entangled with socially situated standpoints (Harding, 1993; Haraway, 1988), however, threatens the linear narrative of policy-relevant knowledge being independent from politicized issues such as Indigenous struggles for self-determination.

Furthermore, inclusive collaborations do not merely require theoretical challenges of the linear model but also interpersonal care in fostering transdisciplinary knowledge production, including conflict resolution, facilitating collaboration, and ensuring inclusivity (Sellberg et al., 2021; Milberg Muñiz et al., 2024; De La Rosa et al., 2024). Feminist thinkers have argued that more caring forms of research require a commitment to participatory and collective work (Mountz et al., 2015; Staffa et al., 2022). They involve slowing down (Stengers, 2016). The imperative of efficiency, however, makes it difficult to develop such caring practices, threatening to stifle the capabilities to care for ourselves and others (Mountz et al., 2015; Manzi et al., 2024). This issue becomes particularly pressing regarding BPBES's and other SPI platforms' ability to engage meaningfully with Indigenous and local ontologies (Díaz-Reviriego et al., 2019). As SDMs are presented as objective scientific summaries, knowledge based on non-modern ontologies often appears incommensurable with dominant framings. Indigenous ontologies, including practices of care, may, therefore, appear too subjective to fit into SDMs. As Staffa et al. (2022) note, modern science often creates a binary that sidelines emotions, associating them with the private sphere and deeming them inappropriate for the objective sphere of research. This exclusion and separation become particularly striking regarding what is considered subjective, as well as Indigenous and local practices of care, limiting BPBES's ability to realize its ambitions of plurality and inclusivity.

Finally, we turn to **impact**, which is where a considerable part of BPBES's mission is intended to be realized. As much as interviewees personally and professionally care about impact, the assessments' actual impact routes are often undermined by bureaucracies, political contestation, academic overburden, economic priorities, resource limitations, and epistemic challenges. Furthermore, having an impact through "policy relevance" often means focusing on utility rather than care (Prattes, 2023) and showcasing efficiency rather than subjectivity or reciprocity toward biodiversity. Even if concern about impact was evident across the interviews, the modern and linear model, as well as the wider interpersonal and systemic/institutional challenges into which BPBES is currently inserted, does not provide many openings for care and impact in substantive ways.

In sum, care is present but also strikingly precarious across all three dimensions - content, process, and impact - investigated in this study. Of course, BPBES members care about biodiversity. It drives their involvement in the platform, is reflected in the content of the assessment, and is articulated in the desire to have an impact on policy and decision-making. At the same time, the forms of care often remain superficial and are severely restricted by the neoliberal, economic, systematic, institutional, and epistemic set-up of BPBES, striving to provide neutral and objective knowledge in efficient and usable ways. These

restrictions risk reproducing a simplistic linear model of science-policy relations while also threatening the ambitions of BPBES to include diverse actors, with plural forms of knowledge and care, in the assessment production.

7. Conclusion: caring policy-relevant knowledge?

The title of this article remains a question as the results indicate substantial challenges to producing and practicing caring policy-relevant knowledge in the content, process, and impact of the SDMs. At the same time, our findings are not exclusively negative. Care is present across each of the investigated aspects of BPBES, highlighting the possibility that "another knowledge is possible" (Escobar et al., 2020; Turnhout, 2024) that embraces its affective, subjective, messy, political dimensions and allows for a more caring policy-relevant knowledge. Rather than presenting a sterile dichotomy between policy-relevant objective facts and policy-irrelevant subjective care, such a vision of caring policy-relevant knowledge could guide BPBES and other SPI platforms toward a more nuanced understanding of the complexity of knowledge production while opening research and governance toward diversity and plurality in knowledge and care.

Articulating such vision and practice of caring policy-relevant knowledge, however, requires more than just mentioning care in the discourse and content of SDMs. Discourse without practice risks reproducing buzzwords — empty language used to attract attention but disconnected from real-world practices (Cornwall, 2010; Ludwig et al., 2024). Care is a powerful concept, but its transformative potential lies in its intrinsic relationship with practice. As care terminology gains prominence in academic and political spaces, especially post-COVID-19 (Holemans et al., 2021; Lula, 2023; The Care Collective, 2020), a substantive articulation of caring policy-relevant knowledge would have to provide more than just fashionable care terminology and appeals to care theory. Much like other trending concepts, care can be diluted, co-opted, or even weaponized in ways that replicate colonial harms (Prattes, 2023).

One strategy for moving from care discourse to care practice is to build stronger transdisciplinary commitments. Transdisciplinarity, however, requires continuous training to develop transdisciplinary skills and sensitivities (Deutsch et al., 2023), resource availability, and collaborative processes that value inclusivity even when it comes to tension with dominant understandings of relevance and efficiency. Plural actors like policymakers, scientists, and local communities bring diverse priorities, expectations, epistemologies, ontologies, and values that do not always form a harmonious whole. Negotiations and dialogues are, therefore, necessary (Puig de la Bellacasa, 2017). Consequently, caring policy-relevant knowledge may require stepping away from comfortable narratives of transdisciplinarity that are based on frictionless notions of knowledge integration (Klenk and Meehan, 2015) or on ideals of win-win solutions. Care in transdisciplinary processes demands reflexivity in questioning comfortable assumptions, willingness to work through conflicts and tensions, and commitment to building new relations (Gottschlich and Katz, 2019; Staffa et al., 2022). This approach not only benefits policy-relevant knowledge creators but also could offer decision-makers an opportunity to shift perspectives and practices.

Navigating between policy demands for factual research assessments on one hand and the relational character of care on the other it remains a core challenge. While we recognize that policy-relevant knowledge must remain accessible and credible, creating a space for care will also require addressing the deeply entrenched legacy of the linear model in science-policy interface platforms like BPBES. Specifically, we suggest that policy-relevant knowledge cannot afford to strip away the situated, relational, and embodied aspects of care in the process. After all, the transformative role of care lies in its ability to weave together discourse, practice, and relationality to create knowledge that is not only relevant but also affective and ethical.

CRediT authorship contribution statement

Esther Turnhout: Conceptualization, Supervision, Validation, Writing – review & editing. **Giulia De Fusco:** Resources, Investigation, Writing – review & editing, Validation, Methodology. **Charbel El-Hani:** Supervision, Writing – review & editing. **David Ludwig:** Funding acquisition, Writing – review & editing, Supervision, Conceptualization. **Adriana Ressorio C.:** Formal analysis, Writing – original draft, Investigation, Conceptualization, Methodology, Project administration, Data curation, Writing – review & editing.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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ANNEX 1: Full interview guide

Original questions in portuguese	Questions translated to English
Personal and BPBES	
1 Qual é o seu nome completo?	What is your full name?
2 Qual é a sua formação e especialização?	What did you study and what is your area of expertise?
3 Desde quando você trabalha com o BPBES?	Since when do you work/collaborate with BPBES?
4 Qual sua(s) função(ões) no BPBES?	What is your role(s) within BPBES?
5 O que te motivou a trabalhar com o BPBES? Porquê esta Plataforma?	What motivated you to work with BPBES? Why this Platform?
6 Quais aspectos do trabalho com a Plataforma você considera gratificante e quais você considera desafiador?	Which aspects of working with the Platform you find more gratifying and which ones are more challenging?
(a) [se ainda não respondeu] Quais são os atores/público que o material da BPBES atinge?	(a) (if not answered yet) which is the main audience that BPBES's materials reach?
7 Vem a mente algum caso concreto em que tomadores de decisão utilizaram/utilizam as publicações da BPBES para alguma tomada de decisão ou uma política pública?	Do you have in mind any concrete case where decision-makers used/or are using the BPBES assessments for a decision-making process or a policy?
8 Me corrija se eu estiver errada, mas pra essa pesquisa eu parto do pressuposto de que os sumários para os tomadores de decisão produzem um conhecimento que é relevante para informar as políticas para a biodiversidade. Certo? Considerando isso o que é que você entende por conhecimento relevante para os tomadores de decisão?	Correct me if I'm wrong, but for this research I'm assuming that summaries for decision-makers produce knowledge that is relevant to inform biodiversity policy-making. Right? Considering this, what do you understand by relevant knowledge for decision-makers?
(a) Você acha esse conhecimento é diferente do conhecimento científico?	(a) Do you think this knowledge is different from scientific knowledge?
9 Você poderia me contar um pouco sobre o desenvolvimento dos sumários para os tomadores de decisão. E como foi/é a sua participação? E mais especificamente, como é o processo de decidir o que entra e o que não entra nesse sumário?	Could you tell me a little about the development of the summaries for decision-makers? And what was/is your role in this process? More specifically, how is the process of deciding what is included and what is left out of these summaries?
10 No seu trabalho, escrevendo os sumários para os tomadores de decisão, você percebe alguma tensão/conflito entre o processo de criar o conhecimento e o processo da prática (no caso implementar as políticas)?	In your work writing summaries for decision-makers, do you notice any tension between the process of creating knowledge and the process of practice (in this case, implementing policies)?
Care & More-than-human care	
11 Em poucas palavras, quando falo cuidar ou cuidado, o que é que lhe vem primeiro à mente? (um sinônimo, talvez)	In a few words, when I say care or caring, what comes to your mind first? (perhaps a synonym)
12 O que é uma relação cuidadosa para você?	What is a caring relations in your view?
13 O que você diria que é uma forma de cuidar da biodiversidade?	What would you say is a way to care for biodiversity?
(a) Você consegue pensar em algum exemplo de relações (entre humanos e biodiversidade) que você acha cuidadosa?	(a) Can you think of any examples of relationships (between humans and biodiversity) that you consider caring?
14 Quando pensa em cuidar ou cuidado no âmbito da BPBES, o que é que lhe vem à mente?	When you think of care or caring within the BPBES, what comes to mind?
15 O que é que voce diria que é uma forma explicita de cuidado nos sumários para os tomadores de decisao?	What would you say is an explicit form of care in the summaries for decision-makers?
16 O que é que você diria que é uma forma implícita de cuidado nos sumários para os tomadores de decisao?	What would you say is an implicit form of care in the summaries for decision-makers?
Care & Policy-relevant Knowledge	
17 Você acha que o tipo de conhecimento que você produziu/sumarizou para os relatórios influenciou a sua forma de cuidar (nesse caso, mais especificamente dos seres da natureza)?	Do you think the type of knowledge you produced/summarized for the reports has influenced your way of caring (in this case, more specifically for beings in nature)?
(a) E a sua forma de cuidar (também em relação à natureza) influencia o conhecimento produzido?	(a) And does your way of caring (also in relation to nature) influence the knowledge produced?
18 Existe alguma forma em que o tipo de conhecimento relevante para as políticas poderia ser mais cuidadoso?	Is there any way in which the type of knowledge relevant to policies could be more caring?
(a) Como? Se não, por quê? Quais são os impedimentos?	(a) How? If not, why? What are the barriers?
More informal reflections at the end when with time	
19 Na minha pesquisa, aprendi que o cuidado entre humanos e natureza tem a ver com práticas quotidianas do dia a dia; que ele baseia-se em relações de interconexão e interdependência entre humanos e não-humanos e na reciprocidade entre espécies. Tem também um aspecto autorreflexivo. Tem como objetivo de que muitos (humanos e não humanos) possam florescer juntos. Finalmente tem também o potencial de	In my research, I learned that care between humans and nature has to do with everyday practices; that it is based on relationships of interconnectedness and interdependence between humans and non-humans, as well as reciprocity between species. It also has a self-reflective aspect. Its goal is for many (humans and non-

(continued on next page)

(continued)

	Original questions in portuguese	Questions translated to English
	ampliar o olhar sobre as relações de cuidados humanos e não humanos. O que pensa sobre isso?	humans) to flourish together. Finally, it also has the potential to broaden perspectives on human and non-human care relationships. What do you think about this?
20	Trabalhando com as quebradeiras de coco babaçu (MIQCB), aprendi que o conflito muitas vezes acaba coexistindo com o cuidado, permitindo que elas possam cuidar da e com as palmeiras de babaçu. Você vê essa coexistência de cuidado e conflito como algo também presente no trabalho da BPBES?	Working with the babaçu coconut breakers (MIQCB), I learned that conflict often coexists with care, enabling them to care for and with the babaçu palm trees. Do you see this coexistence of care and conflict as something also present in what BPBES does?
21	Tem alguma pergunta que você gostaria de fazer para mim? Alguma sugestão ou reflexão baseada na nossa conversa?	Would you like to ask me something? Any suggestion or reflexion from this conversation?

Data availability

The authors do not have permission to share data.

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