Towards a More Than Human Assessment of Marginal Landscapes Through the Life Framework of Values

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Abstract. Anthropocentric approaches and utilitarian metrics have long dominated the assessment of marginal landscapes. Despite recent advances promoted by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) – which shift the focus from Ecosystem Services to Nature's Contributions to People (NCP) – such frameworks still struggle to recognise the full range of nature's values, particularly the relational, intrinsic, and shared dimensions that reflect the complexity of human–nonhuman relationships. In contrast, the disciplines of Environmental Humanities (EH) and Environmental Post-Humanities (EPH) have fundamentally redefined the role of humans within ecological systems, repositioning them not as dominant, autonomous agents but as nodes within a network of interconnected relationships and distributed agencies encompassing multiple human and non-human entities. This theoretical reorientation has in turn reshaped the conceptualisation of landscape – and of marginal landscape in particular – by foregrounding the ecological dimension as co-constitutive with, rather than subordinate to, the anthropogenic one. Within this framework, the Life Framework of Values offers a comprehensive basis for interpreting the instrumental, relational, and intrinsic values of Nature. This research adopts the Life Framework of Values as a critical, More Than Human lens for re-examining the spatial criteria employed in landscape evaluation frameworks. In doing so, it aims to identify and explicate the relational configurations among different territorial agencies, rendering visible the networks of coexistence between human and non-human entities that characterise marginal landscapes.

Keywords: Landscape assessment · Plural values · Nature's Contributions to People

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O. Gervasi et al. (Eds.): ICCSA 2026 Workshops, LNCS 16762, pp. 293–310, 2027.
https://doi.org/10.1007/978-3-032-30524-4_19

1 Introduction

In Italy and across Europe, the concepts of rural areas – as defined within the Italian policy framework - and peripheral areas – as defined within the European one – refer to analogous territorial realities that can both be subsumed under the broader notion of marginality [1–3]. Despite the terminological divergence, both categories identify landscapes where ecological richness and territorial vulnerability converge. Their distance from productive and urban centres has allowed ecological processes to persist largely unaffected by intensive land use. However, this same distance has also resulted in population decline, limited access to essential services such as transport, education and healthcare, and structural disadvantage within dominant economic models [4].

These conditions undermine the economic, social, and cultural sustainability of such regions [5], and have consequently attracted growing attention from scholars and practitioners across planning, policy, and the social sciences, requiring great attention [6–8]. It is precisely this dual condition, ecologically significant yet territorially disadvantaged, that makes these areas a privileged vantage point through which to examine the relationship between ecosystems and society. Yet the very term "marginal" is not a neutral description, but a political-territorial construct that reflects a judgement made from the perspective of economic productivity and demographic density [9]. To call an area marginal is already an anthropocentric act, measuring landscape by its utility to human systems.

It is from this critical awareness that the present research departs, grounded in the specific assumption that margins are places where biodiversity and ecological relationships can flourish outside the logic of productivity and economic optimisation, as the British artist Nils Norman has long suggested through his practice [10].

Despite the remarkable ecological richness of these territories, the dominant frameworks used to define and assess them remain rooted in political-territorial constructs that privilege human presence as the primary measure of value. Largely based on demographic indicators, economic performance and proximity to services, such frameworks systematically render invisible the multiple forms of life and ecological relationships that persist and evolve within these landscapes [11, 12].

In response to this limitation, the conceptualisation of peripheral and rural areas has evolved in recent years, reflecting systemic and ecological changes. Spatial relationships, development models and evaluation policies from new perspectives are increasingly being approached from new theoretical perspectives, and these territories are no longer viewed solely as problem areas. Instead, they are being reconsidered as repositories of largely untapped natural and cultural capital [13], long sidelined by dominant models of valuation.

Considering this growing recognition, various assessment frameworks have been increasingly adopted, with a focus on the benefits that people derive from landscapes and the ecological processes that underpin them. While these represent genuine advances in making nature's contributions legible within economic and planning frameworks, they remain, as this section argues, structurally constrained by the same anthropocentric logic they seek to transcend.

The concept of Ecosystem Services (ES) [14–16] has been particularly influential in making Nature's contributions legible within economic and planning frameworks. More

recently, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) introduced the term "Nature's Contributions to People" (NCP), as a broader alternative, explicitly designed to capture not only material and regulating functions but also the relational values associated with nature, those dimensions of human-nature interaction that resist quantification [17].

In the context of spatial planning and landscape assessment, however, both ES and NCP are generally operationalised through spatial indicators and mapping practices that quantify the distribution of benefits provided by ecosystems. This operationalisation has made these concepts powerful tools for policy, but it has also constrained them. The translation into measurable units tends to flatten the complexity of human-nature relationships. This logic reflects a deeper structural limitation. Both ES and NCP remain rooted in an anthropocentric view [18]: nature is assessed insofar as it contributes to human wellbeing, and its worth is measured accordingly. In doing so, these frameworks overlook nature's intrinsic value – the idea that ecosystems, species and processes hold significance independent of their utility to humans – as well as more holistic and relational understandings of the human-nature relationship [19].

This tension between ambition and practice is also visible at the level of international policy. The Kunming-Montreal Global Biodiversity Framework (GBF), adopted at COP15 (2023) [20] as the primary international policy reference on biodiversity, establishes four global objectives for 2050 and twenty-three targets for 2030 aimed at halting and reversing biodiversity loss. Two targets are of relevance here: Target 1, which shifts the focus from protected areas to the landscape as a whole; and Target 14, which aims to integrate biodiversity and its values into decision-making processes at all levels of governance. These targets signal a political openness to broader conceptions of value, yet in practice, as this paper argues, the identification and assessment of values continue to follow traditional anthropocentric logic, leaving non-human agents systematically unacknowledged.

Addressing this limitation requires not merely a refinement of existing indicators or metrics, but a more fundamental shift in the interpretative framework through which marginal areas are described and assessed. Anthropocentric frameworks, which place human beings at the centre of value, need to give way to what Pasqual et al. (2023) [21] describe as "pluricentric worldviews": orientations that do not have a single centre, but instead attend to the various intertwined relationships between humans, non-human beings and systemic processes, without privileging any single centre. This shift implies abandoning the idea of nature as something to be controlled or optimised and moving towards an ethic of coexistence grounded in the recognition of mutual interdependence across all life forms.

A major contribution to this reorientation comes from Environmental Humanities and post-humanist environmental thought. However, drawing clear disciplinary boundaries between these fields may be impossible [22]. What these approaches share is an investigation of the value of the non-human that moves beyond biocentrism's simple reversal of hierarchy, rejecting the notion of humans as the sole autonomous agent and situating them instead as one agent among others within a wider vitality of matter [23].

Within this intellectual landscape, relational approaches have gained significant momentum. Donna Haraway (1988; 1995) [24, 25] proposes a radical decentring of

the human subject, opening the way to recognising non-human entities as active participants in the making of landscapes; Karen Barad (2007) [26] develops the concept of agential realism, in which agency is not a property of individuals but emerges through material-discursive practices – a perspective that directly informs the relational understanding of territory; and Val Plumwood (2002) [27] argues that ecological humanities must resituate humans within, rather than above, the environment, providing the ethical foundation for a non-hierarchical reading of spatial relationships. Together, these perspectives have been instrumental in repositioning the sciences as cultural and political disciplines embedded within discourses on race, gender, and class rather than as objective or neutral vehicles of a "nature" separate from human beings [28]. It is within this intellectual current that David Abram introduced the term More Than Human (1996) [29], gesturing towards a world of perception and meaning shared between human and non-human bodies.

More Than Human geographies [30] have since developed this intuition in explicitly spatial terms: landscapes are actively co-constructed by bodies, processes and agencies that exceed the human [31]. This spatial dimension is central to the present paper. If landscapes are co-produced by human and non-human agencies, then the frameworks used to assess and plan them should be capable of registering and responding to that co-production. Addressing these challenges requires two complementary approaches (Fig. 1). The More Than Human approach provides the ontological lens, redefining who the agents of the landscape are, which relationships matter, and which temporalities are relevant. The Life Framework of Values approach serves as the analytical counterpart, providing a promising conceptual bridge between relational ontologies and the practical domain of environmental decision-making.

Building on O'Neill (2008) [32], O'Connor and Kenter (2019) [33] reframe intrinsic value not as an objective property of nature but as something that emerges through relationships. Organised around four positional orientations (living *with*, *from*, *in*, and *as* the world), the Life Framework of Values integrates the concepts of ES and NCP, combining instrumental, relational, and intrinsic values within a single framework and thereby overcoming the limitations of approaches grounded exclusively in human benefit.

It is against this backdrop that the paper develops its contribution, developing a critical reinterpretation of the spatial criteria typically employed in landscape assessment frameworks, reading them through the combined lens of a More Than Human perspective and the Life Framework of Values. The aim is to make visible the networks of coexistence between human and non-human entities, between slow ecological time and the accelerated temporalities of planning that constitute marginal landscapes and that current frameworks render illegible. This leads to the following research question: How can landscape assessment frameworks, and the values they articulate, be reinterpreted through a More Than Human perspective and the Life Framework of Values to reconsider the spatial criteria used in territorial decision-making? The paper is structured as follows: Sect. 2 outlines the theoretical foundations underpinning the proposed paradigm shift and identifies the key principles for reinterpreting spatial assessment criteria. Section 3 presents the methodological approach used to analyse and reinterpret existing landscape assessment frameworks. Section 4 presents the proposed reinterpretation of marginal

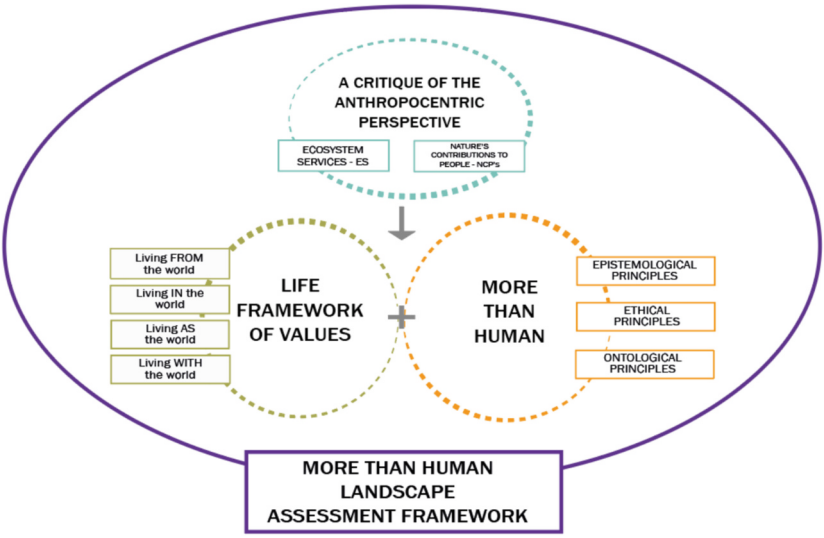

Fig. 1. An ontological lens and analytical perspective for marginal landscapes interpretation.

landscapes through a More Than Human lens. Section 5 discusses the implications of these findings for spatial planning and landscape assessment.

2 Theoretical Foundation

Understanding how landscapes are valued requires engaging with the deeper assumptions that shape their assessment. As Berbés-Blázquez et al. (2016) [34] argue, the values attributed to Nature are indicative of worldviews, systems of knowledge and power relations that underpin institutional structures in societies. The question of how landscapes are assessed is therefore never merely technical. It is always also a question of which worldview is doing the assessing, and which forms of life that worldview renders visible or invisible. Conceiving landscapes as co-produced systems, shaped by the interactions between human and non-human entities [35, 36], requires a theoretical foundation capable of articulating the agents of these systems, the obligations generated by their relationships, and the ways in which these relationships can be identified and represented.

A foundational contribution to this reconceptualisation comes from Actor-Network Theory [37–39], which holds that every entity, whether human or non-human, acquires its identity and significance through the relationships it establishes. The landscape, in this sense, stands as a relational field in which meaning and value emerge from networks of association. This perspective aligns with the notion of flat ontology [40] in which agency is distributed across a heterogeneous field of actors. Animals, plants, fungi, soils, waters, infrastructures and technologies are not passive elements of a backdrop but co-constitutive agents in the production of social and ecological realities [41]. Van Dooren and Rose (2015) [42] develop this further through the concept of the vivacity of

the world, proposing that the lives of other living beings are interwoven with meanings co-constructed through sets of shared relationships. Scott Gilbert's research in symbiotic biology [43] reinforces this point from a scientific angle, demonstrating that no organism exists in isolation: all beings are embedded in networks of mutual dependence and co-evolution. If agency is distributed and identities are constituted through relationships, then the question of how we relate to non-human entities is not merely descriptive but intrinsically ethical.

Donna Haraway (2015) [44] situates kinship at the core of her theoretical framework, positing it as a practice of fostering respect through the acknowledgement of the distinctiveness of other-than-human entities. In "Staying with the Trouble" (2016) [45], Haraway develops this through the concept of the Chthulucene: an era characterised by multispecies responsibility and the ecology of practices, in which remaining with uncertainty becomes a condition for generating unexpected forms of coexistence. Van Horn et al. (2021) [46] extend this notion, proposing that kinship with non-human entities is enacted through everyday actions guided by principles of reciprocity, respect, responsibility and care. María Puig de la Bellacasa (2017) [47] argues that care, understood as an ethical and political practice, is inseparable from the generation of non-exploitative forms of coexistence with other living beings and with the Earth.

Yet recognising ethical obligations towards non-human entities also raises an epistemological question: how such relationships can be known, perceived and represented. If the landscape is a relational field and care is a practice, then how we attend to that field is as important as the concepts we use to describe it.

Marzia Varrutti (2025) [48] proposes a rethinking of the human-non-human relationship through three interconnected perspectives: a conceptual one, engaging. Intellectual capacities to know the non-human; an affective one, perceiving the non-human through the senses and the body; and a practical one, acting upon thoughts and feelings. This tripartite structure is significant because it refuses to reduce the relationship with the non-human to a cognitive operation alone. Articulates, attention is inherently reactive, establishing relationships of correspondence between entities that coexist. The development of an ecological awareness, which commences with introspection concerning a relationship [49], engenders the capacity to respond to the world rather than merely act upon it.

From these theoretical foundations, a set of principles emerges that guide the reinterpretation of spatial assessment criteria proposed in this paper, organised across three levels: ontological, ethical and epistemological.

Ontological principles, concerning the nature of landscape agents and relationships:

- *Relationality*: the existence and meaning of any entity emerges exclusively through the networks of relationships in which it is embedded.
- *Distributed agency*: non-human entities are not passive recipients or resources but active agents capable of influencing and being influenced by the systems they inhabit.
- *Co-habitation, co-construction and co-evolution*: landscapes are dynamic systems shaped by processes shared between species and materials over the long term.
- *Non-human temporality*: ecological time, slow time (tree growth, ecological succession) and deep time (evolution, pedogenesis), exceeds and precedes human-useful

time; standard metrics capture only a fraction of the temporal depth of landscape processes.

Ethical principles, concerning the obligations that relational ontology generates:

- *Care and kinship*: the relationship with the non-human is an ethical act that generates obligations of responsibility and reciprocity.
- *Responsibility*: Every spatial choice is a moral choice involving a community of living beings that extends beyond humans.

Epistemological principles, concerning how value is known and represented:

- *Embodiment*: the body as a site of relation with the More Than Human world.
- *Relational value*: the value of the landscape cannot be measured as the sum of individual services but emerges from the quality and density of the relationships that traverse it.
- *Intrinsic value*: non-human entities possess a value independent of their utility to humans, in line with the land ethic first articulated by Aldo Leopold [50].

These principles provide the conceptual scaffolding for the methodological work that follows. It is precisely in marginal landscapes, as relational milieus where human and non-human entities coexist and evolve in tandem, that the conditions for operationalising these principles are already present. To do so, this paper draws on the Life Framework of Values [33] as the analytical bridge between relational ontologies and territorial decision-making and is developed in full in Sect. 3.

3 Methodology

The Life Framework of Values [33] provides a methodological foundation for translating the theoretical principles outlined in Sect. 2 into an operational framework for landscape assessment. This framework has the potential to bridge the gap between theory and spatial representation, making values visible and reinterpreting them as relationships within territorial decision-making processes to promote an understanding of coexistence networks in marginal landscapes.

The framework is based on a structured critique of the operational logic underpinning both Ecosystem Services (ES) and the Nature's Contributions to People (NCP) framework developed by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). ES classification systems, such as CICES [51], adopt a predominantly extractive and unidirectional logic in which nature is conceived as a provider of benefits for humans. The NCP represented an attempt at progress by recognising the importance of relational, intrinsic, and reciprocal values. However, the term itself betrays the limitations of the approach, as it implies a one-way flow of benefits from nature to people, thus maintaining a fundamentally anthropocentric dimension [52]. A further shortcoming lies in the limited consideration of abiotic ecosystem components.

Human–nature relationships are inherently nonlinear and multifaceted, encompassing elements such as a sense of place, cultural identity, and personal well-being that are difficult to reduce to scalar indicators [53]. In response to these limitations, the Life Framework of Values offers a means of operationalising a More Than Human perspective

within landscape assessment. It does so by reformulating intrinsic value as a subjective expression of objective intrinsic value – what O'Connor and Kenter term *articulated intrinsic values* – offering a more grounded alternative to the conventional triad of instrumental, relational, and intrinsic values, and one capable of registering the agencies and relationships that anthropocentric frameworks systematically overlook. The framework is structured around four relational dimensions, ranging from an instrumental orientation to increasingly symbiotic forms of recognition:

- *Living from the world* where the environment is seen as a source of sustenance, associated with predominantly instrumental and relational values.
- *Living in the world*, where the environment is understood as the setting for human experience, linked to relational and instrumental values.
- *Living with the world*, where importance is given to other living beings, situating humans as part of a biotic community, and activating intrinsic, relational and instrumental values.
- *Living as the world*, situates the More Than Human as both individuals and a collective self within deep ecology and relational perspectives, comprising predominantly relational and intrinsic values.

This relational gradient is particularly relevant in the context of marginal landscapes, which form the spatial focus of this research. Marginal landscapes are places where relationships with the More Than Human world are often already active and embedded in the territory, yet invisible to dominant evaluative frameworks.

The Life Framework of Values provides the conceptual tools to render non-humans legible and politically recognisable, viewing marginality not as an absence of value, but as a presence of relationship. Incorporating the framework into this research, therefore, means adopting an evaluative approach capable of capturing and reflecting the relational complexity that marginal landscapes inherently possess.

Building on this framework, the research undertakes a critical analysis to understand current models for assessing marginal landscapes, with particular reference to the NCP [17] model. The analysis aims to deconstruct the ontological assumptions underlying these frameworks and their implications for the spatialisation of value (Fig. 2). This critical work is based on the deconstruction of the logical-grammatical structure through which NCPs are defined [54]. The description follows a subject-verb-benefit structure, with the benefit being human-centred. While this structure recognises the complexity of relationships between humans and nature, in practice, the value of the landscape remains limited to its utility for human beings [55]. Moving away from the human perspective and challenging this assumption creates a conceptual and operational space in which a More Than Human perspective can be introduced, capable of recognising the multiple values that exist in the territory. This analysis focuses directly on the original IPBES documents rather than secondary adaptations to identify the underlying tensions on which the proposed reinterpretation acts.

The starting point is the selection of a subset of NCPs from the eighteen categories defined by IPBES, reduced based on their spatial applicability in rural and peripheral landscapes. The selected NCPs span regulatory, material, and non-material categories: NCP 1 – Habitat creation and maintenance, NCP 2 – Pollination and dispersal of seeds and other propagules, NCP 3 – Regulation of air quality, NCP 4 – Regulation of climate,

NCP 8 – Formation, protection and decontamination of soils and sediments, NCP 12 – Food and feed, NCP 15 – Learning and inspiration, NCP 16 – Physical and psychological experiences, NCP 17 – Supporting identities, NCP 18 – Maintenance of options.

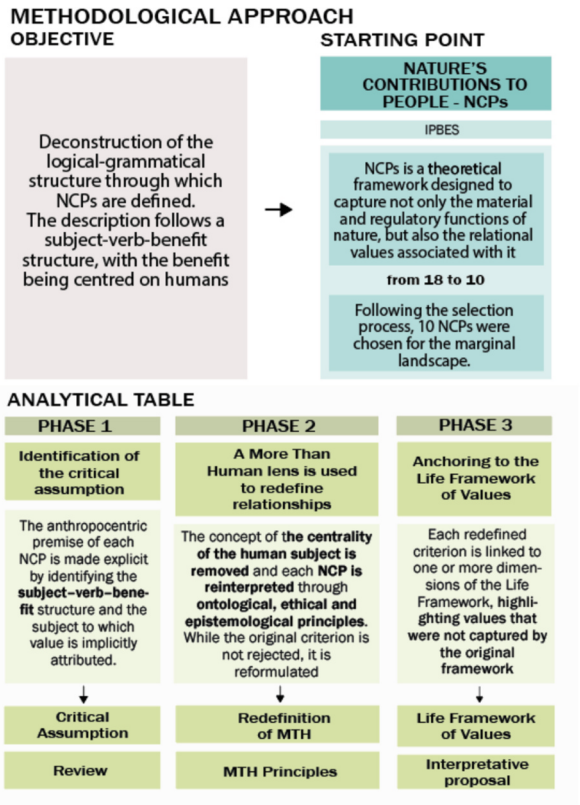

Fig. 2. A methodological process of deconstructing the subject-verb-benefit framework and reinterpreting it through the lens of More Than Human.

These NCPs are further specified through different aims and objectives [56–58] to spatialise the values of marginal landscapes. Figure 2 provides a schematic overview of the methodological process, organised across the following three phases:

– *Phase 1: Identification of the critical assumption.* For each NCP, the anthropocentric assumption is made explicit by identifying the subject-verb-benefit structure and the implicit assumption regarding what or who holds value.
– *Phase 2: Relational redefinition through a More Than Human lens.* The centrality of the human subject is removed in favour of a relational understanding of ecosystem value. Each NCP is reinterpreted through one or more of the ontological, ethical, and epistemological principles identified in Sect. 2. This redefinition does not reject the

original criterion but rather reformulates it. For example, what was previously categorised as a service is now considered a relationship; what was previously categorised as a beneficiary is now considered a co-participant.

– *Phase 3: Anchoring to the Life Framework of Values.* Each redefined criterion is associated with one or more dimensions of the Life Framework (O'Connor & Kenter, 2019). This phase reveals the values that emerge when the perspective changes, which the original framework failed to capture.

The outputs of these three phases are systematised in an analytical table (Table 1), which renders the full methodological process visible and comparable across the selected NCPs.

4 Results

This section presents the results of the critical reinterpretation process applied to the Nature's Contributions to People (NCP), operationalised through the analytical table described in Sect. 3 (Table 1). The proposed selection is based on scientific literature concerning landscape assessment in marginal areas characterised by demographic decline, distance from services, and low economic productivity [57]. Ten NCPs were selected and are distributed across the three defined categories.

Five regulatory NCPs were selected, as these represent the most frequently assessed contributions in marginal contexts, where ecosystem processes such as soil stability, carbon sequestration, pollination and habitat connectivity are commonly mapped and quantified using spatial indicators [59, 60]. In marginal Mediterranean landscapes in particular, soil formation and habitat maintenance are especially significant, supporting ecological dynamics that persist precisely because of their distance from intensive land use [61].

A single NCP was selected from the material services category: food and feed. In marginal landscapes, food production is not just an economic activity; it is also a practice embedded within a network of productive relationships involving soils, animals, plants, climate, and human knowledge. This is particularly evident in extensive pastoral systems [62]. Including this NCP in the assessment framework highlights its extractive logic: nature produces, humans benefit, and the relationships sustaining marginal landscapes are rendered invisible. Finally, four intangible NCPs were included to foreground the relational dimension that dominant frameworks struggle to operationalise. This is because analyses of marginal territories often focus on how human communities relate to their territory through concepts such as sense of place, cultural identity, ecological knowledge, and territorial awareness [63].

For this paper, the analytical procedure is illustrated through its application to NCP 1 – Creation and maintenance of habitats – as a representative example of the full reinterpretation process (Table 1).

Table 1 shows how the three-phase analytical procedure was applied to NCP 1 – creation and maintenance of habitats. The first column shows the original IPBES definition of habitat as the creation and maintenance of ecological conditions favourable to living organisms that are relevant to humans. The second column highlights the critical assumption embedded in this definition: that habitat has value only insofar as it supports

species or functions that are directly useful to humans. By attributing agency exclusively to ecosystems as service providers, the definition renders invisible all ecological relationships and processes whose significance extends beyond human benefit. The third column presents the More Than Human redefinition. Here, habitat is reinterpreted as a network of productive relationships among multiple agents – including plants, animals, fungi, soils, waters, microclimates and human practices – operating across different temporal scales, rather than as a service produced for humans.

Table 1. The table presents a critical and applied analysis of the selected NCPs

NCP Criteria	**IPBES Definition Critical Assumption**	**Critical Assumption Review**	**Redefinition of MTH**	**MTH Principles**	**Life Framework of Values**
NCP 1 - Habitat creation and maintenance	The creation and maintenance of ecological conditions favourable to living organisms relevant to humans by ecosystems	Habitat has value only insofar as it supports species or functions relevant to humans. Agency is attributed to ecosystems as service providers, rendering invisible all relationships that do not directly benefit humans A habitat has value only if it supports species or functions that are relevant to humans	Habitat is not a service produced by ecosystems for humans, but; rather, it is a network of productive relationships among multiple agents, operating between humans and non-humans. Emerging from the interactions of multiple agents operating across different timescales. Its value extends to the entire biotic community, not just human beneficiaries	Ontological principles: • Relationality • Distributed agency • Co-habitation and co-evolution • Non-human temporality Epistemological principles • Embodiment • Relational value • Intrinsic value	Living with the world: the habitat as a space of belonging to a biotic community Living in the world: the habitat as an experiential context

In this reformulation, agency is distributed rather than centralised, and the value of habitat extends to the entire biotic community, not just human beneficiaries. This redefinition is grounded in the ontological and epistemological principles identified in Sect. 2 – relationality, distributed agency, cohabitation and co-evolution, non-human temporality, embodiment, relational value and intrinsic value – which are listed in the fourth column. The fifth column anchors the redefined criterion within the Life Framework of Values. Two dimensions emerge that were absent from the original definition: "living with the world", recognising habitat as belonging to a biotic community; and "living in the world", framing it as an experiential context shaped by relationships between the human and non-human. Relational and intrinsic values thus enter the assessment, whereas previously only instrumental values were considered.

The relational redefinition of NCP 1 has direct implications for how it is implemented spatially. Standard GIS-based assessments of habitat creation and maintenance usually involve land cover classification, habitat quality indices and connectivity metrics. These are spatial units that measure the presence and extent of ecological elements, but not the relational configurations that constitute them. While recent efforts to develop collaborative spatial decision support systems centred on ecological proximity units have begun to reframe these spatial logics beyond conventional, indicator-based approaches [64] they still rely on human decision-making frameworks. A More Than Human reinterpretation would require a different set of spatial questions, such as where habitats are located, who co-inhabits them, which interspecies relationships sustain them and across what temporal rhythms they function. It would also require consideration of where the boundaries between human and non-human agency are most porous. Georeferencing these dimensions requires spatial units that are relational rather than categorical, organised around processes, interactions and temporal gradients rather than fixed land cover classes. While this does not render the criterion unmappable, it does require a redefinition of the spatial indicators through which it is operationalised. Rather than measuring the quantity of ecological elements present, relational indicators would need to capture the density and quality of interspecies relationships traversing a landscape, the temporal rhythms sustaining them, and the gradients of human and non-human agency shaping them. Therefore, the cartographic challenge is not the absence of measurable proxies, but rather the need to construct proxies that are adequate for a relational ontology.

The application of this procedure across the full set of selected NCPs has surfaced three interconnected issues that define the critical terrain on which this work operates. The first concerns the attribution of agency: although the anthropocentric frameworks recognise the importance of the ecological system, they attribute agency to it by defining ecosystems as service providers rather than relational fields co-produced by multiple entities. The second concerns the distribution of values: within the Life Framework of Values, the values articulated by current NCP descriptions are almost exclusively grouped within the dimension of "living from" the world, while, the relational interpretations of "living with" (recognising other living beings as cohabitants), "living in" (the embodied experience of the landscape) and "living as" (rejecting the separation between human beings and the ecosystem) remain systematically underrepresented. The third issue is methodological: current spatial indicators measure the quantity of landscape elements while ignoring the quality and density of the relationships that constitute them. These

three issues are not independent but mutually reinforcing, all grounded in the shared assumption that nature can be evaluated as a series of distinct, quantifiable services for human benefit. It is precisely this assumption that the proposed reinterpretation seeks to displace.

5 Discussions and Conclusion

The analytical application proposed in NCP 1 shows that reinterpreting the criterion from a non-human perspective involves a significant change in its underlying logic. Rather than producing a new indicator, the proposed approach alters the questions that landscape assessments are asked to answer. While standard metrics ask what a landscape offers, the reinterpretation asks who inhabits the landscape, what relationships constitute it, over what timescales it unfolds and for whom - both human and non-human – it holds value. This shift addresses not only a conceptual gap but also an empirically documented one. An exploratory search of the Scopus database (query: TITLE-ABS-KEY ("Nature's contributions to people" AND (rural OR peripheral OR marginal OR inner) AND (area OR areas)) AND PUBYEAR > 2019 AND PUBYEAR < 2027, conducted in early 2026, yielded approximately sixty articles. This limited body of literature suggests that the NCP framework is rarely applied in the territories where a relational approach would be most productive. This scarcity plausibly reflects the difficulty of operationalising intrinsic and relational values within evaluation frameworks designed to capture nature in terms of benefits to humans. Therefore, the gap is operational rather than theoretical, as the conceptual apparatus of the NCP is open to relational values in principle, but its application in marginal landscapes remains rare, and when present, it tends to rely on service-oriented metrics.

This operational gap becomes more apparent when considered alongside adjacent fields that address relational and More Than Human perspectives. Within ecological sciences, relational approaches have been developed through multispecies ecological networks [60], landscape-mediated coexistence models [65], and multispecies assemblage frameworks [66], approaches that operate with distributed agency, relational connectivity and non-human temporality. While these frameworks recognise non-human entities as agents that shape ecological relationships, they remain within the confines of ecology and conservation, extending little into spatial assessment frameworks for planning and territorial decision-making.

Within design, More Than Human methods have been explored through speculative techniques, material experimentation, and personification exercises that aim to make More Than Human connections visible [67–69]. While valuable for developing both theoretical and applied understanding, these contributions also reveal a persistent condition: the mediation through which non-human perspectives are articulated remains fundamentally anthropocentric. In these works, humans speak on behalf of the non-human, interpreting its needs and translating its agency into categories that human systems can process. This paper does not regard such mediation as a flaw to be corrected, but as an irreducible condition that demands reflexivity rather than resolution in any attempt to represent the non-human.

The Life Framework of Values occupies an intermediate position between two adjacent fields: ecology, which operates in a relational manner but does not extend to spatial

planning; and design, which extends to representation but remains anthropocentrically mediated. The Life Framework of Values has proven effective in integrating instrumental, relational, and intrinsic values within a single conceptual framework. However, existing studies do not address the spatial dimension of the framework, nor do they indicate where these relationships might manifest, persist, or generate conflicts within a territory. This contribution begins to address this spatial gap by anchoring the four dimensions of the framework to concrete evaluation criteria (the NCP) and the territorial reality of marginal landscapes. This triangulation is what makes this contribution original. To our knowledge, no other study has attempted to systematically deconstruct and reconstruct the ontological assumptions of the NCP criteria through relational and post-humanist principles.

The analysis developed here offers a concrete answer to the research question posed at the beginning of this article: how can landscape assessment frameworks and the values they express be reinterpreted through a More Than Human perspective and the Life Framework of Values to reconsider the spatial criteria used in territorial decision-making? This combined approach operates on two levels. Firstly, it ontologically dismantles the subject-verb-benefit grammar through which NCPs are currently formulated. It replaces a unidirectional flow of services from nature to humans with a relational field in which agency is distributed between human and non-human entities. Secondly, it extends the range of values that assessments can capture by highlighting relational and intrinsic dimensions that service-based metrics systematically overlook. By doing this, it creates a space within existing frameworks rather than replacing them, revealing what anthropocentric assessment has long made invisible: the relational density of marginal landscapes and their value as territories of coexistence.

The limitations of this contribution are both conceptual and methodological and point towards directions for future research. Although the analytical table demonstrates that a relational interpretation can expand the articulation of values within a territory, the redefined criteria and their associated values still need to be translated into practical spatial operations. The central remaining challenge is the mappability of relational values. Current GIS methodologies are largely calibrated to capture discrete, quantifiable phenomena, such as habitat extent, carbon stock and pollination density, and are not yet calibrated to represent configurations of coexistence, interspecies dependencies and non-human temporalities, which are foregrounded by the proposed reinterpretation. Bridging the gap between field measurements and planning assessments will require the kind of methodological work that this article begins but does not conclude.

This methodological work is also timely in the context of the Kunming-Montreal Global Biodiversity Framework, which calls for the integration of biodiversity values into decision-making at all levels of governance - a call that, as this paper argues, cannot be answered by expanding existing indicators alone, but requires the kind of interpretative reorientation proposed here.

Acknowledgments. The authors jointly conceived and developed the approach, defining the article's overall objective and structure: Conceptualisation: B.G., S.S., D.C. and M.C. Analysis and methodological approach: B.G. Validation: B.G., S.S., D.C. and M.C. Data management: B.G. Preparation of the original draft: B.G. Revision and editing: B.G., S.S., D.C. and M.C.

Visualisation: B.G. Supervision: S.S., D.C. and M.C. All authors have read and approved the published version of the manuscript.

Disclosure of Interests. The authors have no competing interests to declare relevant to this article's content.

Declaration on the Use of AI Tools. During the preparation of this manuscript, the authors used an AI program for language editing and proofreading purposes only, to improve grammar, readability and style. The tool was not used to generate scientific content or analyses. The authors reviewed and edited all output and take full responsibility for the content of the publication.

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