Assessing the emotional and spiritual dimension of forests: A review of existing participatory methods

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A R T I C L E   I N F O

A B S T R A C T

Spirituality, aesthetic enjoyment, relaxation, and emotions are key non-material intangible values experienced in forests. Despite being a central issue to present-day forest policy and regulation, they are difficult to assess because they are intertwined with people's values and beliefs. In this paper, we explore which participatory methods can serve best to identify and evaluate the emotional and spiritual contributions of forests to people (henceforward Forests' Intangible Contributions to People, FICP). We do so to formulate a series of practical recommendations for forest practitioners and researchers eager to use Participatory Methods (PM) to assess the emotional and spiritual contributions of forests to people. Results from a systematic literature review of different participatory tools were validated using semi-structured interviews with PM facilitators and experts. We found 15 participatory methods used to assess Forests' Intangible Contributions to People (FICP). Performative and walking methods emerge as the most widely used. These tools capture the vision of both individuals and communities and aim at giving an active voice to the environment, making nature part of the decision-making process. This research confirms that participatory approaches are pivotal methods to unfold connections amongst stakeholders dealing with Forests' Intangible Contributions to People, supporting the multifunctional role of forests and thus the delivering of national and worldwide policy objectives.

1. Introduction

Forests contribute to people's quality of life in different ways. They provide materials such as timber, fibres, and non-wood forest products, which are sources of subsistence and income generation. They also regulate the environment, surrounding ecosystems, and the climate, i.e., cleaning the air, filtering water supplies, controlling erosion, and supporting biodiversity (Acharya et al., 2019; Aznar-Sánchez et al., 2018). Finally, many forests are spiritual and cultural grounds for neighbouring communities, enriching people's lives through aesthetic enjoyment, relaxation, and recreation (Brauman et al., 2020).

Measuring how people benefit from forests is a central issue in forest policy. An assessment can guide practitioners and policymakers to quantify spatial and temporal changes of forest-based contributions, helping to design proper conservation mechanisms and management priorities. Yet, assessments are often complex for four main reasons:

1. The existence of trade-offs and intricate interactions amongst the types of contributions made by forests and their alignment (or not) with socio-economic national development priorities (Nocentini et al., 2022; Wang and Fu, 2013).
2. The absence of an explicit monetary value assigned to several Forests' Intangible Contributions to People (FICP).[1] FICPs are rarely marketable and thus quantifying their demand and supply is difficult (Gatto and De Leo, 2000). Evaluation methods generally focus only on benefits emerging from their recreational and aesthetical components (e.g., travel cost and hedonic price methods; Small et al., 2017).
3. Spatial and temporal issues, as often the spatial scale of the evaluation does not coincide with the actual geographic extent of the FICP. Similarly, the economic evaluation of FICP often has a temporal validity that is linked to the duration of the project, programme, or environmental policy, but does not consider the positive and negative impacts beyond this period. In this case, it would be necessary to

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perform a cost-benefit analysis and discount these values with an appropriate discount rate (Forest Europe, 2019).

4. The fact that certain FICP (e.g., spirituality, cultural identities) are closely linked with people's perceptions and emotions. This means that they are not only difficult to price but also hardly generalizable as they depend on the intimate relationship individuals create with nature (Pascual et al., 2017).

Much of the academic literature has focused on trade-offs and synergies occurring across multiple forest contributions (for three recent reviews of the literature on this topic see Deng et al., 2023, Nocentini et al., 2022; Pan et al., 2022). Few scholars have also studied the challenges of incorporating FICP into economic valuation exercises (Small et al., 2017; Satz et al., 2013; Milcu et al., 2013). A very limited number of scholars, to the best of our knowledge, have instead looked at ways to broaden economic valuations through participative approaches taking into account spiritual relations and emotions within forest users and communities (e.g., Gould et al., 2015). This area of research is promising in terms of its potential to make valuation processes more policy-oriented. Participatory Methods (PMs) and other ways of embedding local knowledge and preferences can be very useful to: (i) ensure that the policy meets the needs of society (relevance and efficiency); (ii) include citizens and communities actively in the decision-making process (acceptance and effectiveness) (Pandeya and Shrestha, 2016). PMs can thus be very useful to qualitatively assess the relational and emotional contributions of forests to people. Despite the growing use of PMs in assessment processes, the extent to which PMs can be used to effectively measure the emotional and spiritual contributions of forests is largely unknown. This is a relevant research gap, given the growing consensus towards forest multifunctionality as a pillar of rural development (balancing production-related activities with non-marketable goods and services; Vejre et al., 2010), and the general lack of consensus on how to properly evaluate FICP.

Our paper departs from this issue and broadens the existing literature on FICP by reviewing which PMs can serve best to identify and assess the emotional and spiritual dimensions of forests. We do so by combining a systematic review of the literature with semi-structured interviews with experts in PMs, which allows us to assess how PMs emerging from the review tackle people's emotions. We then build on these findings to derive a series of practical recommendations and policy implications for forest practitioners and researchers eager to implement PMs to evaluate FICP.

Our research questions are:

- RQ1) Which PMs can be used to assess people's emotional and spiritual attachment to forests?
- RQ2) What are the pros and cons of employing these methods for evaluating people's emotional and spiritual attachment to forests?

Our findings are relevant as they provide a first systematic assessment of existing operational tools to assess people's emotional and spiritual attachment to forests. This can support forest practitioners and local communities wishing to raise societal awareness of FICP to enhance their weight in policy decisions and transform their own traditional and spiritual values into socio-economic opportunities.

2. Theoretical framework

2.1. Forests' intangible contributions to people

In this paper, we define the non-material benefits humankind obtains from forest ecosystems as Forests' Intangible Contributions to People (FICP). This wording blends two main strands of literature concerning forests: (i) the Nature's Contribution to People (NCP) framework; (ii) the intangible/non-material benefits that ecosystems provide to humankind, also formulated as cultural ecosystem services.

The NCP framework was first formulated by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) in 2015 (Díaz et al., 2015). NCP is defined as "all the positive contributions, losses or detriments, that people obtain from nature to capture both beneficial and harmful effects of nature on people's quality of life" (Pascual et al., 2017). This framework builds on the Ecosystem Services (ES) approach promoted worldwide through the Millennium Ecosystem Assessment (MEA, 2005), a major evaluation of the status of worldwide ecosystems and their degradation due to human impacts.

ES science studies "the direct or indirect benefits that people obtain from ecosystems" (MEA, 2005), and quantifies their status, trends, and underlining processes. According to mainstream ES models, services that are provided to humankind from ecosystems (i.e., through supporting, regulating, provisioning, and cultural services) have a series of potential uses that in turn benefit society. ES assessments are thus used to account for benefits (or detriments) that humans and societies obtain through nature (Costanza et al., 2017; Daily, 1997; Costanza et al., 1997). This classification proved to be a sound assessment framework to monitor and evaluate the socioeconomic and environmental value of nature, improving decision-making processes (Torres et al., 2021). Yet, it has been criticized by some due to its inability to assess emotional attachment to forests, such as spirituality, aesthetics, place attachment, and sense of life (Small et al., 2017; Satz et al., 2013; Chan et al., 2012).

The NCP framework instead aims at "broadening the conceptual space for social science and humanities" (Kadykalo et al., 2019), providing a stronger recognition of the role of knowledge systems and cultural contexts in human-nature relationships. It pushes further the theoretical scope of previous ES research by engaging with less quantifiable concepts, i.e., learning and inspiration, identities, and people's emotions. The three main categories of the NCP framework (regulating, material and non-material; Díaz et al., 2015) are directly linked to human culture and relations. As Dean et al. (2021) thoroughly explain, this framework complements the ES framework by "broadening its epistemological boundaries" from its established economic and ecological spheres to cultural, relational, and institutional domains.

Given the strong emphasis of NCP around relational and social aspects, we find this nomenclature well-positioned to analyze people's emotional and spiritual attachment to forests. Relational and emotional contributions are dependent on the intimate and complex relationship individuals create with nature (Pascual et al., 2017), which in turn affect how we make choices and decisions regarding forests and the environment (i.e., which forest to visit, whether to live/pass by a forest-rich area, etc.). As such, and to disentangle the relational and emotional attachments of people to forests, we need to acknowledge the key role of less quantifiable and hardly accountable metrics to define human-nature relationships. We hypothesize that through this nomenclature it will be easier to analyze the potential of participatory-based methods to assess people's emotional and spiritual attachment to forests.

Our second theoretical strand is linked to the non-material or intangible benefits of forests. As anticipated in our introduction, this is one of the major challenges in assessment processes (for example, in economic appraisals of forests), due to the intrinsic nature of these contributions of providing merely conceptual and immaterial benefits (Small et al., 2017). In the ES framework, intangible contributions are confined to the group of cultural ES. They are described as "non-material benefits people obtain from ecosystems" (Millennium Ecosystem Assessment, 2005). The NCP framework takes a step further and classifies them as immaterial benefits to improve our understanding of what culture means in the context of nature-human relationships (Pröpper and Haupts, 2014). In our analysis, we refer to these contributions as intangible, following the reasoning of Yoshida et al. (2022), which seeks to include the most hidden non-material aspects of human-nature relationships. FICP relies on subjective judgements made by the community/users that pinpoint them (self-identification), in opposition to tangible criteria, which can be assessed objectively through universal schemes and quantitative data (Lenzerini, 2011). Examples of FICP

include: (i) the healing role of green infrastructure during the COVID-19 pandemic (Weinbrenner et al., 2021; Derks et al., 2020); (ii) the increasing importance of forest (re)spiritualization in Europe (Roux et al., 2022); (iii) the psychological health benefits of outdoor forest-based activities (Zwart and Ewert, 2022).

Based on this theoretical line of reasoning, we opted to focus our review solely on the spiritual and emotional dimensions of FICP. This is because this sphere is the most subjective and less universal and thus often the least considered in assessment processes (particularly those focused on quantitative data, such as those of economic appraisals of forests). We hypothesize that PMs, being approaches that actively engage stakeholders in sharing emotions and personal preferences to co-construct shared visions, can provide a suitable angle to evaluate FICP.

2.2. Participatory methods

Participatory methods (PM) are approaches to knowledge production that involve people through all phases of a research project (Metz et al., 2019). The rationale behind these approaches represents a shift away from centrally and externally led assessment programmes towards acknowledging the central role communities and individuals play in planning, managing, and assessing their local environment (Abbot and Guijt, 1998). Literature shows that results grounded on PMs can: lead to better endorsed and long-lasting societal impacts (Reed, 2008); enhance results' credibility and relevance (Mayoux and Chambers, 2005); improve stakeholder representation within the assessment exercise (Martin and Sherington, 1997); and serve to reduce implementation costs (Reed, 2008). Despite the abovementioned benefits of participation, Reed (2008) stresses a series of negative implications of running PM-based research, i.e., the risk of reinforcing privileges and power structures through poorly designed group dynamics, increasing consultation fatigue, and dealing with a possible lack of technical expertise of the involved participants. For all these reasons, an important though understudied research area focuses on the efficacy of PMs to obtain operational and valid results.

In the forestry sector, PMs are often employed in different phases of the forest management process, such as example mapping and objective definition, policy implementation/evaluation, and conflict resolution (National Research Council, 2008). They are framed as activities "intended to improve opportunities for forest communities to influence planning or project implementation and increase the likelihood that they will respond to their needs" (Evans et al., 2010). Yet harnessing the potential of PM-based research to disentangle spiritual and emotional attachment to forests is rarely investigated. This research aims to broaden the existing state-of-the-art by providing a systematic review, grounded on qualitative data analysis, of the pros and cons of PMs when used to assess the emotional and spiritual attachment to forests.

3. Materials and methods

The methodology used to investigate our research question is twofold. Initially, a systematic literature review was conducted to understand the state of the art on the topic. Subsequently, semi-structured interviews were conducted with facilitators and PM experts using PMs in the forestry or agricultural sector to validate and/or refute the results obtained from the systematic review. In this research, we distinguish between PM facilitators, defined as professionals who employ PMs throughout the entire research process, and PM experts, understood as professionals who do not facilitate processes but only use PMs for limited stages of the research process.

3.1. Systematic literature review

3.1.1. Search strategy and eligibility criteria

Table 1 shows the search string adopted to investigate the first research question (RQ1: Which PMs can be used to assess people's

Table 1
Search string adopted to investigate RQ1 (Which PMs can be used to assess people's emotional and spiritual attachment to forests?).

Main categories	Keywords
Affectivity	TITLE-ABS-KEY ("emotion*" OR "sentiment*" OR "feeling*" OR "spiritual*")
Participatory methods	AND TITLE-ABS-KEY ("participatory*" OR "stakeholder* engagement" OR "multi-actor* approach*")
Forest	AND TITLE-ABS-KEY ("forest*" OR "ecosystem* service*" OR "grove*" OR "wood*" OR "timber*")

emotional and spiritual attachment to forests?). The search string consisted of three main categories related to "affectivity", "participatory methods", and "forest". For each of the categories, keywords and synonyms were identified using Boolean operators (AND and OR) and "wild" characters from the electronic databases used for the search. The search was limited to the title, abstract, and keyword fields to avoid generic and unwanted results. The search was conducted between December 2021 and April 2022, using Web of Science (WOS) and Scopus as databases. These databases were chosen because they are the largest citation databases used worldwide and they complement each other both in terms of fields analyzed and in terms of time scale; Scopus considers modern literature, while WOS has a large availability of scientific papers published in the past (up to 1900). The use of such databases also allows for more comprehensive search results, as claimed by previous authors (Wallius et al., 2022; Li et al., 2010) The guidelines proposed by the PRISMA protocol (Page et al., 2021) were used to carry out this systematic review. A systematic review, as opposed to a scoping review, is particularly useful for collecting empirical evidence on a small number of studies related to a targeted research question.

The research question was formulated using the PICO framework to ensure that the review process was truly systematic, conducted in a structured manner and with precise eligibility criteria (Rhee et al., 2022; Sieswerda et al., 2022). Our PICO criteria were: Population (P): FICP poorly considered in forestry; Intervention (I): use of PMs; Comparison (C): use of standard top-down methods; Outcome (O): effectiveness in managing FICP. In the first screening phase, search filters were selected to narrow the field of inclusion, such as: i) primary research articles only; ii) articles written in the English language; articles that did not meet the PICO criteria were excluded. The remaining articles were analyzed in the full text before an inclusion/exclusion decision was made.

3.1.2. Data extraction

Articles deemed suitable were manually evaluated by the authors. Article records were exported in.csv (CSV) format for the initial screening phase, with the following information: title and source for articles extracted from WOS; authors, title, year of publication, source, and document type for those extracted from Scopus. An Excel® spreadsheet was used for the data extraction phase from the full-text articles collecting information on (i) the PMs used and other techniques for data gathering employed, (ii) the structure and size of the participants in the PM-based research (iii) the main FICP assessed. Appendix A describes in full the variables included.

The PRISMA flow chart used to identify articles is reported in Appendix B. In the analyzed search period, 171 records were found, of which 76 were from WOS and 95 from Scopus. From the total number of records found, 43 were removed because they were duplicates, 22 because they did not meet the inclusion criteria, and 3 because they were not available. The final potentially eligible articles amounted to 61, of which only 23 met the PICO eligibility criteria. These became 21 after reading their full text.

3.2. Semi-structured interviews

The objectives of the interviews were twofold: (i) validating and/or

refuting the results obtained from the systematic review, (ii) obtaining further information on the role of the PMs facilitator or expert in exploring emotional and spiritual attachment to the forest. The interviews were conducted between July and October 2022. Twelve facilitators and PM experts were interviewed (8 females and 4 males based in Greece, Hungary, Ireland, Italy, Norway, Spain, and Switzerland). Each interview lasted on average 60 min, was conducted online, and recorded via the Microsoft Teams platform. Interviewees were contacted via e-mail and/or social media. Additional interviewees were identified through snowball sampling. Before the interview, they completed an interview consent form, complying with ethical standards and procedures of research. Interviews were conducted in English, Italian, or Spanish depending on the interviewee's preference. The semi-structured interviews focused on three main aspects: (i) exploring the interviewee's experience as a facilitator or expert, (ii) validating the findings from the systematic review, (iii) identifying the characteristics of the PMs used in the forestry sector for assessing FICP (Supplementary material A). Interview transcripts were analyzed using both inductive and deductive qualitative analysis. Inductive analysis (narrative analysis) was used to highlight aspects of the individual interviews that best supported or refuted the findings from the systematic literature review. Deductive analysis was used to collect standardized information used to enrich the finding from this study (e.g., additional PMs used by the interviewees, additional FICP assessed through PMs, and pros and cons when using participatory research concerning FICP). Statements made by the interviewees (reported in italics and with the corresponding alphanumeric identifier, ID) are provided to support the findings of the systematic review. A preprint of the manuscript was made available to all interviewees through the Open Science Foundation platform (osf.io) in order to collect their feedback on the research.

4. Results

This section includes three subsections. In the first two sections we report the main findings from the literature review and interviews regarding our first research question (RQ1: Which PMs can be used to assess people's emotional and spiritual attachment to forests?). Section 4.1 focuses on the identification of PMs that are commonly used to research people's emotional and spiritual attachment to forests. Section 4.2 focuses on their potential for assessing emotional and spiritual attachment to forests. In the final subsection (Section 4.3) we provide additional information from the interviews that allows us to respond to our second research question, evaluating the benefits, pros, and cons of PMs to disentangle FICP.

4.1. The identification of PMs used to evaluate people's emotional and spiritual attachment to forests

Table 2 presents the 15 PMs that have emerged from the systematic literature review. These PMs can be categorized under 7 different themes, including: (i) performative methods to uncover participants' emotions towards nature and the surrounding landscape, ranging from photographs to theatre; (ii) walking-based methods to immerse participants in nature while conducting research; (iii) validation methods to form judgements and evaluate research results conjointly; (iv) methods to foster small-group discussions; (v) methods to include participatory aspects across the whole research process; (vi) mapping and planning methods; and (vii) scoring methods.

PMs from 5 out of 7 themes have also been validated by the interviewees as effective tools to assess people's emotional and spiritual attachment to forests. These are:

- Performative and art-based methods (Group I; Table 2), mentioned by six interviewees ("*other ways of expressing yourself beyond words and beyond interviews to capture more spiritual, cultural or aesthetic experiences, and the arts is really valuable for that*" [P01]; "*creative*

methods are good for bringing out more of the emotional and somewhat spiritual side of the participants" [P04]).
- Walking-based methods (Group II), mentioned by seven interviewees ("*having the method being run in the forest is a way in which the forest is more directly involved into people's relationship to the forest*" [P01]) ("*When walking in the nature in pairs [...] the atmosphere and the circumstances are very emotional*" [P05]) "*You can go much deeper because they are more honest and more open. And when they come back, they will tell you things they wouldn't tell you before the walk*" [P08]).
- Focus groups (Group IV), mentioned by three respondents ("*a focus group is an extremely inclusive technique...it mitigates participants' shame and enhances participants' gratitude*" [P03]; "*focus groups are brilliant for that*" [reaching participants' emotions and relation regarding a given matter] [P08]).
- Participatory mapping methods (Group VI), mentioned by three respondents ("*it fosters amusement across participants and allows to mitigate participants' anger*" [P03]);
- Participatory observation (Group V), mentioned by two respondents ("*if you ask directly about intangible benefits about emotional engagement, many people find it very hard to express emotional language. So participatory observation allows you to go in with your lenses and see what's already there*" [P01]).

Finally, interviewees listed additional PMs that they use/believe are useful to uncover FICP. These include:

- Methods used to incorporate more-than-human perspectives into the discussion such as: the 'Council of all beings' – a communal ritual that allows participants to speak on behalf of non-human species such as flora and fauna (Work That Reconnects Network, 2017); 'Inviting more-than-human stakeholders' – a storytelling method where natural elements and beings are given a central role in the story-design (Re-imaginary, 2020); 'Letters from nature' – whereby participants put themselves in the shoes of non-human beings and try to create imaginaries of the problem discussed through their eyes – and 'Participatory Nature Walks' (Molnos, 2021).
- Teambuilding activities that involve collaboration and problem solving (e.g., Defend the Egg; where groups create a structure with available materials to protect a raw egg from breaking when dropped).
- Sensory-based techniques that allow for exploring the surrounding environment through other senses than sight, such as 'Leading the blind' (MTU, 2023) and 'Forest Bathing', the "conscious and contemplative practice of being immersed in the sights, sounds and smells of the forest" (Global Wellness Institute, 2023).
- Cooperative role-taking and voting techniques such as the 'Jigsaw', a cooperative learning exercise that splits participants into groups, each one of them specialized into one aspect of the overall discussion topic, and useful to deal with forest and natural resources-based conflicts (Aronson, 1978), and participatory referendums.
- The 'Future Search Conference' is a method for a large group of participants – often from the same community – to co-create shared visions for their future (Serrat, 2017).
- Storytelling and co-writing techniques, including journaling – inviting participants to record personal experiences through short stories and pictures (LUMA, 2022).
- Visual techniques, e.g., 'River of life' – developing a visual and guided conversation with a selected group of workshop participants (Moussa, 2009) and collage-based exercises, whereby participants are given images from newspapers and magazines to express emotions or visual ways to represent the problem they are discussing.
- Non-verbal techniques such as 'silence walks' in nature-based settings and a 'Nature Mandala' – silence drawing group exercises.
- Methods that mix visioning and creative techniques with the provision of scientific data (e.g., biological and ecological data on the forest).

Table 2
List of the PMs identified through the systematic literature review.

Group	ID	Participatory method	Short description	References from systematic review
I - Performative methods to uncover participants' emotions towards nature and the surrounding landscape	1	Community theatre, storytelling workshop	"Participatory forms of inquiry that integrate elements from the performing arts into research and learning processes, in a flexible and context-specific manner to support individual, community, and institutional reflexivity and transformation" (Heras and Tàbara, 2014)	Heras and Tàbara, 2014
	2	Participatory video making	A set of techniques to involve a group of participants or a given community in producing their own film/ short story	Roe and Aspinall, 2011
	3	Photovoice	Using photographs taken and selected by participants to explore the reasons, emotions, and experiences behind their chosen images. Promoting critical dialogue and community knowledge (The Howard League for Penal Reform, 2016)	Cook, 2019; Mattouk and Talhouk, 2017
II - Walking-based methods to immerse participants in nature	4	Walking tour	Participants hold discussions while walking in an outdoor setting to encourage continuous contact with nature and forests	Cocks et al., 2012; Foster, 2021; Mapes, 2012
III- Validation methods to form judgements and evaluate research results conjointly	5	Data Party	Making sense of the data through data visualization tools, which are presented and discussed with participants (Franz, 2018)	O'Flynn et al., 2021
	6	Deliberative valuation process	"Interactive valuation method, which brings different actors to form value judgements in an open dialogue with each other" (IPBES, 2022)	Murphy et al., 2017
	7	Community potluck	Family or community-friendly events based around having a meal where everyone brings a dish (that can be traditional) to share, while participating in a specific discussion (Network of Wellbeing, 2018)	Johnson et al., 2021
IV- Methods to foster small-groups discussions	8	Focus group	A technique that collects data through group interaction on a topic defined by the researcher. It involves a small number of participants (6–12) being either demographically similar people (e.g., youth, students) or having common traits/ experiences linked to the research topic (Morgan, 1996)	Janse and Konijnendijk, 2007; Rios and Menezes, 2017
	9	Participatory heterogeneity analysis	Actively involve intra-community groups in discussions about their communities' heterogeneity and its implications for collaborative action (Pokorny et al., 2003)	Pokorny et al., 2003
	10	Visioning processes	A process by which the involved participants define the future they want, through co-creating activities (Haines, 2001)	Janse and Konijnendijk, 2007
V- Methods to include participatory aspects across the whole research process	11	Community-based participatory research	"An approach to research that involves collective, reflective and systematic inquiry in which researchers and community stakeholders engage as equal partners in all steps of the research process with the goals of educating, improving practice or bringing about social change" (Tremblay et al., 2018)	Bussalleu et al., 2021; Kim et al., 2012
	12	Participatory observation	Researchers are immersed in day-to-day participants' events and activities. They often work alongside them to co-create knowledge (University of Toronto, 2019)	Foster, 2021
VI- Mapping and planning methods	13	Participatory mapping	Way of documenting land use, tenure arrangements, as well as participants' perceptions/memories/ knowledge of the landscape through maps. Participatory maps are used to create a common understanding of a territory amongst participants (Boissiere et al., 2019)	Helmer et al., 2020; Manuschevich et al., 2020; Bogdan et al., 2019; Cocks et al., 2012
	14	Participatory surveys/data collection planning	Taylor a survey tool with the active participations of stakeholders to specific geographic and socio-economic contexts as well as stakeholder values and preferences	Clement and Cheng, 2011
VII- Scoring methods	15	Participatory workshops with experts scoring	Successive workshops alternating open-format and closed-format questions to allow participants to rank or rate different options.	Vári et al., 2020; do Rosário et al., 2019

4.2. The potential of PMs for assessing the emotional and spiritual dimension of FICP

Table 3 makes the link between the participatory methods identified from the systematic review and the spiritual and emotional dimension of FICP they aim to assess. The main emotional and spiritual FICP are:

- Care and attachment towards living trees, forested spaces (identified in 38% of the studies; IDs: 5,8,9,10,13,16,19,21).
- Care and attachment towards landscape, neighbourhoods, people, and their culture (19%; IDs: 6,7,8,9).
- Cultural identities and nostalgia of the past (19%; IDs: 11,12,14,17).
- Emotional wellbeing, quality of life, and mood enhancement (19%; IDs: 5,8,15,20).
- Public orientations, preferences, and bequest values (10%; IDs: 3,16).
- Religious and spiritual beliefs (10%; IDs: 1,4).
- Feeling of escape and freedom associated with forested places (5%; IDs: 8).

The interviewees also mentioned the following emotional and spiritual FICP that can be assessed through PMs:

- Primary emotions such as anger, fear, sadness, surprise, and joy ("*strong emotions that people feel very vulnerable admitting to or talking about, particularly not just expressing anger but talking about being angry* [P01]").
- Emotional conflicts amongst stakeholders.
- Self-acceptance and freedom of expression ("*People hate being told what they should think. However, if you make the decision yourself [you will feel] accepted that this freedom is related to your own free will*" [P08]).
- Empathy with more-than-human participants ("*Empathy is based on similarity. If we can find somebody like us and this somebody is an animal or a plant, then we can feel empathy and embrace their perspectives*" [P11]).
- Ecological grief (participants become more sensitive to nature's issues, as they broaden their relationships with nature-based processes).

Most of the PM studies identified in the literature review focus on cultural ES (90% of the total). When referring to the NCP framework, the most common addressed contribution is *Supporting identities* (57%), followed by *Physical and psychological experiences* (52%), *Food and feed* (29%), *Maintenance of options* (24%), and *Materials and assistance* (19%). About half of the assessed studies (48%) mention a direct economic driver behind the study development, with the most common being the setting up of standards for ES valuation (40%), planning cultural and tourism-related activities (30%), nature-based conservation strategies (10%), or improvement of forest management (20%). Most of the PMs are implemented in the field (52%) and combined with additional qualitative techniques, such as semi-structured interviews, informal interviews, and ethnographic observations. The types of PMs employed are mostly used in the empirical phase of the research cycle (90%), followed by the analytic (24%), and the design and planning (14%) phases.

Findings from the interviews confirmed the results obtained from the literature review. Most of the interviewees tend to work exclusively with qualitative tools ("*Qualitative research allows you to get to know much better the context. Quantitative data is less intuitive*". [P03]). In certain cases, depending on the project objectives, they mix qualitative and quantitative methods ("*You use the quantitative methods and then you go in depth with qualitative analysis. […] the participatory methods and*

qualitative techniques are used to see, to validate what are the gaps there". [P09]). Moreover, interviewees confirmed that in-the-field activities are extremely useful for uncovering and assessing the emotional and spiritual dimension of FICP ("*We are in the forest, and this is a safe place and connected with nature and really calm for us*" [P05]). Finally, the facilitators and experts interviewed consider that PMs can offer insights through all phases of the research cycle, with 4 out of 12 facilitators and experts applying them mostly during the empirical phase.

4.3. Pros and cons of PMs in disentangling FICP

In this section, we report on the results from the semi-structured interviews regarding the potential of PMs to support research on assessing FICP. Interviewees tend to agree that PMs can draw out both tangible and intangible contributions of forests to people in evaluation processes. Yet, PMs are deemed particularly pivotal for disentangling FICP for the following reasons:

- They can provide insights that traditional evaluation techniques might overlook, especially because there are limited approaches to be used to work with intangible values as care, identities, and spiritual beliefs ("*I think when you think about intangible, the question is what? What else? What other approach do you have to gather knowledge on that? And then I have to say yes they're valuable there because you have a limited range of approaches*" [P01]).
- They are understood to be the best way to connect to the deeper emotional state of participants, creating a safe space for sharing and discussion and reaching transformative changes. ("*To reach emotions you need to enter into the way of life of the participants, not one-way communication but discussing* (with them)" [P05]; "*participatory methods are perhaps the only way to bring out important emotional values*" [P03]; "*Facilitation gives you the possibility to explore values and functions related to the intangible, to strengthen the sense of identity of people involved in participatory sessions on intangible contributions*" [P06]; "*Rationalization makes participants detach from their emotional counterpart. This is why participatory methods are essential tools to capture the intangible, through their creative components*" [P12]).

One interviewee also mentioned that in certain cases the participatory process can prevent individual emotions to emerge, as it is an activity engaging multiple participants. In this case, individual qualitative interviews might work best. Nonetheless, other informants stressed the tight connection between individual and collective emotions (e.g., "*When a person talks about a meaningful experience they had in the forest, when analysing it, you'll always find that this emotion will eventually have a link to certain collective emotions shared by the forest community*" [P12]).

Table 4 summarizes the pros and cons identified by interviewees when using PMs in relation to FICP. We grouped them into four main macro-categories: (i) emotions, (ii) process, (iii) reactions and (iv) outcomes.

5. Discussion and conclusions

The purpose of this research was to unfold the main PMs that draw out emotional and spiritual dimensions of FICP for assessment processes. Our review indicates 15 PMs used by forest researchers and practitioners. Performative methods are the most widely used, as they can capture the vision of both individuals and communities, both of which are important dimensions for assessing FICP (how I experience and represent nature; how I – as part of a group – relate to others regarding the spiritual and emotional dimensions of forests). This result was also validated by most interviewees. Heras and Tàbara (2014), in a study conducted on performative methods for sustainability, show the

Table 3
Descriptive results from the systematic literature review.

ID	Participatory method	emotional and spiritual FICP	ES link	NCP link	Economic rational	Setting	Stakeholder types	Accompanying methods	Research cycle[1]	Location (country)	Reference
1	Participatory mapping	Spiritual, cultural, and traditional experiences	Cultural	Physical and psychological experiences; Supporting identities	planning of tourism infrastructures and activities	In the field	Tourists	Interviews	Empirical	Romania	Bogdan et al., 2019
2	Community-based participatory research	Emotional wellbeing	Cultural	Physical and psychological experiences	None	In the field	Community members; health officers	Semi-structured interviews; informal interviews; cultural immersion	All	Perú	Bussalleu et al., 2021
3	Participatory surveys/data collection planning	Public value orientations, attitudes, and preferences	All	All	None	In the lab	Households	Mail survey	Design & planning	USA	Clement and Cheng, 2011
4	Participatory mapping; Walking tours	Religious beliefs	Cultural	Supporting identities; Maintenance of options	None	In the field	Citizens	Informal unstructured interviews	Empirical	South Africa	Cocks et al., 2012
5	Photovoice	Care towards nature, quality of life	Cultural	Physical and psychological experiences	None	In the field	Male individuals with dementia	Semi-structured interviewing; walk-along interviewing; observation	Empirical	United Kingdom	Cook, 2019
6	Participatory workshops with experts scoring	Landscape attachment	Cultural	All	Ecosystem services valuation	In the lab	Landowners and managers; NGOs policymakers; producer associations; academia; business	None	Empirical, Analytic	Portugal	do Rosário et al., 2019
7	Participatory observation, Walking tours	Emotional attachments to neighbourhoods	Cultural	Supporting identities	Alternative evaluation techniques (emotional economies of care)	In the field	Citizens; members of neighbourhood associations	Interviews	Empirical	USA	Foster, 2021
8	Participatory mapping	Feelings of escape, freedom, emotional well-being, and overall care to both nature and culture	Cultural	Physical and psychological experiences	Evaluation of biophysical ecosystem services tied with outdoor recreation	In the field	Citizens familiar with the landscape used for recreation	Online and in person questionnaire	Empirical	USA	Helmer et al., 2020
9	Community theatre, storytelling workshop (performative methods)	Care towards people and nature	Cultural	Supporting identities	None	In the lab (local schools)	Students; teachers; community members,	Structured questionnaire; open-ended questionnaire	Empirical	Mexico	Heras and Tàbara, 2014
10	Visioning processes; focus groups	Care and feelings towards forests	n.a.	n.a.	Enhance the planning, design and prospective management of urban woodland	n.a.	Policy makers, associations of land owners and residents, cultural associations, NGOs, business representatives	Questionnaires and Interviews	Design & planning; Empirical	Belgium, Bulgaria, Finland, Italy, Sweden, United Kingdom	Janse and Konijnendijk, 2007
11	Community potluck	Desire to learn, or engage more deeply in	Cultural	Supporting identities	Improve cultural market demand to	In the lab	Indigenous community members	ArcGIS StoryMap	Empirical	USA	Johnson et al., 2021

Table 3 (*continued*)

ID	Participatory method	emotional and spiritual FICP	ES link	NCP link	Economic rational	Setting	Stakeholder types	Accompanying methods	Research cycle[1]	Location (country)	Reference
		culture and/or heritage			support community revitalization						
12	Community-based participatory research	Cultural identities	Cultural	Food and feed; Supporting identities	None	In the field	Indigenous community members	Semi-structured interviews, ethnography, and secondary documents	All	Canada	Kim et al., 2012
13	Data Party	Care towards living trees	Cultural	Supporting identities	Improving forest management	In the lab	Forest workers; managers and forest owners; forestry advisers;	Semi-structured interviews	Analytic	United Kingdom	O'Flynn et al., 2021
14	Participatory mapping	Memories and nostalgia of the past	Cultural	Supporting identities	None	In the field	Farmers; community members	Observation; semi-structured interviews; literature review	Empirical	Chile	Manuschevich et al., 2020
15	Walking tours	Mood enhancement, spiritual uplift, stronger sense of self	Cultural	Physical and psychological experiences	None	In the field	Community members	Questionnaires	Empirical	United Kingdom	Mapes, 2012
16	Photovoice	Care towards nature, nature's perception, and bequest value	Cultural	Physical and psychological experiences; Maintenance of options	Design of future nature conservation activities	In the lab (local schools)	Youth	None	Empirical	Lebanon	Mattouk and Talhouk, 2017
17	Deliberative valuation process	Reveal social values	All	All	Ecosystem services evaluation	In the lab	Citizens	Questionnaires	Empirical; analytic	United Kingdom	Murphy et al., 2017
18	Participatory heterogeneity analysis	Motivation, solidarity, leadership, or sincerity	Provisioning	Food and feed	None	Non specified	Households; communities	None	Empirical; analytic	Brazil	Pokorny et al., 2003
19	Focus group	Care towards nature	Cultural	Physical and psychological experiences	None	In the field	Children aged 4–10 years	None	Empirical	Portugal	Rios and Menezes, 2017
20	Participatory video method	Trust, joy, anticipation, surprise, anger, fear, disgust, and sadness	Cultural	Supporting identities	None	In the field	Children aged 10–12 years	Ethnography	Empirical	United Kingdom	Roe and Aspinall, 2011
21	Participatory workshops with experts scoring	Emotional bonds towards nature	Provisioning, Cultural	Food and feed; Materials and assistance; Physical and psychological experiences	Estimating the values of wild plants	In the lab	farmers; community members; NWFP pickers	Online and in person questionnaire	Empirical; analytic	Romania	Vári et al., 2020

[1] We assessed in which phase of the research cycle (according to Polit and Beck, 2004) the articles retrieved with the systematic review apply participatory methods. In certain articles, participatory methods were used in multiple phases of the research.

importance of such methods for the promotion of self-reflective research processes and collective exploration, highlighting how they are capable of translating complexity and involve the emotional part in judgements and decision-making processes. Another element that emerges is the use of methods in outdoor settings (e.g., walking-based methods) giving an active voice to the environment. Impersonating more-than-human perspectives into the PM helps participants better understand that nature is an active character of the decision-making process, enhancing empathy and grief towards nature's issues, such as climatic changes or degradation. Both sets of PMs thus emphasize the strong link between the activity organized and the collective and individual emotions that emerge.

Most of the emotions that were identified from our review are related to the sense of attachment and care for the natural component. This is in line with several works in the literature such as those of Berg (2020), Baur et al. (2020), and Häggström (2019). The semi-structured interviews however, identified additional primary and often conflictual emotions such as anger, fear, and sadness, that can be measured through PM-based research and that had not emerged in the literature review. Two informants suggested that this absence of works in the literature of conflictual emotions can be attributed to two main reasons: (i) a general underestimation of the emotional dimension when studying forest-based conflicts mostly through rational techniques (Buijs and Lawrence, 2013), (ii) the fact that such publications would be less appealing for the purposes of scientific research. There are works in the literature related to emotions and conflicts, such as those conducted by Halla and Laine (2022) and Bergstén et al. (2018); however, these use more traditional and non-participatory methods (such as content analysis and narrative emotion analysis in the former and semi-structured interviews in the latter). This could probably help to understand the limited number of articles focusing on conflictual emotions found in the literature. On the contrary, Miettinen et al. (2019), in a study conducted in Finland on the empowerment process of peripheral communities, highlight the importance of storytelling and narrative methods such as the 'Nature Mandala' in facilitating the process of reconciliation of property conflicts between parties.

The review also shows that PMs are often accompanied by other qualitative or quantitative methods (mixed methods approach), as the combination of different methods makes it possible to capture different FICP (Bussalleu et al., 2021; O'Flynn et al., 2021; Cook, 2019). Most informants, on the other hand, only use qualitative and participative methods. This is probably because the purpose of the participatory session is different. Most informants are professional facilitators or experts and do not use PMs for academic purposes. Some informants who are more academically oriented, however, point out to the importance of combining several methods, such as quantitative and qualitative, to validate the gaps and to analyze the results in greater depth. Another aspect that emerged from the review is that more than half of the PMs applied are conducted in the field (e.g., walking in a forest). This indicates the importance of the setting when tackling inner and emotional experiences of the participants (see Section 4.2).

A recent study by Anderson et al. (2022) conceptualizes Nature's Contributions to People in four macro-categories: living AS nature (e.g., harmony), living IN nature (e.g., belonging), living WITH nature (e.g., stewardship), and living FROM nature (e.g., livelihood). Our work suggests that PMs can effectively disentangle the first three of nature's contributions to forest communities, which are often neglected by traditional evaluation methods for ES. PMs thus emerge as the most suitable techniques to use when dealing with FICP. Even if most of the facilitators interviewed are familiar with the ES framework, only few are aware of the NCP framework. This indicates that further work should be done by both the scientific and policy community to promote it, so to support the emergence of alternative evaluation methods for assessing FICP.

5.1. Recommendations for using participatory methods to assess FICP

Drawing from our findings we propose four main recommendations for forest practitioners and researchers eager to utilize PMs to assess FICP.

1. *Context matters.* FICP derive from the one-to-one/many-to-one relationship we as humans develop with forests. Creating "*a safe space, and atmosphere where participants are willing to share their own knowledge with each other and learn from each other*" [P01] is a perquisite for facilitation processes. This can trigger transformative changes of participants' values and norms when taking into account FICP (Chan, 2019). Priebe et al. (2022) show that context matters when assessing the transformative changes a forest community faced in the past. This suggests that intangible contributions deeply rooted in individual and community past experiences (care, identities, spirituality, nostalgia, see Section 3.2) can benefit from PMs organized in carefully selected outdoor forest settings that are meaningful for group participants (Mattouk and Talhouk, 2017). Trees, forested spaces, and the landscape become active participants in the discussion and deep individual-nature connections and emotions are reaffirmed and explored.

2. *Ensure facilitation skills.* From the interviews conducted a clear distinction emerges between merely using PMs and implementing facilitating participatory processes. Facilitation is a "*relational building process*" and an "*approach to learning*", which departs from a structured involvement process facilitators adopt from their ethical and philosophical principles. Trained facilitators are deemed essential to disentangle and interpret relational and emotion-based FICP. Someone who is (i) able to listen without interfering in group dynamics, (ii) brave enough to create a connection across diverse and in many cases opposing stakeholders, (iii) and skilful enough to manage time, relations, emotions, norms, and values, ensuring psychological safety and active listening for the involved participants. Most of the informants received a type of training (e.g., master's level or intensive training) that allowed them to consider themselves as forest or agriculture facilitators.

3. *The right tool for the right moment.* The choice of the methods to use is both context and participant based. Results from our review indicate that the perfect method does not exist, although performative and walk-based PMs are the most widely used techniques to assess FICP. The selection and testing of the method that best fits the research focus or the issue to be discussed is up to the facilitators, and based on their knowledge of the context, the participants involved, and the research objectives. In certain cases, PMs are used to co-create alternative evaluation methods, in others to inform policy decisions, or to broaden the way we sense the environment. In large research projects it is thus essential to establish active communication channels between facilitators and researchers to ensure that facilitation builds on the research objectives and that the research is effectively supported by facilitation processes.

4. *Be prepared for what might come.* Disentangling FICP means digging into human-nature relationships, individual emotions, and group dynamics. This is a complex psychological setting in which facilitators need to move carefully with extreme flexibility, ensuring that the results of the exercise do not harm individual and collective psychological wellbeing. This is another reason why some informants highlighted the importance of ad-hoc training for researchers and forest practitioners willing to become facilitators.

Table 4

Summary of the main pros and cons identified by interviewees with regards to participatory methods and Forests' Intangible Contributions to People.

ID	Pros	Cons
Emotions	The assessment process becomes more comprehensive; PMs allow for a happier way of learning and reaching the nonverbal and more irrational side of the participants' mind. *"Participants learn more and in a better and happier way"* [P04]	A group activity might limit participants in expressing their private emotions; results might change due to participants' tiredness and/or personal experience; ensuring psychological safety of the participants; treating participants as equals. *"If people are not confident to engage, it won't happen."* [P06] Facilitators need to have fine-tuned facilitation skills (including an open mindset and and having the skills to bridge across opposing stakeholders); limited comparability of the results; time and conflict management is essential; the process behind participatory methods often takes time; the PM needs to be adapted to the participants' knowledge, context, perceptions, norms, and values.
Process	Safe space for knowledge sharing and discussion; experience-centred assessment. *"I am safe here to express my feelings, to express my thoughts and my needs"* (P08)	*"Not just a skilful facilitator but a brave and determined facilitator"* [P05] *"I would say that everything can be dealt with participatory methods, depending on the skills of the facilitator"* [P09]. *"You cannot use paintings in a forest community that does not paint, or songs in a community that does not sing"* [P12].
Reactions	PMs stimulate creativity; improve communications amongst and within participants; bring transformative change for participants – participants' empowerment; participants feel listened; trust-building exercises allow participants to network with people experiencing similar emotions towards the intangible. *"I think that's participatory approaches are also empowering. If they lead people to, you know, new ways of looking at their own resources and their own skills"* [P06]. (while doing this participatory technique) *"I see myself embedded in nature, and I see nature and I finally see it as what it really is"* [P10]. Broaden the way we implement risk assessment decision making; brainstorming new evaluation methods; higher effectiveness than traditional evaluation methods; robustness of the results due to different opinions involved; more beautiful and creative outcomes	One participant only leading the group discussion; intense sensitivity to power dynamics *"I mean participatory tools require intense sensitivity to power dynamics. Who has power? Who has voice? Who doesn't? Who's invited to be involved, who isn't? Who takes power in the room? And so you have to be very sensitive to all that, with participation generally. Otherwise you will just invite the strongest voices and you'll hear the strongest voices. You have to work quite hard on that"* [P01].
Outcomes	*"I find it* (the participatory method)*, also from an aesthetic point of view, much more appealing both for me and for them and to those to whom I then communicate it"* [P04]. *"The biggest pro of using participatory approaches is that you're trying to focus on the reality as experienced by the community or the farmers or the people who are the forest users. It's trying to switch the balance of power in development planning"* [P06].	_

5.2. Conclusions

This research confirms that PMs can contribute greatly to assessing the emotional and spiritual dimensions of FICP. Participation methods emerge as pivotal toolkits to unfold connections amongst stakeholders dealing with intangible benefits, supporting the multifunctional role of forests, and thus the delivery of national and worldwide policy objectives (e.g., the Sustainable Development Goals or EU policy priorities of the Horizon Europe Work Program focusing on *Inclusive Societies*). PMs will likely play a key role in future policies to encourage the provision of forest ecosystem services by fostering bottom-up approaches and learning amongst peers (Winkel et al., 2022) as well as for ensuring policy acceptance at local level (Blondet et al., 2017). Our findings also highlight the importance of training facilitators in choosing the most suitable PM for assessing emotional and spiritual dimensions of FICP. This is an important aspect that national and supranational funds can support through ad hoc training schools and programmes, aiming at providing facilitation skills to forest advisors, practitioners, and researchers wishing to assess FICP through inclusive and participatory-based techniques.

CRediT authorship contribution statement

V. Marini Govigli: Conceptualization, Methodology, Formal

analysis, Investigation, Writing – original draft, Writing – review & editing. **S. Bruzzese:** Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Data curation, Visualization.

Declaration of Competing Interest

The authors have no competing interests to declare.

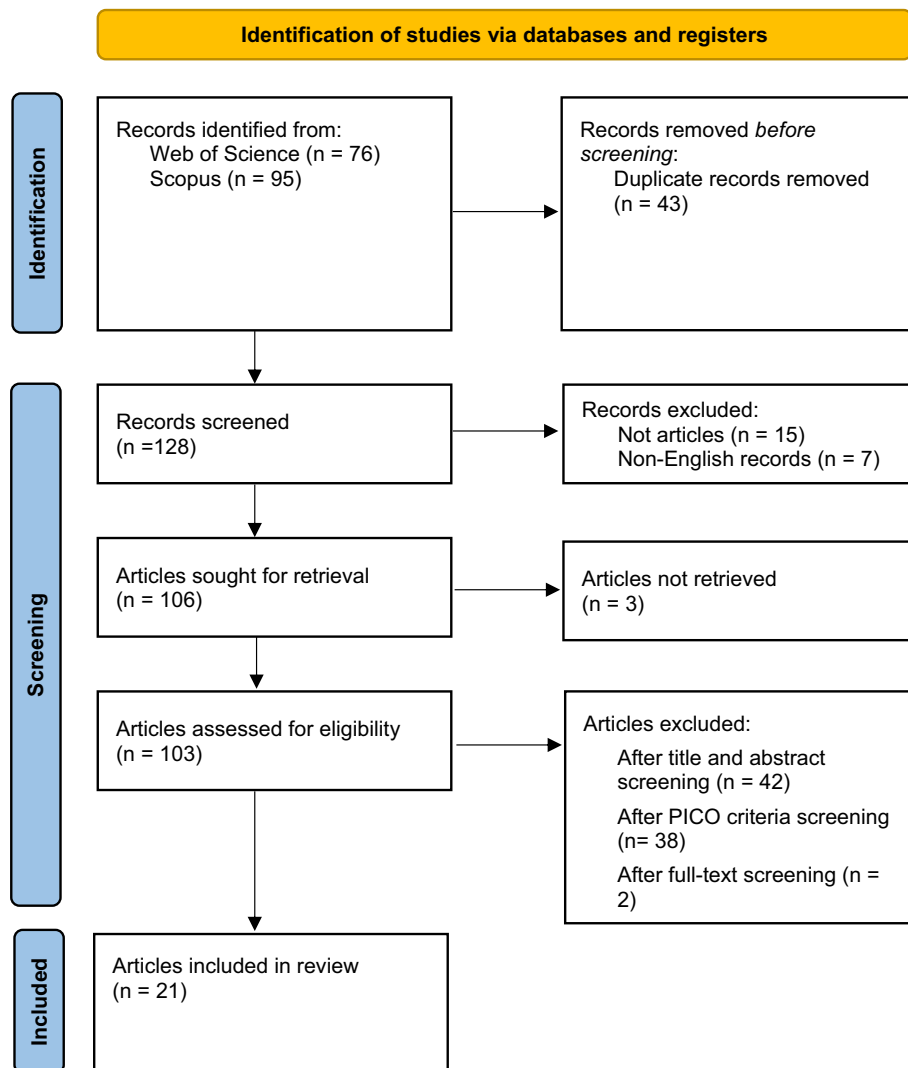**Data availability**

Data will be made available on request.

Acknowledgments

Appendix A. Description of variables included in the data extraction phase

Variable	Variable options	Additional description
Type of participatory method	N/A	String identifying the type of PM used
Accompanying methods	N/A	Additional method used for collecting the data if any
Type of accompanying methods	"Qualitative", "Quantitative", and "Quali-Quantitative"	–
Type of stakeholders	"Forest managers", "Civil societies", "Policy-makers", "NGOs" and "Other"	Main stakeholders involved in the PM
Application of participatory tools	"In the field", and "In the lab"	–
Type of ecosystem services (ES)	"Supporting", "Provisioning", "Regulating", and "Cultural"	Categories from Masiero et al., 2019
Type of Nature Contribution to People (NCP)	"Habitat creation and maintenance", "Pollination and dispersal of seeds and other propagules", "Regulation of air quality", "Regulation of climate", "Regulation of ocean acidification", "Regulation of freshwater quantity, location and timing", "Regulation of freshwater and coastal water quality", "Formation, protection and decontamination of soils and sediments", "Regulation of hazards and extreme events", "Regulation of organisms detrimental to humans", "Energy", "Food and feed", "Materials and assistance", "Medicinal, biochemical and genetic resources", "Learning and inspiration", "Physical and psychological experiences", "Supporting identities", and "Maintenance of options"	Categories from IPBES, 2018
Type of emotional and spiritual FICP assessed	N/A	A description of the main emotional and spiritual FICP assessed, if any
Economic rationale for using the participatory tools	"Marketing development", "Innovation", and "Community subsistence"	–
Economic valuation methods adopted	N/A	–
Spatial scale	"Local", "Subnational", "National" and "International"	
Geographical area	N/A	
Year of method application	N/A	

Appendix B. PRISMA flow diagram

Identification of studies via databases and registers

Identification

Records identified from:
  Web of Science (n = 76)
  Scopus (n = 95)

→ Records removed *before screening*:
  Duplicate records removed (n = 43)

Screening

Records screened (n = 128)

→ Records excluded:
  Not articles (n = 15)
  Non-English records (n = 7)

Articles sought for retrieval (n = 106)

→ Articles not retrieved (n = 3)

Articles assessed for eligibility (n = 103)

→ Articles excluded:
  After title and abstract screening (n = 42)
  After PICO criteria screening (n = 38)
  After full-text screening (n = 2)

Included

Articles included in review (n = 21)

Appendix C. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.forpol.2023.102990.

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