



RESEARCH

 OPEN ACCESS  Check for updates

Exploring cultural landscape narratives to understand challenges for collaboration and their implications for governance

Tamara Schaal-Lagodzinski ^{a,b}, Bettina König^{c,d}, Maraja Riechers ^a, Nico Heitepriem^e and Julia Leventon^f

^aSchool of Sustainability, Leuphana University Lüneburg, Lüneburg, Germany; ^bCenter for Technology and Society, Technische Universität Berlin, Berlin, Germany; ^cFaculty of Life Sciences, Humboldt-Universität zu Berlin, Berlin, Germany; ^dResearch Center [Sustainability - Transformation - Transfer], Eberswalde University for Sustainable Development, Eberswalde, Germany; ^eState Office for Environment Brandenburg, UNESCO Biosphere Reserve Spreewald, Lübbenau/Spreewald, Germany; ^fDepartment of the Human Dimensions, Global Change Research Institute of the Czech Academy of Sciences, Brno, Czechia

ABSTRACT

Ongoing land use change, including both land abandonment and agricultural intensification and expansion, not only present a threat for biodiversity and ecosystem health but also for the persistence of cultural landscapes. However, farmland abandonment and the resulting loss of traditional cultural landscapes is an under-researched topic in the literature. Our work in a transdisciplinary action research project in the Spreewald Biosphere Reserve suggested that challenges to preserve the cultural landscape are rooted in diverging landscape understandings and future aspirations. Dealing with and integrating different perceptions and viewpoints is a key challenge in landscape governance. Narratives as storylines about a topic or an issue have a structural and temporal dimension and can help understand land-use conflicts and different viewpoints. We adopted a social constructivist perspective on landscape to engage with meanings and perceptions (including values) that constitute landscape to diverse stakeholders. To understand these differences in meaning, we drew on Q-methodology and conducted 38 interviews with key stakeholders. We elicited three co-existing and partly overlapping landscape narratives. These differ with regard to meanings of the term cultural landscape, including how stakeholders characterise the landscape, how they appreciate it, and what they perceive as threats. We show how such differences in meanings and values attributed to the landscape translate to different problem framings and future aspirations and thus present a barrier for collaborative management and governance. We highlight how participatory vision development could help address narrative tensions and argue that a more integrative perspective would better include cultural aspects.

ARTICLE HISTORY

Received 19 June 2023
Accepted 10 February 2024

EDITED BY

Cristina Quintas-Soriano

KEYWORDS


Biodiversity; biosphere reserve; plurality; Spreewald; values

1. Introduction

Land use changes are among the most important drivers of ecosystem degradation and biodiversity loss (IPBES 2019). These changes not only threaten the persistence of ecosystems but also that of cultural landscapes and thus the many ways in which people relate to and value them, which can contribute to a lack of awareness or even disregard of peoples' role in nature and the values of nature (c.f. Beery et al. 2023). Both land abandonment and agricultural expansion and intensification are drivers of landscape changes in Europe (Plieninger et al. 2016), which are accompanied by a range of interacting drivers such as climate change or political changes shaping cultural landscapes (Bürgi et al. 2017). Using the example of semi-natural habitats, Herzon et al. (2022) highlight that interconnected societal processes, including less attention in research and decreasing public experience of these habitats, contribute to the decrease of the area

under appropriate management. Although land abandonment has been identified as a key driver for landscape change, farmland abandonment and the concomitant loss of traditional cultural landscapes is an under-researched topic in the literature (Zscheischler et al. 2019). The term cultural landscapes refers to the co-evolution of humans and nature and the broad range of material and non-material values that people associate with them (Schaich et al. 2010; Bürgi et al. 2017) – emphasising subjectivity and plurality for understanding landscapes (Stenseke 2018) and thus the myriad of ways in which humans interpret and ascribe meaning to landscapes (e.g. Sandström and Hedfors 2018). For example, van Putten et al. (2020) recently showed how landscape associations vary between different languages. Cultural landscapes therefore present a particularly interesting type of landscape to explore challenges around differences in perceptions of landscape change processes.

CONTACT Tamara Schaal-Lagodzinski  schaal@leuphana.de

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/26395916.2024.2320886>.

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

Our research aim was to explore different meanings associated with a cultural landscape through a narrative lens and understand how those create challenges for landscape management and governance. This research aim emerged from the transdisciplinary action research project *ginkoo* in the Spreewald Biosphere Reserve (BR) in eastern Germany. *ginkoo* explored options for coordinated landscape management and maintenance to preserve the wet meadows, which are typical of the Spreewald area, but which are threatened to disappear due to land abandonment (Schäfer and König 2018). Three innovative approaches were tested as part of *ginkoo*: a biodiversity offset instrument (land pools) (Busse et al. 2019), the thermal use of biomass from landscape maintenance, and financing landscape management directly through the touristic sector, e.g. via donations (König et al. n.d.). Findings from the transdisciplinary project suggested that navigating the process to co-develop and co-implement innovations to address this challenge were rooted in diverging imaginations of the sustainable future development of the cultural landscape. In workshops with different stakeholders in the area, a question that kept coming up repeatedly either explicitly or implicitly was ‘What cultural landscape are we talking about?’. This question pointed to differences in what cultural landscape meant to different people and resulting challenges to establish collaborative management of the cultural landscape and co-creation of different innovative approaches to address land abandonment. This current paper therefore presents results from research that sought to explore these differences.

Different meanings ascribed to and understandings of environmental problems present an important governance challenge (c.f. Ingold et al. 2019). Görg (2007) defined landscape governance as ‘deal[ing] with the interconnections between socially constructed spaces (the politics of scale) and “natural” conditions of places’ (p. 954). Thus, landscape governance is concerned with perceptions of problems related to biophysical aspects in particular locations (c.f. Buizer et al. 2016). Such landscape perceptions are influenced by peoples’ experiences with them (van Putten et al. 2020). For example, perspectives on landscape development are influenced by different interests (Barnaud and Couix 2020; Frei et al. 2020) and landscapes are valued by different people for various reasons – instrumentally, intrinsically or relationally (Bieling et al. 2020). Thus, how landscapes are perceived influences management decisions as well as how inhabitants of the landscapes take up these decisions. Further, landscapes are not stagnant but constantly evolving and thus perceptions of landscape can change. How people think about current changes of a landscape and the future is influenced by how they perceive past changes (Soliva 2007). Moreover, significant landscape changes

can alter how people relate to and value them (Riechers et al. 2020), which is even more relevant for cultural landscapes.

Narratives provide a conceptual lens to identify different perceptions of issues and to reveal underlying beliefs, preferences and values. Central to narratives is a sequence of events or actions (Roe 1994) and thus a temporal dimension (Soliva 2007; Bryman 2016). Narratives are about something, e.g. an issue, phenomena or topic, such as land abandonment (Soliva 2007; Frei et al. 2020). Narrative research has examined tensions and conflict around current and future landscape development. For example, Stanley (2021) contrasted narratives about cemeteries’ material-symbolic meaning in Icelandic culture and contrasted them with an imagined futures narrative by an external consulting firm. Similarly, Masterson et al. (2019) demonstrate how different narratives in a study area in South Africa draw on different place meanings and how the full breadth of meaning is not incorporated into dominant conservation narratives. Tensions between narratives were also highlighted by Köpsel et al. (2017) who contrasted a policy narrative with different local landscape narratives about Cornwall. Contrasting landscape narratives can also help understand conflicts around future land use and development priorities (Plieninger et al. 2018). These examples show that a narrative lens provides a nuanced understanding of conflicts related to different meanings and perceived changes and trade-offs related to land use and development. Thus, narratives do not only constrain but also enable thinking (Veland et al. 2018) and what is perceived to be the right course of action or management (e.g. Köpsel et al. 2017).

In this paper, we took a social constructivist approach that considers constructions of landscape in relation to physical or material elements of the environment, the interpretation of which differs between different people or groups (c.f. Gailing 2012; Köpsel et al. 2017). The materialities of landscape, e.g. landscape elements, thus provide the ‘raw material’ to which meanings are ascribed (Stedman 2016). We understand narratives not as tools of communication to achieve a certain objective but as shared interpretations and meanings assigned to the notion of cultural landscape. To address our research aim, we sought to explore how the Spreewald cultural landscape is conceptualised by local actors and how this relates to perceptions of threats and landscape values. To this end, we used a mixed methods approach, namely Q-methodology (Watts and Stenner 2012). We interviewed 38 stakeholders from different sectors, including agriculture, nature conservation and tourism in the Spreewald. We identified three cultural landscape narratives which differ with respect to problem framings, landscape meanings and values. We highlight how this creates narrative tensions resulting in both a lack of a shared problem framing and future imaginations which create a barrier

for management and governance. Findings from this research are also relevant for other cultural landscapes where stakeholders seek ways to collaboratively preserve traditional cultural landscapes.

2. Material and methods

2.1. The study area

The Spreewald area is located approximately 100 km southeast of Berlin in the Federal State of Brandenburg in Germany (Figure 1). It was awarded the status as Biosphere Reserve in 1990 just after the German unification. The Spreewald is characterised by an interplay of an extensive network of the river Spree, small and fragmented agricultural areas and (floodplain) forest. Extensive, small-scale farming in the area resulted, for example, in species-rich wet meadows. Due to their ecological significance, three water-dominated habitat types with representative

character in the Spreewald are protected under the European Union's Habitats Directive. Further, the Sorbs, a Slavic tribe, settled in and cultivated the Spreewald as early as the 6th century. Their language, customs and influence on e.g. architecture are today considered cultural heritage. These co-evolving processes have shaped a landscape that demonstrates unique characteristics. Thus, the Spreewald is known for both its biological diversity but also high cultural significance which forms the basis for the regional identity (Schäfer and König 2018). This resulted in the decision to award it the status of UNESCO Biosphere Reserve as a way to protect the cultural landscape. Today, the Spreewald is particularly known for gherkins cultivated there, which received the status as protected geographical indication, but also horseradish. With over 800,000 visitors in 2019, tourism is a key sector in the regional economy. The traditional, extensive management that created the cultural landscape is highly labour-intensive

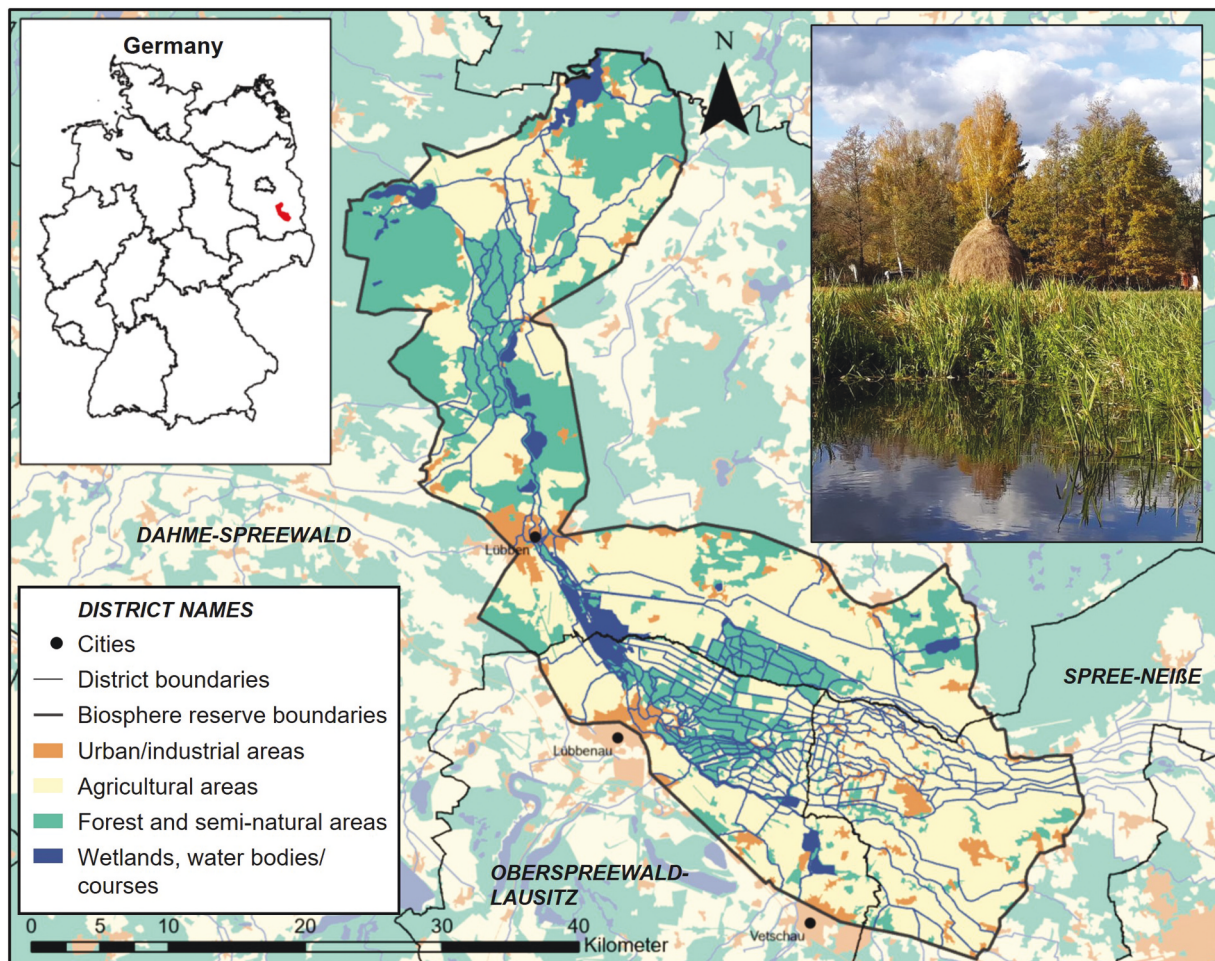


Figure 1. Map of the Spreewald Biosphere Reserve in eastern Germany. The figure shows the extensive river network of the Spree and the characteristic mix of the river with agricultural and forest areas. The photo shows a wet meadow and a hay stack, a symbol of traditional land management in the area. Grass that was mowed with a scythe was stored on wooden beams to dry and served as fodder for cattle especially in winter. Data sources: © 2022. Map created by Tamara Schaal-Lagodzinski with ArcGIS version 10.6.1; GeoBasis-DE/LGB, 2019 (district boundaries); Landesamt für Umwelt Brandenburg (biosphere reserve boundaries); GeoBasis-DE / BKG, 2020 (land cover data); WasserBLick/BfG und Zuständige Behörden der Länder, 22.10.2021 (watercourses); GeoBasis-DE / BKG 2018 (German federal state boundaries). All Rights Reserved. Reproduced under Data licenceGermany – attribution – Version 2.0.

and requires skills such as using a scythe that today few people in the area possess. This contributed to this type of farming no longer being economically viable, in addition to the lack of new technologies available for an adapted land management, which leads to land abandonment and subsequent natural reforestation and the loss of wetland biodiversity.

2.2. Photo-based Q-methodology

We used Q-methodology as a way to understand landscape narratives in a structured, holistic and qualitatively rich way (c.f. Watts and Stenner 2012). In Q-methodology, a set of representative items are selected from a particular subject area or topic of interest and participants rank the items relative to each other, e.g. from what they most agree with to what they most disagree with, based on a sorting question (Brown 1980; Watts and Stenner 2012; McKeown and Thomas 2013). All participants were asked to place the items in the same fixed symmetrical sorting layout, with a decreasing number of items permitted towards the two extremes of the layout, forcing participants to prioritise items. Through the activity of sorting, participants express their own (subjective) point of view relative to the focus topic (Brown 1980). Following the sorting, an interview with each participant serves to understand the personal interpretation of the items and rationale for the sorting in more depth. Central to Q-methodology is its holistic nature (Watts and Stenner 2012), whereby the entire sorting of items by each participant (Q-sort) is considered because all

items are ranked relative to each other based on each participant's viewpoint. In the analysis stage, researchers search for patterns in the Q-sorts thus identifying prevalent social perspectives or discourses (Watts and Stenner 2012).

We used a photo-based Q methodology according to the steps outlined in Figure 2. Our focus was on identifying different landscape narratives and how different landscape elements, i.e. landscape materialities, are interpreted within those narratives. Photographs are useful in eliciting values, beliefs and attitudes towards a topic and engaging with different meanings (Prosser and Schwartz 1998). We therefore decided to use photos as items as a way to elicit participants' subjective interpretations of the items, rather than the more common statement or text-based approaches. Photos have been used for example to understand perceptions of abandoned farmland in landscapes (Benjamin et al. 2007) and landscape aspirations among rural communities (Milcu et al. 2014). In our case, the photographs were used (1) as prompts to get participants to discuss different aspects of the landscape but also (2) as data in that they were numbered and the ranking of statements was the basis for our quantitative analysis (c.f. Bryman 2016).

2.3. Interview process

To explore different conceptualisations of the Spreewald cultural landscape and related perceptions of threats and landscape values, we first sought to identify the 'concourse of communication', i.e. the

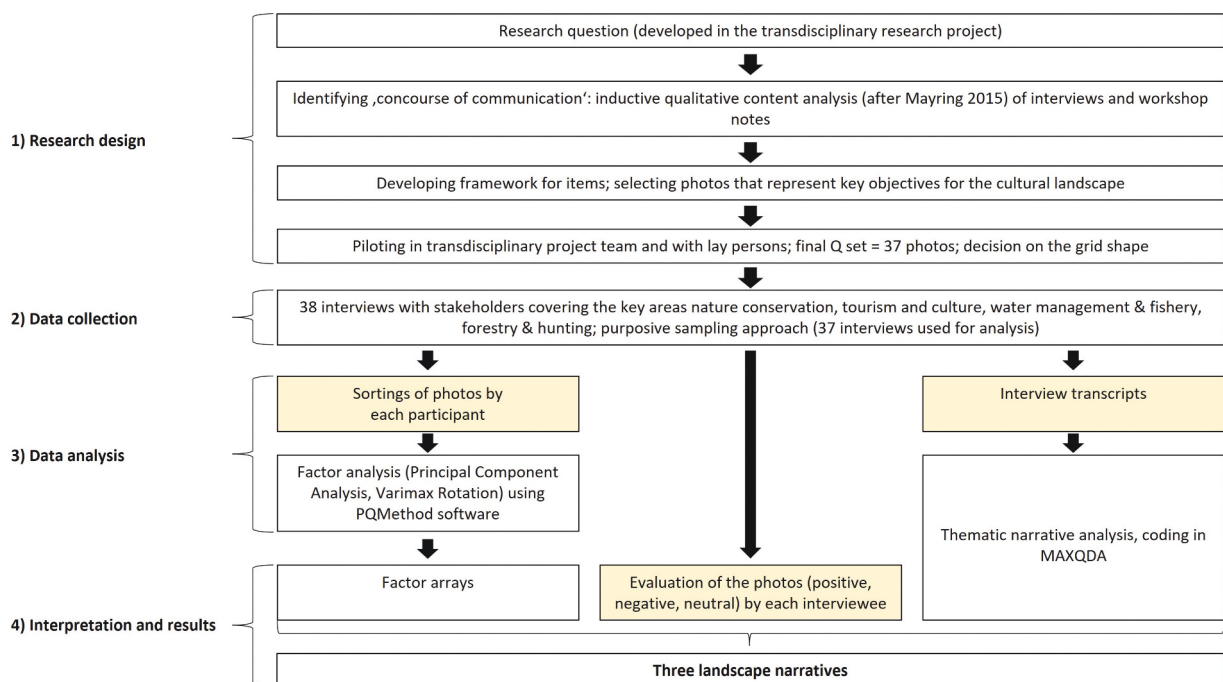


Figure 2. Steps in the Q-method approach. The three types of data collected as part of the interviews are highlighted in yellow.

range of perspectives on the topic (McKeown and Thomas 2013). We did an inductive qualitative content analysis (after Mayring 2015) of 18 interviews with key informants that had been conducted at early stages of the project, minutes of three project workshops between 2016 and 2018, and two interviews with tourism organisations. Based on the identified objectives and intensive discussions among the co-authors, we made an initial selection of photos featuring motifs that represented these objectives. To identify different viewpoints, we decided to include photos that we expected to provoke strong qualitative reactions among participants, e.g. a rape seed field. We also developed a framework for the items that covered the key topics and to ensure that it was balanced between different types of land use, ecosystems and cultural elements. We discussed and piloted the interviews which resulted in a final Q-set consisting of 37 photos (supplementary material I).

To answer our research question, we selected participants that play a role in shaping and influencing landscape development and whose perspectives therefore matter for the topic (c.f. West et al. 2016). Landscape development of the Spreewald is influenced by a range of different formal institutions focusing on different areas including tourism, rural development and nature conservation (Gailing 2012). We selected participants purposively based on an initial contact list developed in the ginkoo project team and expanded our list through a snowball sampling approach (c.f. Bryman 2016). We included participants from the key areas agriculture, forestry and hunting, water management and fishery, nature conservation, tourism and culture and from different types of organisations (governmental, private, non-governmental organisations) (supplementary material II).

Before each interview started, we provided participants with a project summary and introduced the research project and interview process. Participants then had the opportunity to ask questions and they subsequently signed a consent form agreeing to participate in the research and to be audio-recorded. These measures were included to ensure that the research met best practice for ethics in research, and were discussed and agreed at the level of work package lead before research commenced. All the interviews were conducted following the same interview guide (supplementary material III). First, participants were asked to outline their role, responsibilities and the key objectives of their organisation regarding the Spreewald. Second, participants were given the photos in random order and asked to rank them on a grid representing a quasi-normal distribution based on the sorting question 'What should the Spreewald cultural landscape look like?' from most positive (+4) to most negative (-4). We did not use photo labels or

explained the photos to participants because they ascribe meaning to the items (c.f. Watts and Stenner 2012). We answered questions about the photos' contents as briefly as possible. Third, depending on the participants' preference, we interviewed them during or after the sorting of the photos to understand the meanings attributed to the photos and the overarching rationale behind the sorting (Watts and Stenner 2012). Fourth, we asked participants to categorise photos into those they perceived to be positive, neutral and negative. At the end of the interviews, participants were asked to fill out a short questionnaire to obtain demographic information regarding age and gender.

In total, we conducted 38 interviews, which took place between February and March 2019 and each lasted approximately one hour. In one case, two employees from the same organisation decided to do an interview together. Over half of the participants were 55 years or older, 64% of them were male and 36% female. Approximately a third of participants were associated with the areas of water management and fishery and agriculture and another third of participants were associated with multiple areas of expertise. All recorded interviews were subsequently transcribed verbatim. The transcripts and the respective Q-sorts were sent to the participants with the possibility to rephrase anything that participants felt might be misinterpreted by the researchers or to add explanations.

2.4. Narratives and data analysis

We took a convergent mixed method approach to analyse the three types of data we had collected: 1) ranking of the photos in the grid that participants were presented with, 2) evaluation of the photos (negative, neutral, positive) and 3) transcripts of the interviews.

We first wrote memos for all the photos based on our recollection of the different meanings and interpretations of the items to understand which photos stood out and why, e.g. because of contrasting interpretations between participants. After familiarisation with the transcripts, we wrote brief case summaries for the interviews based on key terms such as wilderness or land management and summarised different understandings of cultural landscape. One participant placed several photos outside the grid which is why we could not consider their Q-sort in the analysis. Despite not being part of the formal analysis, this transcript helped inform our understanding of the narratives. We analysed the Q-sorts statistically. Factor analysis is a method of data reduction helping to identify patterns in the data and thus latent or underlying variables (factors) (Watts and Stenner 2012). We analysed the Q-sorts

using the PQMethod software version 2.35 (Schmolck 2014). Whilst each Q-sort reflects a unique perspective, factor analysis identifies groups of participants who share a perspective based on similar rankings of the photos (e.g. Brown 1980). All eight factors in the unrotated factor matrix had an eigenvalue of >1 . Factors 4–8 all had only one or no significant factor loading in the unrotated factor matrix, which is one criteria for not considering them further (see Watts and Stenner 2012). For the remaining three and two factor solutions, a principal component analysis and varimax rotation were applied to identify a ‘best’ or preferred solution (Brown 1980). Simultaneously, we conducted a thematic narrative analysis which focuses on the content, i.e. what is said, and not e.g. to whom something is said (Riessman 2008). Therefore, we coded text segments under themes relating to the broad categories of land use, threats and negative aspects, characteristics and general aspects using MAXQDA version 2020.4.1 in an inductive-deductive approach.

We compared the two and three factor solutions with the case summaries and preliminary coding of the data to understand how well the qualitative and quantitative analysis complemented each other. We decided on a three factor solution due to the subjective meaning and unique perspective of each extracted factor (c.f. Watts and Stenner 2012). Our interpretation of the narratives was based on three elements: a model Q-sort for each narrative (so-called factor array), the assessment of the photos (supplementary material IV) and the themes that were identified in the transcripts. To put the themes into context, the factor arrays helped us understand particularly salient photos in the narratives and the assessment helped us uncover areas of (dis-)agreement over the interpretation of the photos. This was supplemented by the case summaries to help avoid dissecting the interviews based on the themes and remain focused on how the themes are embedded within and relate to the overall landscape interpretations. Based on the photo interpretations and meanings, themes and assessments of photos, we identified key landscape values for each landscape narrative during the interpretation of our findings (Figure 2). We understand values here broadly to refer to the importance or appreciation of the landscape thus including intrinsic, instrumental and relational values (Chan et al. 2016). This notion of values thus includes biophysical aspects (e.g. forest) but also place meanings (e.g. home) and landscape aesthetics (e.g. tidiness) (c.f. Raymond et al. 2016).

Preliminary findings were presented at a workshop in the study area in October 2019. Workshop participants were asked to provide feedback on the findings and align themselves with one of the three perspectives. Some of the people we interviewed also participated in this workshop. How they aligned themselves with the narratives,

without any knowledge of which narratives their Q-sort was associated with, as well as their questions and feedback on the findings were vital for the further interpretation and distinction between the narratives.

3. Results

We identified three landscape narratives which represent different perceptions of what the landscape is and what it should look like. The three narratives accounted for 61% of the variance and the Q-sorts of 26 people loaded significantly onto the narratives (supplementary material V and VI).

In the following, we start by pointing out the landscape conceptualisation underlying each narrative. We then present (groups of) photo motifs that were considered to be particularly positive as well as their interpretation. We subsequently point out perceived threats and photo motifs that were considered to be negative and how they were interpreted. The three narratives are presented by referring to the photo numbers, which are preceded by the # symbol. The names of the three narratives are based on expressions used by participants associated with the narratives.

3.1. Nature narrative: cultural landscape as landscape close to natural

The *nature narrative* recognised that the cultural landscape was created and shaped by humans, and the landscape was conceptualised as the connection between the traditional use of the landscape and nature, understood by participants as areas and elements showing little or no human intervention. Despite human influence on the landscape, the protection of nature in terms of species and habitats was an important goal (Figure 3).

It is certain that the cultural landscape was planted at some point but it also has a high degree of closeness to nature, this symbiosis between protection and utilization goals so to speak. (I26)

The two photos showing birds (white stork, kingfisher) had the highest ranking and reflected this symbiosis (#7 & #30: +4) (Figure 4). The kingfisher was seen as a symbol or ‘indicator’ (I21) of a generally good ecological condition of the landscape and the white stork as a synanthropic bird reflected how humans and nature co-exist and are compatible through traditional land use.

[...] and the stork for me is also such a symbol of how nature and humans can be reconciled with each other [...]. (I25)

Traditional land use played a central role in this narrative and related to two key aspects: First, small scale agricultural production and extensive management were seen as reflecting a careful use of the land (#19 & #33: +3, #13 &

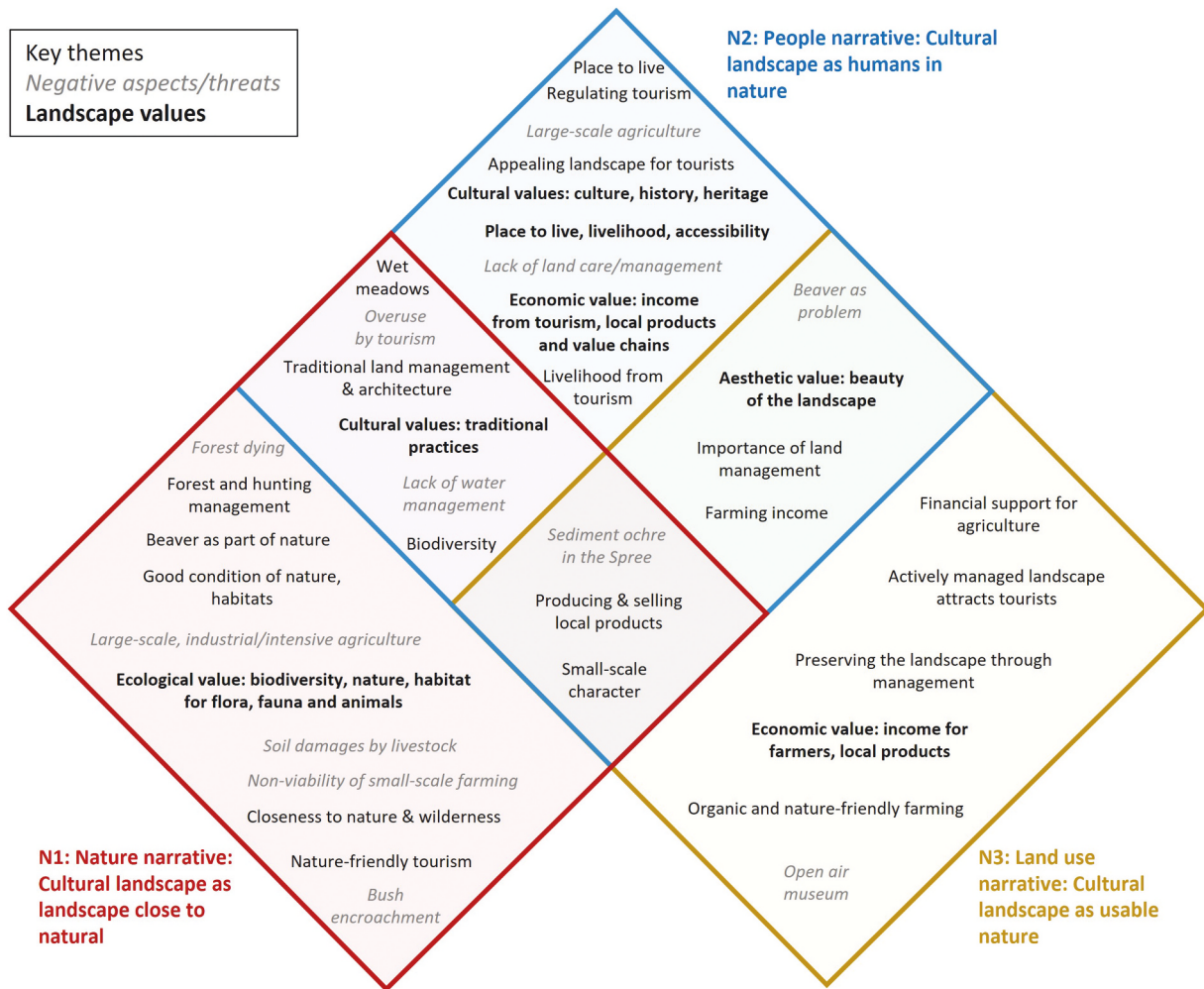


Figure 3. Venn diagram displaying the three narratives with related themes, negative aspects and landscape values. The phrases originate from the qualitative analysis.

#28: +2). Second, management also referred to forestry and hunting as a way to create ‘beautiful forests’ (I19). However, participants associated with this narrative did acknowledge that small-scale, traditional agriculture is an ideal and that it is threatened because it is not economically viable. Related to the appreciation of traditional land management were elements that represent ways of traditional living in the landscape such as the haystack (#34: +3, #8: +1, #6: 0). The marketing of regional products, including through organic farming labels (#36: +1, #22: 0), was considered an important economic aspect. Despite a preference for the production and sale of local products, two participants noted that the production of gherkins takes place outside the Biosphere Reserve, which explained the lower ranking of this motif (#4: -1).

Nature, in the sense of untouched areas, was considered to be important in and of itself, in addition to its value as a habitat. Participants considered natural and wilderness areas, i.e. motifs appearing less organised and displaying little or no human intervention, (including flora, fauna and wildlife) as essential parts of the landscape. This explains why photos displaying natural areas or dead wood were considered to be positive (#16: +2, #9 & #21: +1). For example, views

towards the beaver were generally positive, and it was mostly viewed as belonging to the landscape (#12: 0). Sustaining biological diversity, referring primarily to species diversity, in the landscape is important, and this was mentioned in particular in relation to wet meadows which were seen as a key characteristic of the Biosphere Reserve (#27: +2).

[...] the species-rich wet meadows are, so to speak, THE symbol of the Spreewald cultural landscape. (I26)

Some participants argued that it is because of nature that tourists come to the Spreewald. Notions of ‘nature-friendly tourism’ (I25) or ‘nature-oriented tourism’ (I27) highlighted that tourism needs to be compatible with the protection of areas with little or no human intervention.

With regard to threats or negative aspects, this narrative reflected a strong apprehension towards large-scale, intensive agriculture which was perceived to be a threat to the typical landscape (#5: -4, #11 & #18: -3, #15 & #23: -2). The intensive use also related to intensive livestock management and the damage to the soil from large numbers of animals on wet meadows (#1: -1).



Figure 4. Model Q sort for the nature narrative. The ranking of the photos is based on the weighted averages of the Q sorts associated with the narratives. Photo credit: © 2022. Photo collage created by Tamara Schaal-Lagodzinski; Michael Petschick (photos #1, #4, #15, #20, #23, #26, #28, #33); Tamara Schaal-Lagodzinski (photos #2, #35, #37); Tom Noah (photos #3, #12); Stefan Fusan (photo #5); Biosphere Reserve Spreewald (#6, #9, #13 #19, #21, #25, #32, #34, #36, #16); Frank Kuba (photos #7, #30); Spreewald-Touristinformation Lübbenau e.V. (photo #8); Andreas Traube (photo #10); Nico Heitepriem (#11, #14, #17, #27, #22 [photo was cropped], #24, #29, #31); Andreas Göbel (photo #18). All Rights Reserved. Reproduced with permission and under Data Licence CC BY-SA 3.0 (photo #5).

[...] that is really my image of the enemy as far as the Spreewald is concerned: heavy tractor, super heavy technology, with thick, big tires, making everything flat, huge areas if you see the straw rolls in the background, a disaster. (I24)

The lack of water management and maintenance of the streams was seen as something negative (#14: -2). However, participants agreed that not all streams need to be cleared of dead wood but they should be well-maintained. Whilst natural areas and areas of wilderness in the cultural landscape are important, no management at all was not considered to be positive which is why bush encroachment as a result of land abandonment was perceived to be a problem.

Forest dying was another theme that appeared prominently in this narrative. This related to flooding of areas during the summer months and infections of trees with *Phytophthora alni* pathogens. These two aspects are key issues for alder trees but also ash trees. A picture that appeared to be displaying signs of unhealthy trees was therefore assessed predominantly negative (#31:

-1). Finally, participants considered sediment ocre in the Spree (#25: -4) and mass tourism (#3: -3) to be threats, particularly with regards to habitat protection.

[...] the invasion of bipeds in the Spreewald, or in such close to natural areas in the long run and in this mass will sooner or later bring it down. (I23)

3.2. People narrative: cultural landscape as humans in nature

In the *people narrative*, humans and their use and interaction with nature created the cultural landscape which continues to be the basis for life and production. Nature was valued for the way people relate to their environment. The cultural landscape was viewed as a place to live and important for peoples' livelihood by making an income from agriculture but especially from tourism (Figure 3).

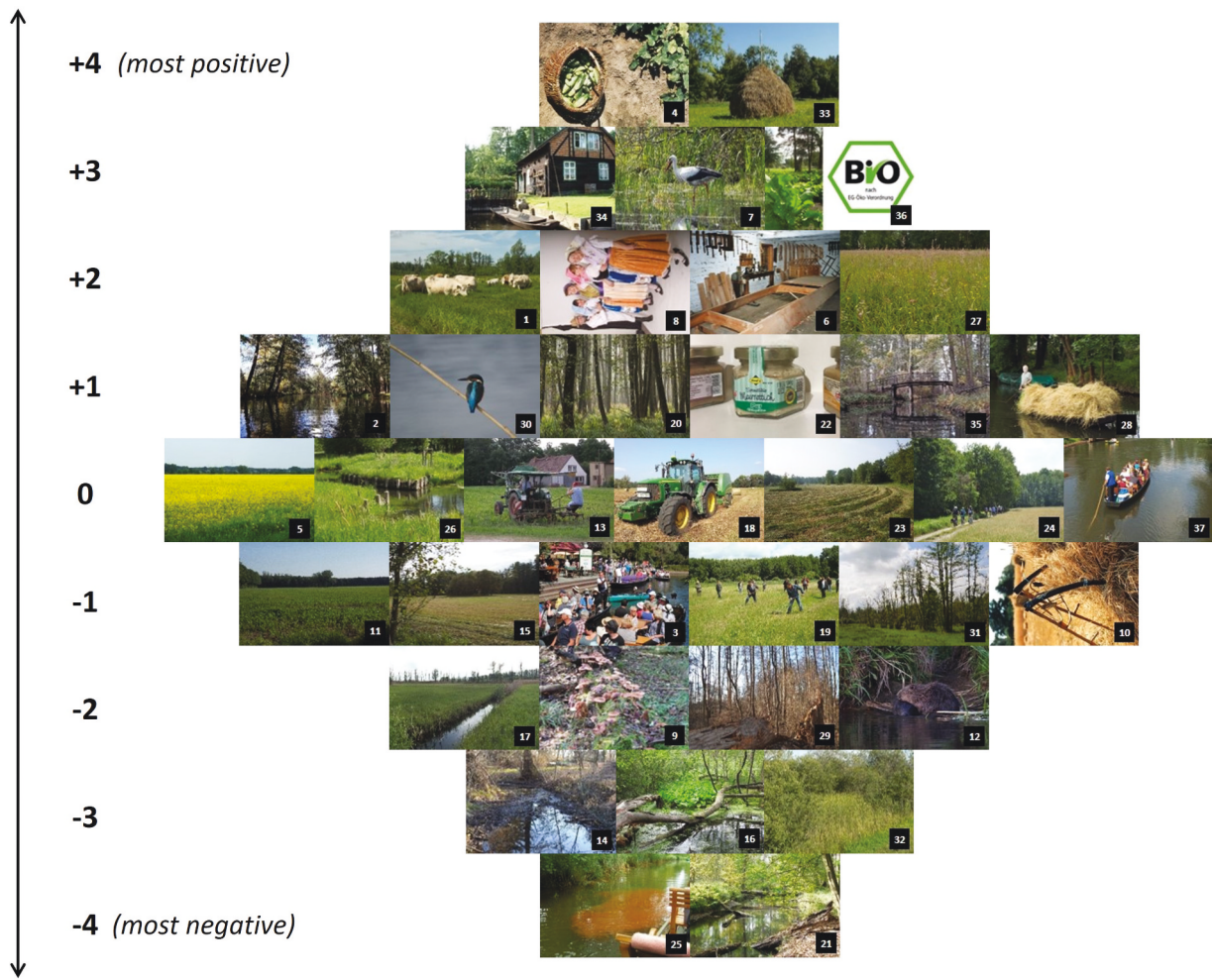


Figure 5. Model Q sort for the people narrative. The ranking of the photos is based on the weighted averages of the Q sorts associated with the narratives. Photo credit: © 2022. Photo collage created by Tamara Schaal-Lagodzinski; Michael Petschick (photos #1, #4, #15, #20, #23, #26, #28, #33); Tamara Schaal-Lagodzinski (photos #2, #35, #37); Tom Noah (photos #3, #12); Stefan Fussen (photo #5); Biosphere Reserve Spreewald (#6, #9, #13, #19, #21, #25, #32, #34, #36, #16); Frank Kuba (photos #7, #30); Spreewald-Touristinformation Lübbenau e.V. (photo #8); Andreas Traube (photo #10); Nico Heitepriem (#11, #14, #17, #27, #22 [photo was cropped], #24, #29, #31); Andreas Göbel (photo #18). All Rights Reserved. Reproduced with permission and under Data Licence CC BY-SA 3.0 (photo #5).

Spreewald cultural landscape is a colourful bouquet of demands and the Spreewald cultural landscape, without humans, is not a cultural landscape. (I05)

Traditional management of the landscape is important in this narrative as it reflects the historical context in which the landscape was created. Therefore, the hay stack and gherkins stood out particularly due to their symbolic meanings (#4 & #33: +4) (Figure 5). This reflected an appreciation of the hard work that humans put into creating and sustaining the cultural landscape (#28: +1).

The hay stack is THE symbol of the Spreewald cultural landscape and served our previous generations to keep livestock in the Spreewald [...]. (I09)

Land care and management of the landscape were perceived to be essential components to preserve the cultural landscape (#7: +3, #1: +2; #5, #13, #23 & #18: 0). The small-scale character of the landscape was appreciated but participants did acknowledge

that traditional, small-scale agriculture is not economic under the current conditions.

A farmer who limits himself to transporting his hay and straw on barges cannot work in a way that earns him money. (I13)

This narrative also reflected a strong appreciation for the cultural heritage of the landscape. This included the typical architectural style of the houses but also traditional handicraft techniques and lived culture by e.g. wearing traditional costumes (#34: +3, #8 & #6: +2).

But at the end of the day, I think it's important to focus on originality and to continue to live these traditions as they were created in the past. (I01)

Apart from these cultural elements, participants appreciated biodiversity in the Spreewald, which in this narrative was mostly associated with the presence of different species and wet meadows (#27: +2, #30: +1).

Another key element in this narrative were humans and people still living in the landscape. This was tied to the role of infrastructure which allows inhabitants, tourists and land managers to access the fragmented landscape (#35: +1; #24: 0). Thus, language and local knowledge were intricately linked to landscape understandings.

[...] an old Spreewald saying is that the soul of the Spreewald lies at the bottom of the stream. (I09)

In this narrative, local products and local value chains were seen as an opportunity to create an income (#22: +1). This included organic farming as a means to produce products that can be sold at a higher price (#36: +3). Moreover, the economics of tourism in the landscape were considered to be important because tourism is a key source of income in the Spreewald (#37: 0, #3: -1). Additionally, tourists appreciate and experience the nice landscape.

Of course, there should also be romanticism in the Spreewald and it should also be developed for tourism, because the people there also need sources of income. (I13)

However, this narrative reflected an ambivalent relationship with tourism. On the one hand, it is an important economic factor but on the other hand, mass tourism or 'Walt Disney (World)' (I05, I33) were believed to lead to conflict between tourism and conservation but also e.g. between canoers and boatmen. In particular, participants mentioned the increased volume of paddle boats. Therefore, participants were strongly in favour of regulating and channelling tourism.

but the canoes, the damage they cause at the riverbanks and so forth, that is a catastrophe. [...] There are days when you hardly see the water for the canoes. (I02)

Threats to the cultural landscape related to iron ore in the Spree (#25: -4) and the beaver due to its damage to the landscape (#12: -2). Two other negative aspects related to land use and management: Large scale farming was considered negative and not a fit for the Spreewald. However, the loss of land care or agriculture was seen as a problem as it changes the appearance and character of the Spreewald. Therefore, too much wilderness in the sense of unmanaged areas in the landscape was seen as something negative (#9 & #29: -2, #16 & #32: -3).

What I consider to be negative is the shrubbery and bush encroachment in the Spreewald. We have the typical bay willows which are growing bigger and bigger and we lose agricultural areas. (I33)

Connected to that, the lack of water management was considered a key issue (#14: -3, #21: -4) due to the reduction in the use of streams by humans but also

negative impacts from muddy streams on wildlife and trees dying from too much water.

3.3. Land use narrative: cultural landscape as usable nature

In the land use narrative, the cultural landscape was created through human use of the landscape and management continues to sustain the Spreewald. The use of the land in a nature-friendly way was central to this narrative (Figure 3).

This is a cultural landscape, it is used in the front [of the photo]. This is the harmony with nature. (I14)

The importance of land use was reflected by the prioritization of photos that show motifs relating to agriculture and land use (#13 & #23: +4, #1 & #15: +3; #18: +2; #11 & #17: +1) (Figure 6). In this context, participants mentioned small-scale farming as characteristic of the landscape. There were two main arguments why land use is important. First, agricultural land use was considered to be pivotal to sustain the cultural landscape. If agricultural management stopped, the cultural landscape would change and lose its characteristics. For example, participants whose Q-sorts significantly loaded onto this narrative explained that the period after the designation as Biosphere Reserve exemplified that land use instead of a protectionist approach is needed to sustain the cultural landscape.

[...] without (land) management it won't work [...] And management, I see that actually embedded in this whole concept. (I32)

Second, people actively managing the landscape and therefore the appealing or 'tidy landscape' (I14) attract tourists to come visit the area.

[...] tourists don't want to see a meadow that hasn't been mowed for five years when they pass by on the barge but they want to see a person who lives in the Spreewald and farms there. (I30)

This narrative was about achieving a harmony or reconciliation of agriculture and nature. Nature here referred to the presence of non-agricultural areas and has its place in the cultural landscape (#7: +2). This explains why photos showing motifs with no human presence or intervention in the landscape were assessed positively (#20: +3, #16: +1; #21: 0). Organic farming was considered to be the status quo in the Spreewald. One participant argued that European Union organic farming regulations were not strict enough (#36: -1) compared to the much stricter organic farming practices in the Spreewald area.

We have hardly any farmer in the Spreewald who practices conventional agriculture, in fact no one at all. We all farm ecologically, extensive, we abstain



Figure 6. Model Q sort for the land use narrative. The ranking of the photos is based on the weighted averages of the Q sorts associated with the narratives. Photo credit: © 2022. Photo collage created by Tamara Schaal-Lagodzinski; Michael Petschick (photos #1, #4, #15, #20, #23, #26, #28, #33); Tamara Schaal-Lagodzinski (photos #2, #35, #37); Tom Noah (photos #3, #12); Stefan Fussen (photo #5); Biosphere Reserve Spreewald (#6, #9, #13 #19, #21, #25, #32, #34, #36, #16); Frank Kuba (photos #7, #30); Spreewald-Touristinformation Lübbenau e.V. (photo #8); Andreas Traube (photo #10); Nico Heitepriem (#11, #14, #17, #27, #22 [photo was cropped], #24, #29, #31); Andreas Göbel (photo #18). All Rights Reserved. Reproduced with permission and under Data Licence CC BY-SA 3.0 (photo #5).

from fertilizer as far as possible, without pesticides in the Spreewald and it works. (I30)

Economic aspects related to land use were prominent themes in this narrative. It was considered vital that those who manage the landscape, in particular forestry and agriculture, can make an income from their activities (Figure 3). Two approaches were mentioned in that regard. First, subsidising or financing farmers who have to manage land under difficult circumstances in the Spreewald. Second, branding, marketing and selling of products coming from the area present an opportunity to make an income (#4: +2, #22: 0).

[...] on the one hand everything that has to do with nature, which I consider to be very positive, and everything that I associate with sustainable management [...] if I want to preserve nature, I need revenues and I can only get that from the economy. (I32)

Photos representing traditional land management practices were mainly described as ‘show’ (I14), not reflecting current land management and thus generally ranked low (#19: -4, #10: -3, #28: -2). The sentiment that the landscape should be actively managed was expressed most strongly by one participant’s opposition to an ‘open air museum’ (I14). Whilst participants were not against preserving cultural traditions, those did not occupy a very prominent role in this narrative (#33: +1, #6 & #34: 0, #8: -2).

Perceived threats in this narrative were iron ochre in the Spree (#25: -4) and damages as a result of beaver activities, e.g. flooding due to water blockages, (#12: -1). Whilst the beaver was not seen as negative per se, some people had negative attitudes towards how the beaver is treated.

[...] I am not against the beaver but I am against how it is spoilt. (I30)

3.4. Consensus photos

Five of the photos were consensus items, i.e. which had similar rankings across all narratives (c.f. Watts and Stenner 2012; see also supplementary material VII). Sediment ocre in the river Spree (#25) was considered to be negative across all three narratives. The photo displaying a river (#2) is general in nature and did not evoke any particularly strong positive or negative associations. The horseradish jar (#22) was mostly interpreted as representing local products and value chains which was something that was important in all narratives. The white stork (#7) as a synanthropic bird was interpreted as representing the management of the land by humans, and at the same time it was perceived to represent the presence of nature, explaining its overall positive ranking. The flowering meadows (#27) were mostly interpreted to represent biodiversity and were also appreciated due to their aesthetic value. Finally, cyclists in the landscape (#24) were not perceived to cause any particular damage to the landscape such as canoers and were therefore considered mostly favourably.

4. Discussion

Our findings highlight how the cultural landscape of Spreewald BR is interpreted differently in the three narratives regarding what it means, what characterizes it, how it is threatened but also appreciated. This reflects different underlying understandings of how humans relate to nature. The *nature narrative* can be understood as a more ecocentric viewpoint where nature is valued for its own sake independent of human use (intrinsic value). Both the *people* and *land use narratives* represent more anthropocentric viewpoints where humans and how they interact with the landscape are the focus of attention (instrumental and relational values). The beaver provides a good example for this difference because it was described as an ‘amazing builder’ (I23) in the *nature narrative* and a ‘problem animal’ (I32) in the *land use narrative*. Despite the context-specific nature of our narratives, there are some similarities with other landscape narratives in the literature. The *nature narrative* is comparable to other pro-nature narratives that value biodiversity, wildlife and vegetation (e.g. Plieninger et al. 2018; Frei et al. 2020; Barnaud and Couix 2020). For example, Köpsel et al. (2017) identified a ‘natural landscape’ narrative that constructs the landscape in relation to elements of nature. This is similar in concept to closeness to nature in the *nature narrative*. Analogous to the *people* and *land use narratives*, other narratives conceptualise the landscape primarily as a place where people live (e.g. Köpsel et al. 2017), where human intervention through sustainable use or management is vital (e.g. Plieninger et al.

2018) or where management needs to be sustained (Frei et al. 2020). Apart from reflecting different human-nature relationships, the narratives also construct the landscape around different core values (Figure 3). Existing classifications of landscape values in the literature demonstrate the myriad of ways in which landscapes are appreciated by people (e.g. Raymond et al. 2016; Garcia-Martin et al. 2017; Plieninger et al. 2018). Our findings highlight three archetypal ways of viewing and relating to the cultural landscape based on different landscape meanings and values.

The narratives we identified reflect differing landscape conceptualisations and problem framings that need to be addressed in governance approaches to the area. Other examples from the literature show how the process of land abandonment is interpreted differently depending on the viewpoint and interests. For example, it might be perceived negatively by farmers (Benjamin et al. 2007) but more positively from a conservationist’s perspective (Frei et al. 2020). In the *nature narrative*, bush encroachment as a result of land abandonment was perceived as a threat because it changes the ecosystems and threatens the diversity of species. In the *people narrative*, however, the lack of land management or use was perceived negatively based mostly on the aesthetic value of the landscape. The different ideas about or approaches to engage with nature reflected through the narratives can be seen as an expression of human-nature disconnection (Beery et al. 2023). The narratives are representations of peoples’ different ideas about desired land use trajectories where understandings of the role and meaning of nature differ. This points to the difficulties to decide on the ‘right’ management and conservation approach. Thus, our findings explain why land abandonment in our case study is not considered an issue by everyone (c.f. Schäfer and König 2018) which results in challenges for collaboration to tackle this ‘issue’.

Understanding how place meanings vary among narratives can help elucidate commonalities but also conflicts (Masterson et al. 2019). Such ‘narrative tensions’ (c.f. Veland et al. 2018) became visible through our narrative approach and point to challenges for effective management. For example, wet meadows were highlighted in the *nature narrative* due to their meaning as places with high biological diversity and thus natural value. In the *people narrative*, the haystack was interpreted as a symbol for the historical links between people and nature and thus the value that traditional land management practices such as manual hay making have in maintaining and preserving the landscape. In contrast, the *land use narrative* focused on utilisation of the landscape and opposed the preservation of the landscape in the form of a museum for consumption by tourists (c.f. Sandell

2016). Whilst the innovation approaches to protect wet meadows developed in our transdisciplinary project resonate with some of the narratives, e.g. land pools with the *land use narrative*, they do not resolve or explicitly address any of the underlying narrative tensions. A next step could thus be to relate narratives and physical landscape elements with the innovative approaches as a means to handle ‘narrative tensions’ in a spatially explicit and differentiated way. Increased participation in innovation approaches might provide an opportunity to incorporate different priorities and viewpoints, e.g. how and where to target income from tourism for managing wet meadows.

Our findings also uncover different underlying normative assumptions about how the cultural landscape should develop. Bieling et al. (2020) highlighted how ethical arguments based on different values can result in competing framings of landscape stewardship. They argue that the diversity of values which leads to different objectives and future pathways needs to be made visible and communicated. This suggests that there is a need to bring the different narratives in conversation especially around the key questions of how the landscape is currently valued and how the cultural landscape of the future is envisioned. Including the perspective of ‘nature as culture’ from the Nature Futures Framework (PBL 2018) could provide a useful addition to the debate on future landscape development. Developing a joint vision can help provide direction for decision-making, actions and behaviours (Wiek and Iwaniec 2014). For example, scenarios in landscape planning help diverse stakeholders to explore plausible changes and agree on common objectives (Albert et al. 2019). They can be helpful to develop a shared vision for the future and to explore opportunities and barriers for collective action towards that vision (Nieto-Romero et al. 2016). Moreover, exploring future visions and pathways towards them in a participatory manner can help empower rural communities to take action (Schaal et al. 2023). Developing a joint vision for the cultural landscape and exploring opportunities for change could thus help with collective sensemaking about the issue of land abandonment and resulting loss of biodiversity-rich wet meadows and provide direction for change. This could help local communities identify levers for change, including for the governance and management of the cultural landscape.

The BR Spreewald is an example of integrated landscape management, promoting multifunctional land use and selling regional products under the common label ‘Spreewald’ (Mann and Plieninger 2017). However, the different perceptions of landscape reflected through the narratives point to a disconnect between physical and socio-cultural aspects of landscape. For example, cultural elements referring to Sorbic minority language and traditions played

a dominant role only in the *people narrative*. Both natural and cultural diversity were adopted as goals of UNESCO Biosphere Reserves in the 1990s (UNESCO 1996). However, we found that both linguistic and cultural on the one hand and biological diversity on the other hand emerged during the interviews, they remain somewhat fragmented among the narratives. None of the narratives considered the cultural landscape holistically in the sense that they considered how both aspects could co-evolve and jointly shape future landscape trajectories. Based on synthesized insights from Biosphere Reserves across the globe, Reed and Price (2020) recently argued that increased emphasis on the concept of biocultural diversity could help shift perceptions away from seeing biosphere reserves as protected areas, an association often evoked by the term ‘reserve’. The designation of the Spreewald cultural landscape as UNESCO Biosphere Reserve heavily influenced the way people manage the landscape. According to the interviews, management initially followed a more restrictive approach to conservation compared to today where extensive, organic farming is the main approach.

Biosphere reserves are model regions for sustainable development (e.g. Reed and Price 2020) and practitioners interpret the concept of biosphere reserve differently, connected to the institutional context and activities in the respective biosphere reserves (Schultz et al. 2018). In our case study we found that whilst land abandonment and thus the loss of biodiversity was considered an issue by many people, the loss of the Sorbic minority language and cultural traditions was mentioned less often by participants. Civically engaged landscape stewardship in the Spreewald engages with both biological and cultural aspects. However, our findings point to the need to broaden the term diversity as part of the Biosphere Reserve to include both biological diversity and cultural heritage. However, whilst for example the importance of plural values of biodiversity is increasingly recognized in biodiversity research (Pascual et al. 2021), such value plurality is limited by current policy frameworks. In particular, in the current governance system sectoral policies prevail and environmental policy tends to conceptualise nature and humans as two separate entities (Biermann 2021). Based on findings from this research, we argue that better integration of socio-cultural aspects into existing landscape management initiatives would be important in the governance of cultural landscapes.

5. Conclusions

Cultural landscapes are changing due to a range of different, interacting drivers (e.g. Bürgi et al. 2017), making their management and the preservation of their biological and cultural values urgent priorities.

Our study demonstrated substantial differences in how a cultural landscape is perceived and valued by different stakeholders. The three identified narratives represent archetypal ways of viewing and relating to the cultural landscape. The *nature, people and land use narratives* reflect different meanings of the cultural landscape, landscape values and perceived threats. This leads to different land use and development priorities, differing problem perceptions and imaginations about the cultural landscape of the future. We show how this creates challenges for collaborative management and for developing innovative approaches to address the impacts of farmland abandonment. Our findings point to the need to develop differentiated visions of future development in a participatory approach as a way to bring different landscape narratives in conversation and to provide direction for future planning and management. In a future step, the narratives and physical landscape elements could be related to innovation approaches that were developed as part of the research project to allow for better engagement with tensions between the narratives. Our study also reveals a fragmentation of biological and sociocultural aspects among the narratives and we suggest better integration among these notions of diversity which can be informed and supported by realist contributions on spatial distribution of bio-physical characteristics of cultural landscapes. Insights from this case study are particularly relevant for researchers and policy makers involved in cultural landscape development and protected areas, especially Biosphere Reserves.

Acknowledgements

We would like to express our profound gratitude to all participants for their time and willingness to participate in this study. We highly appreciate the support provided by the administration of the Spreewald Biosphere Reserve. We thank Prof. Martina Schäfer for the discussions about various aspects of this publication. We also thank the three people who kindly agreed to pilot the initial Q-set and provided critical feedback.

Disclosure statement

Nico Heitepriem was a third-party funded employee at the Spreewald Biosphere Reserve administration during the ginkgo project period, coordinating science-practise interaction in the transdisciplinary project. The first author of this publication conducted the interviews and analysed the data. The whole writing group interpreted the findings, wrote and reviewed the manuscript. Therefore, this employment has not influenced the findings presented here.

Funding

The research was funded by the German Federal Ministry of Education and Research grant numbers [033L145AN

(BK), 033L145B (NH) and 033L145E (TSL)]. The ginkgo project was hosted and coordinated by Humboldt-Universität zu Berlin in cooperation between the Thaeer-Institute and IRI THESys.

Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

ORCID

Tamara Schaal-Lagodzinski  <http://orcid.org/0000-0002-0869-6220>

Maraja Riechers  <http://orcid.org/0000-0003-3916-8102>

References

- Albert C, Haaren CV, Klug H, Weber R. 2019. Leitbilder and scenarios in landscape planning. In: Haaren CV, Lovett AA Albert C, editors Landscape planning with ecosystem services. Netherlands, Dordrecht: Springer; p. 423–433.
- Barnaud C, Couix N. 2020. The multifunctionality of mountain farming: social constructions and local negotiations behind an apparent consensus. *J Rural Stud.* 73:34–45. doi: [10.1016/j.jrurstud.2019.11.012](https://doi.org/10.1016/j.jrurstud.2019.11.012).
- Beery T, Stahl Olafsson A, Gentin S, Maurer M, Stålhammar S, Albert C, Bieling C, Buijs A, Fagerholm N, Garcia-Martin M, et al. 2023. Disconnection from nature: expanding our understanding of human–nature relations. *People Nat.* 21(2):145. doi: [10.1002/pan3.10451](https://doi.org/10.1002/pan3.10451).
- Benjamin K, Bouchard A, Domon G. 2007. Abandoned farmlands as components of rural landscapes: an analysis of perceptions and representations. *Landsc Urban Plan.* 83 (4):228–244. doi: [10.1016/j.landurbplan.2007.04.009](https://doi.org/10.1016/j.landurbplan.2007.04.009).
- Bieling C, Eser U, Plieninger T. 2020. Towards a better understanding of values in sustainability transformations: ethical perspectives on landscape stewardship. *Ecosyst People.* 16(1):188–196. doi: [10.1080/26395916.2020.1786165](https://doi.org/10.1080/26395916.2020.1786165).
- Biermann F. 2021. The future of ‘environmental’ policy in the anthropocene: time for a paradigm shift. *Env Polit.* 30(1–2):61–80. doi: [10.1080/09644016.2020.1846958](https://doi.org/10.1080/09644016.2020.1846958).
- Brown SR. 1980. Political subjectivity: applications of Q methodology in political science. New Haven: Yale University Press.
- Bryman A. 2016. Social research methods. 5th ed. Oxford: Oxford University Press; p. 747.
- Buizer M, Arts B, Westerink J. 2016. Landscape governance as policy integration ‘from below’: a case of displaced and contained political conflict in the Netherlands. *Environ Plann C Gov Policy.* 34(3):448–462. doi: [10.1177/0263774X15614725](https://doi.org/10.1177/0263774X15614725).
- Bürgi M, Bieling C, Hackwitz KV, Kizos T, Lieskovský J, Martín MG, McCarthy S, Müller M, Palang H, Plieninger T, et al. 2017. Processes and driving forces in changing cultural landscapes across Europe. *Landscape Ecol.* 32(11):2097–2112. doi: [10.1007/s10980-017-0513-z](https://doi.org/10.1007/s10980-017-0513-z).
- Bürgi M, Verburg PH, Kuemmerle T, Plieninger T. 2017. Analyzing dynamics and values of cultural landscapes. *Landscape Ecol.* 32(11):2077–2081. doi: [10.1007/s10980-017-0573-0](https://doi.org/10.1007/s10980-017-0573-0).

- Busse M, Heitepriem N, Siebert R. 2019. The acceptability of land pools for the sustainable revalorisation of wetland meadows in the Spreewald Region, Germany. *Sustainability*. 11(15):4056. doi: [10.3390/su11154056](https://doi.org/10.3390/su11154056).
- Chan KMA, Balvanera P, Benessaiah K, Chapman M, Díaz S, Gómez-Baggethun E, Gould R, Hannahs N, Jax K, Klain S, et al. 2016. Opinion: why protect nature? Rethinking values and the environment. *Proc Natl Acad Sci USA*. 113(6):1462–1465. doi: [10.1073/pnas.1525002113](https://doi.org/10.1073/pnas.1525002113).
- Frei T, Derks J, Rodríguez Fernández-Blanco C, Winkel G. 2020. Narrating abandoned land: perceptions of natural forest regrowth in Southwestern Europe. *Land Use Policy*. 99:105034. doi: [10.1016/j.landusepol.2020.105034](https://doi.org/10.1016/j.landusepol.2020.105034).
- Gailing L. 2012. Dimensions of the social construction of landscapes - perspectives of new institutionalism. *Proc Latv Acad Sci*. 66(3):195–205.
- García-Martin M, Fagerholm N, Bieling C, Gounaridis D, Kizos T, Printsmann A, Müller M, Lieskovský J, Plieninger T. 2017. Participatory mapping of landscape values in a Pan-European perspective. *Landscape Ecol*. 32(11):2133–2150. doi: [10.1007/s10980-017-0531-x](https://doi.org/10.1007/s10980-017-0531-x).
- Görg C. 2007. Landscape governance. *Geoforum*. 38(5):954–966. doi: [10.1016/j.geoforum.2007.01.004](https://doi.org/10.1016/j.geoforum.2007.01.004).
- Herzon I, Raatikainen KJ, Helm A, Rüşa S, Wehn S, Eriksson O. 2022. Semi-natural habitats in the European boreal region: caught in the socio-ecological extinction vortex? *Ambio*. 51(8):1753–1763. doi: [10.1007/s13280-022-01705-3](https://doi.org/10.1007/s13280-022-01705-3).
- Ingold K, Driessen PP, Runhaar HA, Widmer A. 2019. On the necessity of connectivity: linking key characteristics of environmental problems with governance modes. *J Environ Plann Manage*. 62(11):1821–1844. doi: [10.1080/09640568.2018.1486700](https://doi.org/10.1080/09640568.2018.1486700).
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). 2019. Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services. Bonn, Germany: IPBES secretariat. (Brondizio, ES, Settele, J, Díaz, S, Ngo, HT, editors). p. 1148.
- König B, Nölting B, Schäfer M, Wortmann L. n.d. Method for managing transdisciplinary research: using the situation analysis approach for a joint problem framing. Internal project publication.
- Köpsel V, Walsh C, Leyshon C. 2017. Landscape narratives in practice: implications for climate change adaptation. *Geogr J*. 183(2):175–186. doi: [10.1111/geoj.12203](https://doi.org/10.1111/geoj.12203).
- Mann C, Plieninger T. 2017. The potential of landscape labelling approaches for integrated landscape management in Europe. *Landscape Res*. 42(8):904–920. doi: [10.1080/01426397.2017.1335863](https://doi.org/10.1080/01426397.2017.1335863).
- Masterson VA, Spierenburg M, Tengö M. 2019. The trade-offs of win-win conservation rhetoric: exploring place meanings in community conservation on the Wild Coast, South Africa. *Sustainability Sci*. 14(3):639–654. doi: [10.1007/s11625-019-00696-7](https://doi.org/10.1007/s11625-019-00696-7).
- Mayring P. 2015. *Qualitative Inhaltsanalyse: Grundlagen und Techniken*. 12th ed. Weinheim and Basel: Beltz Verlag; p. 152.
- McKeown B, Thomas DB. 2013. *Q methodology*, 2nd ed. quantitative applications in the social sciences 66. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE; p. 120.
- Milcu AI, Sherren K, Hanspach J, Abson D, Fischer J. 2014. Navigating conflicting landscape aspirations: application of a photo-based Q-method in Transylvania (Central Romania). *Land Use Policy*. 41:408–422. doi: [10.1016/j.landusepol.2014.06.019](https://doi.org/10.1016/j.landusepol.2014.06.019).
- Nieto-Romero M, Milcu A, Leventon J, Mikulcak F, Fischer J. 2016. The role of scenarios in fostering collective action for sustainable development: lessons from central Romania. *Land Use Policy*. 50:156–168. doi: [10.1016/j.landusepol.2015.09.013](https://doi.org/10.1016/j.landusepol.2015.09.013).
- Pascual U, Adams WM, Díaz S, Lele S, Mace GM, Turnhout E. 2021. Biodiversity and the challenge of pluralism. *Nat Sustain*. 4:567–572. doi: [10.1038/s41893-021-00694-7](https://doi.org/10.1038/s41893-021-00694-7).
- PBL. 2018. *Next steps in developing nature futures*. The Hague, The Netherlands: PBL.
- Plieninger T, Draux H, Fagerholm N, Bieling C, Bürgi M, Kizos T, Kuemmerle T, Primdahl J, Verburg PH. 2016. The driving forces of landscape change in Europe: a systematic review of the evidence. *Land Use Policy*. 57:204–214. doi: [10.1016/j.landusepol.2016.04.040](https://doi.org/10.1016/j.landusepol.2016.04.040).
- Plieninger T, Rana HÁA, Fagerholm N, Ellingsgaard GF, Magnussen E, Raymond CM, Olafsson AS, Verbrugge LN. 2018. Identifying and assessing the potential for conflict between landscape values and development preferences on the Faroe Islands. *Global Environ Change*. 52:162–180. doi: [10.1016/j.gloenvcha.2018.07.006](https://doi.org/10.1016/j.gloenvcha.2018.07.006).
- Prosser J, Schwartz D. 1998. Photographs within the sociological research process. In: Prosser J, editor *Image-based research: a sourcebook for qualitative researchers*. New York: Routledge; p. 115–130.
- Raymond CM, Bieling C, Fagerholm N, Martin-Lopez B, Plieninger T. 2016. The farmer as a landscape steward: comparing local understandings of landscape stewardship, landscape values, and land management actions. *Ambio*. 45(2):173–184. doi: [10.1007/s13280-015-0694-0](https://doi.org/10.1007/s13280-015-0694-0).
- Reed MG, Price MF. 2020. Unfinished business: the present and future contributions of biosphere reserves to sustainability science. In: Reed MG, editor *UNESCO biosphere reserves: supporting biocultural diversity, sustainability and society*. London, New York: Routledge; p. 321–332.
- Riechers M, Á B, Betz L, Jiren TS, Fischer J. 2020. The erosion of relational values resulting from landscape simplification. *Landscape Ecol*. 35:2601–2612 doi: [10.1007/s10980-020-01012-w](https://doi.org/10.1007/s10980-020-01012-w).
- Riessman CK. 2008. *Narrative methods for the human sciences*. Thousand Oaks, California: SAGE; p. 251.
- Roe E. 1994. *Narrative policy analysis: theory and practice*. Durham: Duke University Press; p. 240.
- Sandell K. 2016. Ecostrategies: presentation and elaboration of a conceptual framework of landscape perspectives. *Tourism*. 64(1):63–80.
- Sandström UG, Hedfors P. 2018. Uses of the word 'landscape' in Swedish municipalities' comprehensive plans: does the European Landscape Convention require a modified understanding?. *Land Use Policy*. 70(3):52–62. doi: [10.1016/j.landusepol.2017.07.060](https://doi.org/10.1016/j.landusepol.2017.07.060).
- Schaal T, Mitchell M, Scheele BC, Ryan P, Hanspach J. 2023. Using the three horizons approach to explore pathways towards positive futures for agricultural landscapes with rich biodiversity. *Sustainability Sci*. 18(3):1271–1289. doi: [10.1007/s11625-022-01275-z](https://doi.org/10.1007/s11625-022-01275-z).
- Schäfer M, König B. 2018. The role of cooperation for sustainability innovations in the agriculture and food sector. 13th European International Farming Systems Association (IFSA) symposium, Greece. *Int J Agric Ext*.

- 65–78. <https://esciencepress.net/journals/index.php/IJAE/article/view/2680>.
- Schaich H, Bieling C, Plieninger T. 2010. Linking ecosystem services with cultural landscape research. *GAIA - Ecol Perspect Sci Soc.* 19(4):269–277. doi: [10.14512/gaia.19.4.9](https://doi.org/10.14512/gaia.19.4.9).
- Schmolck P. 2014. Pqmethod software (version 2.35) [software]. <http://schmolck.org/qmethod/index.htm#PQMethod>.
- Schultz L, West S, Bourke AJ, d'Armengol L, Torrents P, Hardardottir H, Jansson A, Roldán AM. 2018. Learning to live with social-ecological complexity: an interpretive analysis of learning in 11 UNESCO biosphere reserves. *Global Environ Change.* 50:75–87. doi: [10.1016/j.gloenvcha.2018.03.001](https://doi.org/10.1016/j.gloenvcha.2018.03.001).
- Soliva R. 2007. Landscape stories: using ideal type narratives as a heuristic device in rural studies. *J Rural Stud.* 23(1):62–74. doi: [10.1016/j.jrurstud.2006.04.004](https://doi.org/10.1016/j.jrurstud.2006.04.004).
- Stanley JL. 2021. Revising reykjavík: changing narratives of skeletons, structures, and imagined futures. *Sustain Sci.* 16(3):859–868. doi: [10.1007/s11625-020-00817-7](https://doi.org/10.1007/s11625-020-00817-7).
- Stedman RC. 2016. Subjectivity and social-ecological systems: a rigidity trap (and sense of place as a way out). *Sustainability Sci.* 11(6):891–901. doi: [10.1007/s11625-016-0388-y](https://doi.org/10.1007/s11625-016-0388-y).
- Stenseke M. 2018. Connecting 'relational values' and relational landscape approaches. *Curr Opin Env Sust.* 35:82–88. doi: [10.1016/j.cosust.2018.10.025](https://doi.org/10.1016/j.cosust.2018.10.025).
- UNESCO. 1996. Biosphere reserves: the seville strategy and the statutory framework of the world network. Paris: UNESCO.
- van Putten S, O'Meara C, Wartmann F, Yager J, Villette J, Mazzuca C, Bieling C, Burenhult N, Purves R, Majid A, et al. 2020. Conceptualisations of landscape differ across European languages. *PLoS One.* 15(10):e0239858. doi: [10.1371/journal.pone.0239858](https://doi.org/10.1371/journal.pone.0239858).
- Veland S, Scoville-Simonds M, Gram-Hanssen I, Schorre AK, El Khoury A, Nordbø MJ, Lynch AH, Hochachka G, Bjørkan M. 2018. Narrative matters for sustainability: the transformative role of storytelling in realizing 1.5°C futures. *Curr Opin Env Sust.* 31:41–47. doi: [10.1016/j.cosust.2017.12.005](https://doi.org/10.1016/j.cosust.2017.12.005).
- Watts S, Stenner P. 2012. *Doing Q methodological research: theory, method and interpretation*. London: SAGE; p. 238.
- West S, Cairns R, Schultz L. 2016. What constitutes a successful biodiversity corridor? A Q-study in the Cape Floristic Region, South Africa. *Biol Conserv.* 198:183–192. doi: [10.1016/j.biocon.2016.04.019](https://doi.org/10.1016/j.biocon.2016.04.019).
- Wiek A, Iwaniec D. 2014. Quality criteria for visions and visioning in sustainability science. *Sustainability Sci.* 9(4):497–512. doi: [10.1007/s11625-013-0208-6](https://doi.org/10.1007/s11625-013-0208-6).
- Zscheischler J, Busse M, Heitepriem N. 2019. Challenges to build up a Collaborative Landscape Management (CLM) —lessons from a stakeholder analysis in Germany. *Environ Manage.* 64(5):580–592. doi: [10.1007/s00267-019-01205-3](https://doi.org/10.1007/s00267-019-01205-3).