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Cultural ecosystem services of visited landscapes

An exploratory comparative study

DOI: 10.18030/socio.hu.2018en.17

Abstract

Academic interest in ecosystem services has been growing in the past ten years with an increasing number of research studies and papers being dedicated to this complex and diverse field of enquiry. The Millennium Ecosystem Assessment (MEA 2005) suggested that cultural services and values were not recognised enough in landscape planning and management. This paper therefore focuses on Cultural Ecosystem Services (CES), one of the four main categories of ecosystem services (MEA, 2005). Cultural Ecosystem Services (CES) include aesthetics, cultural heritage, inspiration, spirituality, sense of place, tourism, recreation and education. Although previous research on CES has placed emphasis on the importance of human perceptions in CES and landscape research (Daniel et al. 2012), this study proposes a new research tool for doing so. The tool is a quantitative questionnaire, whose design was based on a Cultural Ecosystem Services framework. It is argued that the data can provide some interesting insights into the values and benefits that can be derived from different types of landscapes. Unlike previous CES research, this study focuses on all categories of CES simultaneously. It also attempts to differentiate between the benefits derived from different landscape types by collecting data on visitor perceptions, a hitherto under-researched area in this field.

Keywords: cultural ecosystem services, landscapes, benefits, visitors

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Introduction

Landscapes have been the object of recreation and pleasure for various types of visitors over the course of centuries. Numerous studies have shed light on the relationship between the visitor and the visited, either before, during or after a visit — albeit mostly from westerners' perspectives (Shaw-Willliams 1994, Porter–Sheppard 1998, Crouch 1999, Aitchison et al. 2000, Cartier–Lew 2005, della Dora 2009, Terkenli 2014). Nonetheless, the great variability, depth and significance of this (at least, twofold) relationship, both geographically and historically, remains largely unexplored, especially as regards the role of the landscape in the visitor experience. This gap is addressed by this research, through a comparative exploratory probe into visitors' conceptualisations of landscapes and their benefits in a range of contexts. A cultural ecosystem services framework is used for this analysis. The reason for this is that academic interest in ecosystem services has been growing in the past ten years with an increasing number of research studies and papers being dedicated to this complex and diverse field of enquiry.

The Millennium Ecosystem Assessment (MEA 2005) divided ecosystem services into four main categories: supporting, regulating, provisioning, and cultural services. More emphasis has traditionally been placed on use, monetary and economic value of ecosystem services rather than non-use, intangible or cultural values (Chan et al. 2012). However, MEA (2005) stated that cultural services and values were not recognised enough in landscape planning and management. Musacchio (2013) suggested that emphasis needs to be shifted towards understanding peoples' experiences of landscapes, including wellbeing benefits. Cultural Ecosystem Services (CES) represent physical, intellectual and spiritual interactions with ecosystems. This includes aesthetics, cultural heritage, inspiration, spirituality, sense of place, as well as tourism, recreation and education. Although previous research has placed emphasis on the importance of human perceptions in CES and landscape research (Daniel et al. 2012, Schirpke et al. 2016, Riechers et al. 2016), this study proposes a new research tool for doing so. Willis (2015) suggests that a better understanding of the non-material benefits of nature using a CES framework could have important implications for sustainable development, local and tourist satisfaction.

In order to undertake this research, we formulated our research questions as follows:

1. What are the main benefits that visitors derive from visiting landscapes?
2. How can those benefits be articulated and measured in the context of Cultural Ecosystem Services (CES)?

The relationship between landscapes and cultural ecosystem services

Landscapes can be defined and interpreted in various ways, but the European Landscape Convention (ELC 2000) produced one of the most often quoted definitions of a landscape as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors".* Interpretations of landscape can vary considerably across cultures, for example, Tenberg et al. (2012) make the distinction between Nordic concepts of landscape which include interactions between people and place, whereas Anglophone interpretations are based more on visual features of landscape. Vallés-Planells et al. (2014) suggest that landscape is a perceived environment as much as a geographical and biological entity. Indeed, landscapes can hold multiple values for different stakeholder groups (Meinig 1979, Crouch 1999, Terkenli 2001). Musacchio (2013) advocates that a better understanding of peoples' experiences of landscapes and the benefits which they value needs to be cultivated. This includes their psychological, cultural and social relationships and connections to nature and biodiversity. Wu (2013: 1019) states that *"landscapes represent, arguably, the most operational scale for understanding and shaping the relationship between society and the environment".*

The Millennium Assessment (MEA) (2005) describes Cultural Ecosystem Services (hereafter, CES) as *"The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection and aesthetic experiences".* Chan et al. (2012: 9) describe CES as *"ecosystems' contributions to the non-material benefits (e.g. capabilities and experiences) that arise from human-ecosystems relationships".* The relationship between humans and ecosystems is clearly a fundamental principle in the assessment. Hernández-Morcillo et al. (2013) suggest that researchers who work with CES should consider not only the services generated by the ecosystem, but also the relationship between the observer and the environment and the factors that influence demand.

Table 1 shows the main elements of Cultural Ecosystem Services as defined by MEA (2005). It is difficult to find information about how these categories were generated, although it is indisputable that they are all important in the context of landscape management. Some of these elements have been researched more than others, largely as a result of the challenges of researching some of the more intangible dimensions. Plieninger et al.'s (2013) review of 42 papers about CES showed that most papers focused on recreation and ecotourism services (54%) followed by aesthetic (14%) and educational (9%) dimensions. Hernández-Morcillo et al. (2013) also reviewed 42 papers and suggested that recreation and ecotourism is the most accounted CES category, while categories like aesthetics, spirituality or inspiration tended to be neglected. Andersson et al. (2014) describe how spiritual experiences, aesthetics, and sense of place are perceived as being especially elusive.

Table 1. Main elements of cultural ecosystem services

Spiritual and religious: many societies attach spiritual and religious values to ecosystems or their components
Recreation and ecotourism: people often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscape in a particular area
Aesthetic: individuals find aesthetic value in various aspects of ecosystems, as reflected in support for parks, scenic drives, and selection of housing locations
Inspirational: ecosystems provide a rich source of inspiration for art, folklore, national symbols, architecture and advertising
Sense of place: ecosystems as a central pillar of "sense of place", a concept often used in relation to those characteristics that make a place special or unique as well as to those that foster a sense of authentic human attachment and belonging
Cultural heritage: many societies place high value on the maintenance of either historically important landscapes ("cultural landscapes") or culturally significant species. Educational: ecosystems and their components and processes provide the basis for both formal and informal education in many societies. In addition, ecosystems may influence the types of knowledge systems developed by different cultures.

Source: Adapted from MEA (2005)

It is worth questioning some of the categories and their connections. One of the common features of landscapes is their natural and cultural heritage value, from which other values or benefits could be derived. These include recreational, tourism and educational values as well as inspiration and sense of place. The latter might be intensified because of the aesthetic or spiritual appeal of the landscape. Sense of place may be especially important in fostering community attachment and identity. Smith and Csurgó (2018) explore these inter-connections in the context of a Hungarian rural landscape emphasising the fundamental importance of cultural heritage to other categories. It should be noted that historically important landscapes and cultural landscapes might be quite different, with the latter being defined by UNESCO as expressing the relationship or interation between people and their natural environment (UNESCO 1992). Historically important landscapes can also be urban and include the built as well as intangible heritage.

Landscapes, tourism and visitation

It is clear from previous meta-analysis (e.g. Plieninger et al. 2013, Hernández-Morcillo et al. 2013) that tourism and recreation have received considerable attention in CES and landscape research. This is unsurprising if one considers that all types of landscapes may potentially hold interest for visitors for the consumption of services, activities, experiences, etc. However, certain types of landscape can be more appeaing to visitors than others. Tourism travel trends from the post-war era indicate an overwhelming visitor preference for coastal, sea-sand-sun destinations, during the most accommodating time of the year (i.e. summer), rather than urban tourism, and secondarily for other types of natural environments and ecosystems, such as mountains, forested, lake-side or rural areas (Towner 1996, Löfgren 1999). Experiences greatly diverge among different types of landscapes, which tend to offer widely varying services to their visitors, e.g. tranquility, excitement, seduction, awe, inspiration, sense of wellbeing, etc.

Landscapes can clearly hold multiple values for different stakeholder groups (Meinig 1979, Crouch 1999, Terkenli 2001). For example, the attraction of landscapes for health was already acknowledged in ancient Persia, Greece and Rome and gradually became popular in Europe from the 18th century. Access to some form of

'nature' seems to be a fundamental need for humans, gaining even more importance in the context of modern urban lifestyles (Ward Thompson 2011). What a particular landscape means however, depends on the cultural values of the visitor (Plachter 1995). Although there is some common understanding, the ways of encountering and experiencing nature may vary between individuals and populations (Hartig et al. 2014). Whether we perceive a landscape as natural depends on its socio-cultural definition and is related to a particular human lifestyle and code of conduct. In this sense, every landscape is a cultural construction, meaning that its cultural reality is defined by what is representative for a specific culture (Seeland 2011).

We can however conceptualize landscape as a health-enhancing resource. A review of over 120 studies by Abraham et al. (2010) identified the potential of landscapes as a resource for physical, mental and social wellbeing, providing a range of benefits *(Table 2):*

Table 2: Potential benefits of landscapes

Physical wellbeing	Promotion of physical activity (both in daily life or as leisure time) through walkable environments
Mental wellbeing	Attention restoration Stress reduction Evocation of positive emotions
Social wellbeing	Social integration, social engagement and participation Social support and security

Source: Abraham et al. (2010)

However, the therapeutic influence of landscape has to be addressed critically as it does not always or only have a positive influence on quality of life and wellbeing (see for example, Milligan–Bingley (2007) in their study on the impact of woodland on the mental wellbeing of young adults). Nature can also cause fear (biophobia) (Van den Berg–Ter Heijne 2004).

What is the (attributed) role of places and landscapes to health? Gesler (1992) asked the question and launched the concept of the therapeutic landscape providing a way of seeing that had increasingly been taken up by medical geographers. Therapeutic landscapes can be defined as places, settings, situations, locales, and milieux that encompass both the physical and psychological environments associated with treatment or healing, and the maintenance of health and wellbeing (Williams 1998). In the concept of therapeutic landscape environmental, individual and societal factors can be explored that come together in the healing process in both traditional and non-traditional landscapes (Kearns 1997). This is a way of resisting the "positivist hegemony" in health geography and extending the meaning of "traditional health care landscapes" from all landscapes that are a product of human action and the human mind, reflecting both human intentions and actions and the constraints and structures imposed by society (Gesler 1992: 743). The therapeutic landscape framework was first used to investigate places that achieved lasting reputations for healing. Over time this was extended to places associated with the maintenance of health and wellness and everyday pursuits of health and wellbeing (Gesler 2009, Khachatourians 2003), such as coastal towns (Andrews–Kearns 2005).

Although the physical effects of a visit to a landscape may be experienced as more concrete, the mental impact of landscapes may be more important. Pretty (2004) identified three levels of engagement with

nature, which all deliver mental health benefits: firstly, viewing nature, for example through images in a book, a painting or on television; secondly being incidentally in nature, for example through walking, cycling or another activity, like visiting a park with friends or, thirdly, by active involvement in nature, such as by gardening or farming (Pretty 2004). Natural environments turn out to be particularly rich in the characteristics necessary for restorative experiences, improving directed attention, which plays an important role in human information processing and has far reaching consequences (Kaplan 1995). Natural environments may well be gardens and plants in artificial landscapes but can also contribute to mental wellbeing (Van den Berg 2005) or even visual landscapes. The work of Ulrich (1979, 1984) on the influence of visual landscape on psychological wellbeing and recovery is well known in this context.

Conradson (2005) explains the experience of a therapeutic landscape as the outcome of a relationship between a person and the broader socio-environmental setting (Conradson 2005). As everybody experiences landscape differently and the idea of a therapeutic landscape is 'context dependent' no setting of landscape is intrinsically therapeutic (Gesler 2005). The mental contribution of a therapeutic landscape can also be proven by psychoanalytic and psychotherapeutic theories, using the concept of 'mentalising' (Rose 2012). This means that prior familiarity with representations of specific landscapes enables us to apprehend them metaphorically and help to improve individual self-understanding and to enhance the capacity to empathise with others. This can explain why co-presence is not necessary: imaginations of landscape suffice and imagined places, being constructed and manipulated, can be used in therapy sessions (Andrews 2004).

There is a growing literature on the health effects of green- and blue space (like lake- and riversides) as part of the living environment (Hartig et al. 2014, Völker-Kistemann 2015), bringing forth the urge for urban landscape planners to include open green (and blue) spaces in order to create possibilities to reduce stress-related illnesses (Grahn–Stigsdotter 2003).

Challenges of researching and measuring CES in the context of landscapes

the importance of human perceptions in the context of CES and landscapes was noted by Daniel et al (2012) and Schirpke et al. (2016); however, it seems that there have not yet been many comprehensive empirical studies of peoples' perceptions in the context of CES (Riechers et al. 2016), and Van Zanten et al. (2015) state that very few comparative landscape preference studies have been undertaken overall. A few recent studies have emerged (e.g. Schirpke et al. 2016, Zoderer et al. 2016), but most of these examine only one type of landscape. The subjective and intangible nature of CES is one of the main challenges (Chan et al. 2012, Leyshon 2014) and some categories are more elusive than others. There is a lack of understanding of terminology associated with CES, as many people are unfamiliar with the term (Riechers et al. 2016) or find it difficult to articulate their feelings about them (Gould et al. 2014).

Several studies on CES and landscapes have emphasised the human wellbeing dimension (e.g. Aretano et al. 2013, Wu 2013, Vallés-Planells et al. 2014, Riechers et al. 2016, Blicharska et al. 2017). Vallés-Planells et al. (2014) undertook research on CES, landscapes and wellbeing and emphasised the fundamental role that cultural services play not only in enjoyment such as recreation or aesthetics, but also in personal fulfiment such

as education, inspiration and spiritual benefits, health (e.g. calm) and social fulfilment (e.g. cultural heritage, sense of place).

Paracchini et al. (2014) analyse the preferences of different nationalities for certain types of recreation within ecosystem services. Several studies have started to emerge which differentiate between age, gender, education levels and nationality when researching visitor perceptions of landscapes. For example, Van Zanten et al. (2015) suggest that individuals with higher education levels tend to demonstrate stronger preferences for cultural landscapes. Zoderer et al. (2016) found that cultural heritage was valued more by older people, and that people with higher education levels did not value leisure opportunities as much as those with lower levels of education. Schirpke et al. (2016) could differentiate between French-speaking and German-speaking residents, and between German and Italian tourists, and Zoderer et al. (2016) could distinguish between Italian and German tourists' perceptions of CES in landscape. However, the latter three studies only focus on one type of landscape.

Research method: Questionnaire design and analysis

A questionnaire was designed which aimed to capture visitor perceptions and experiences of all of the categories of CES as listed in Table 1 in several different kinds of landscape. The justification for this choice of research tool was that previous studies of CES have tended to be qualitative and very few comparative landscape preference studies have been undertaken (Van Zanten et al. 2015). Previous research tended to focus on only one or two categories of CES, whereas this research includes all of the categories. Using the seven CES categories as defined by the Milliennium Ecosystem Assessment (2005) as well as an additional wellbeing category, a scale was developed with nineteen items or statements (see *Table 3).*

The statement design took into consideration the concerns of Gould et al. (2014) and Riechers et al. (2016) that questionnaire respondents or interviewees often struggle to comprehend CES categories or to articulate their feelings about them. The statements were designed to be as closely aligned with the CES categories as possible, but at the same time remaining understandable to all respondents and comprehensible enough to translate into several languages. With the exception of two statements referring to use or function (e.g. relating to recreational activities), the questionnaire mainly focused on perceptions.

Table 3. Questionnaire statements relating to cultural ecosystem services categories

MA CES Category	Linked Statements
Spiritual/religious	I came to this landscape for spiritual reasons I feel a close connection to nature here I feel connected to a special energy here
Aesthetic	I came here to enjoy the beautiful scenery or views I came here to enjoy the plants and flowers
Inspirational	I find this landscape awe-inspiring This landscape makes me feel creative (e.g. to write, draw, paint or make music)
Sense of place	This landscape is unique and unlike other landscapes that I have been to I feel a strong sense of place in this landscape
Educational	I came here to learn something new about the natural environment I came here to learn something new about cultural traditions
Recreation/tourism	I came here to enjoy recreational activities linked to fitness or sports (e.g. hiking, biking, climbing, swimming) I came here to view wildlife/animals
Cultural heritage	I came here because of the interesting cultural or heritage attractions This landscape is linked to peoples' cultural traditions
Wellbeing	Being in this landscape makes me feel happy I came here to feel calmer I came here to reduce my stress levels I came here to relax

The statement design was refined during a two-round Delphi process with fifteen experts from an EU-funded COST Project on *Tourism, Wellbeing and Ecosystem Services* between March and June 2015 and the questionnaire was finalised after a pilot study with 22 visitors in a Macedonian national park in June 2015. The questionnaire was translated into eight languages and distributed in six different types of landscape (forest, mountains, lakeside, seaside, mountains and desert) in Belgium, Germany, Greece, Hungary, Israel, Macedonia, Netherlands and Poland. Visitors were asked to rate the nineteen statements on a Likert scale of 1–7. 876 valid responses were gathered and subsequently analysed. It should be noted that no distinction was made between visitors and tourists in this research, as it was assumed that the values and benefits would not vary greatly across these groups.

Only seventeen of the items were found to be appropriate for factor analysis, according to the criterion of the 0.5 cutoff. The item 'I came here to enjoy recreational activities' was excluded because it was negatively correlated to the other items, perhaps because it addresses active experience rather than passive engagement with the landscapes. All items contributed to a single factor, except the 'being in this landscape makes me feel happy' item, which was also excluded in the later analysis due to double loadings. This resulted in 15 items being included in the factor analysis and the Extraction method of Principle Component Analysis with a rotation method of Varimax with Kaiser Normalization produced 4 factors solutions after 6 iterations. Four distinct factors were identified which are connected to the benefits derived from landscape. These were labelled as follows:

- spiritual interaction (e.g. finding the landscape awe-inspiring, feeling creative, feeling a close connection to nature and feeling connected to a special energy)
- emotional interaction (e.g. reducing stress levels, feeling calmer, relaxing)
- cognitive interaction (e.g. learning something new about natural and cultural traditions, visiting heritage attractions)
- experience-related interaction (e.g. enjoying the beautiful scenery or views as well as flora and fauna).

These four interactions converge quite closely with the Common International Classification of Ecosystem Services (CICES) version 4.3, which was developed by the European Environment Agency (EEA) to promote standardization in the process of ecosystems services valuation (Haines–Young–Potschin 2013). Looking back at the statements in the questionnaire which were designed to reflect the MEA (2005) CES categories (Table 3), the factor analysis confirmed that the statements were relatively well-designed. For example, the statements relating to spirituality, inspiration, aesthetics and education clustered closely in the factor analysis. The same was true of wellbeing (see *Table 4).*

Table 4. Factor analysis derived from the CES questionnaire data

Component	Spiritual factor	Emotional factor	Cognitive factor	Experience factor
connected to a special energy here	.784	.301	.130	-.079
feel creative	.735	.091	.112	.122
close connection to nature	.733	.128	.134	.289
awe-inspiring	.677	.059	.046	.384
a strong sense of place	.616	.245	.239	.146
to reduce my stress levels	.148	.898	-.013	.143
to relax	.171	.872	-.031	.074
to feel calmer	.268	.860	.011	.135
to learn something new about cultural traditions	.111	.103	.885	-.051
to learn something new about natural	.284	.030	.788	-.034
cultural traditions	.126	-.071	.740	.192
cultural heritage attractions	.007	-.088	.711	.369
to enjoy the plants and flowers	.149	-.013	.142	.752
to enjoy the beautiful scenery or views	.166	.266	.080	.742
*feel happy (excluded later)	.406	.260	.094	.557

Note: estimates with the same alphabetical superscript are not significantly different from each other at the 0.05 probability level

In terms of data relating to different kinds of landscape (see *Table 5)*, it could be seen that a seaside landscape is superior in all factors, but the same was not true of the riverside or lakeside landscape. This suggests that although 'blue' or 'blue/green' landscapes are often considered to be the most therapeutic, further research is needed to confim if seasides have special qualities which distinguish them from lake or riverside landscapes. This could build on the work of Völker–Kistemann (2015), for example, who emphasised the therapeutic and health benefits of blue spaces in non-marine environments. Visitors tended to prefer landscapes which are simple and plain, rather than those that combine many elements, especially one which includes man-made features. This confirms the findings of Schirpke et al. (2016) whose research showed that residents and tourists tends to be less positive about landscape images which include settlements, infrastruc-

ture, intensive agricultural use and streets. Orenstein et al. (2015) also suggested that visitors tend to dislike the disturbance caused by objects or people in landscape. This is perhaps surprising if one considers the ELC (2000) definition of landscape quoted at the beginning of this paper, which emphasises the interaction of natural and/or human factors. Norberg–Schulz's (1980) earlier conceptualisations might also have suggested that landscapes that have not been tamed by human intervention could be deemed inhospitable. Interestingly, and perhaps surprisingly, green landscapes were not preferred over desert landscapes, which might suggest that 'yellow' landscapes can be as therapeutic as green ones. Given that visitors seem to prefer plain and 'uncluttered' landscapes, desert usually offers such an experience, including long vistas and views of the horizon.

Table 5. Analysis of landscapes, using factors as dependent variables

Dependent variable	Landscapes	Estimate Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Spiritual interaction	Seaside	4.974a	.092	4.792	5.155
	Mountains	4.785ab	.135	4.520	5.051
	Forests	4.668bc	.091	4.491	4.846
	Lakeside	4.154	.137	3.886	4.422
	Desert	4.873abc	.149	4.581	5.165
	Nature and manmade	3.616	.136	3.349	3.884
Emotional interaction	Seaside	6.055	.101	5.856	6.254
	Mountains	4.940a	.148	4.649	5.231
	Forests	5.423b	.099	5.228	5.617
	Lakeside	5.260ab	.150	4.966	5.554
	Desert	4.831a	.163	4.511	5.152
	Nature and manmade	4.041	.149	3.748	4.334
Cognitive interaction	Seaside	4.436a	.101	4.238	4.634
	Mountains	4.784a	.147	4.495	5.073
	Forests	3.635b	.099	3.441	3.828
	Lakeside	3.486b	.149	3.194	3.778
	Desert	3.640b	.162	3.322	3.958
	Nature and manmade	3.585b	.148	3.293	3.876
Experience-related interaction	Seaside	5.275a	.096	5.087	5.463
	Mountains	4.716b	.140	4.441	4.991
	Forests	5.254a	.094	5.070	5.438
	Lakeside	4.018	.141	3.740	4.295
	Desert	4.581b	.154	4.278	4.883
	Nature and manmade	5.318a	.141	5.041	5.595

Conclusions

This paper has suggested that a research tool based on a Cultural Ecosystem Services framework can provide some interesting insights into the values and benefits that can be derived from different types of landscapes. Unlike previous CES research which was mostly qualitative in nature, this study provided a quantitative tool for the analysis and focused on all categories of CES simultaneously. It also attempts to differentiate between the benefits derived from different landscape types by collecting data on visitor perceptions, a thus far under-researched area in this field.

The questionnaire design proved to be statistically valid and reliable and the factor analysis corresponded closely to previous categorizations of CES. In future research, it could be useful to analyse different perceptions of tourists (domestic and international), day trippers or local resident visitors to ascertain if there are any differences in perceptions. A larger sample of visitors in each landscape might also have allowed a more statistically representative sample from which to analyse differences between nationality groups (it should be noted that variance according to gender and age in this study was minimally significant).

It might also be useful to explore further the relationship between use or function value (e.g. recreational activities) and more perceptual ones (e.g. aesthetics, wellbeing). It could also be important to differentiate more clearly between motivational factors and benefits or outcomes of a visit. It could be argued that the questionnaire statements in this research reflected both without a clear enough distinction.

In terms of the implications for landscape planning and management, the questionnaire could certainly become a useful instrument for collecting CES data from wider samples of visitors. Indeed, CES can inform landscape planning by identifying and incorporating the values that various stakeholders attach to landscape (Plieninger et al. 2015). It seems that the visual and perceptual experiences of landscape are among the most important for visitors, therefore these should be taken into consideration in the context of landscape development (Ungaro et al. 2016). One final area of investigation could include the relationship between CES and the wellbeing benefits of different types of landscapes and the activities and experiences that take place within those landscapes.

Acknowledgements

The author would like to acknowledge the contribution of members or Working Group 1 from the EU COST project *Tourism, Wellbeing and Ecosystem Services* (TObeWELL ISCH COST Action IS1204) to the theoretical and empirical work on which this article is based. The statistical data analysis was undertaken by Dr Yael Ram.

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