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Review

Visual Resource Stewardship—An International Perspective

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Abstract: This paper provides an international perspective on visual resource stewardship. It examines the long history of Britain's love affair with its landscapes and its abandonment of measuring the subjective element of landscape quality, focusing instead on landscape character, which could be objectively assessed. This paper summarises the development of the European Landscape Convention, which has been embraced across much of Europe, and which follows Britain's emphasis on landscape character. Programs in a range of European countries are reviewed. The recognition of outstanding landscapes under the World Heritage Convention, the UN List of Protected Areas program which includes landscapes, and National Scenic Area programs, are briefly summarised. The key message of this paper is that most of the provisions summarised focus on the *character* of the landscape and not its *quality*. Because it has been alleged, particularly in Britain and Europe, that it is too difficult to measure scenic quality, landscape character has become the subject instead of scenic quality.

Keywords: landscape character; scenic quality; Britain; European landscape convention; European countries; world heritage

1. Introduction

This paper should be considered an opportunity to review the focus on landscape character assessment and whether, despite its widespread adoption, this continues to be appropriate. It is suggested that this emphasis on character instead of quality "loses the plot". This paper provides a wide-ranging review of the origins of landscape character assessment in England as a reaction against measuring landscape quality and how this found its way into the European Landscape Convention, which similarly focuses on landscape character. The spread of this approach throughout many European countries is reviewed. The paper reviews other international measures to recognise outstanding landscapes, namely the World Heritage list, the UN List of Protected Areas, and National Scenic Areas. As the United States is very adequately covered by the papers in this and the 2017 conference, this paper concentrates on countries other than the US.

The key message this paper seeks to impart is that most of the provisions focus on the *character* of the landscape and not its *quality*. Because it has been alleged, particularly in Britain and Europe, that it is too difficult to measure scenic quality, landscape character has become the subject instead of the subjective entity of scenic quality. Authorities have stayed clear of subjectivity and applied an objective-based analysis to landscape character. The approach is well described by a National Parks Authority in Britain: "Landscape character assessment is an objective, value-free assessment of landscape concerned with character rather than quality or value" [1].

The terms, landscape character and landscape quality, need to be defined from the outset. Landscape character is the distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse whereas landscape quality is the human subjective aesthetic perception, both positive and negative, of the physical landscape, responding to its land forms, land cover, land uses, the presence of water and other attributes. This paper was delivered, in an abbreviated form, at the 2019 Visual Resource Stewardship Conference held at the Argonne National Laboratory, Chicago on 27–30 October.

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2. Great Britain

2.1. Pre 1960

Britain has a long and proud history of appreciating the beauty of its landscapes. British writers, poets, painters, photographers and tourists have a love of their landscapes and have learned to appreciate and protect them [2]. Because Britain has influenced the assessment of scenic quality, particularly in regard to the European Landscape Convention and World Heritage nominations, it is examined in some detail.

Prior to World War II, many books were published on the beauty of the English landscape. The books "naturalized a version of rural England in which timelessness and continuity were powerful recurring motifs" [3]. Geographers regarded the beauty of the earth as within their purview. They argued that:

> *"natural beauty is inexhaustible. And it is not only inexhaustible: it positively increases and multiplies the more we see of it and the more of us see it. So it has a good claim to be considered the most valuable characteristic of the Earth"*. [4]

Another geographer, Dr Cornish, wrote: "The combination of the English village, with the setting of field and hedgerow and coppice, is an Arcadian scene unrivalled elsewhere in Britain and unsurpassed in any part of the world" [5]. The Addison Committee on the National Parks of 1931 reported favourably on the establishment of national parks as a "means of access for pedestrians to areas of natural beauty" [6]. In addition, during World War II, "the ideal picture of a pastoral countryside became an important symbol for patriotism" [7].

During World War II, several government inquiries recommended the establishment of national parks to preserve "extensive areas of beautiful . . . country" and in 1949, the National Parks and Access to the Countryside Act was proclaimed, the purpose of which included "the preservation of the natural beauty of the area" [8,9]. Over the next decade, ten national parks were proclaimed along with Areas of Outstanding Natural Beauty (AONB). The national parks were mainly highland landscapes, whereas AONBs covered farmed lowland landscapes. Today, the 15 national parks cover nearly 10% of the UK and the 46 AONBs cover another 18%. Together, they include about one-third of Britain's coastline (Figure 1).

The system of national parks and AONBs over private land is a uniquely British solution to the competing desire to protect high-quality environments with the need to provide food and fibre for the large population. Scenic preservation, along with provision for public enjoyment of the parks, were the main reasons for the creation of national parks; concern about the protection of flora, fauna and biodiversity came later.

Whereas the scenery of wilderness and nature was the basis of national parks in the US, Canada and other nations, in England they were:

> *"based on the needs of a densely populated and precociously industrialised society and the legacy from Wordsworth's time of a high regard for picturesque landscapes visibly shaped by human land use"*. [7]

Scott and others have been critical of the selection of iconic landscapes by land-owning elites while ignoring significant areas of lowland England.

> *"The hierarchy of landscape designations in the UK have all endorsed this upland bias though expert-led approaches, which arguably are not representative of the kind of landscapes that people most want, use and value."* [10,11]

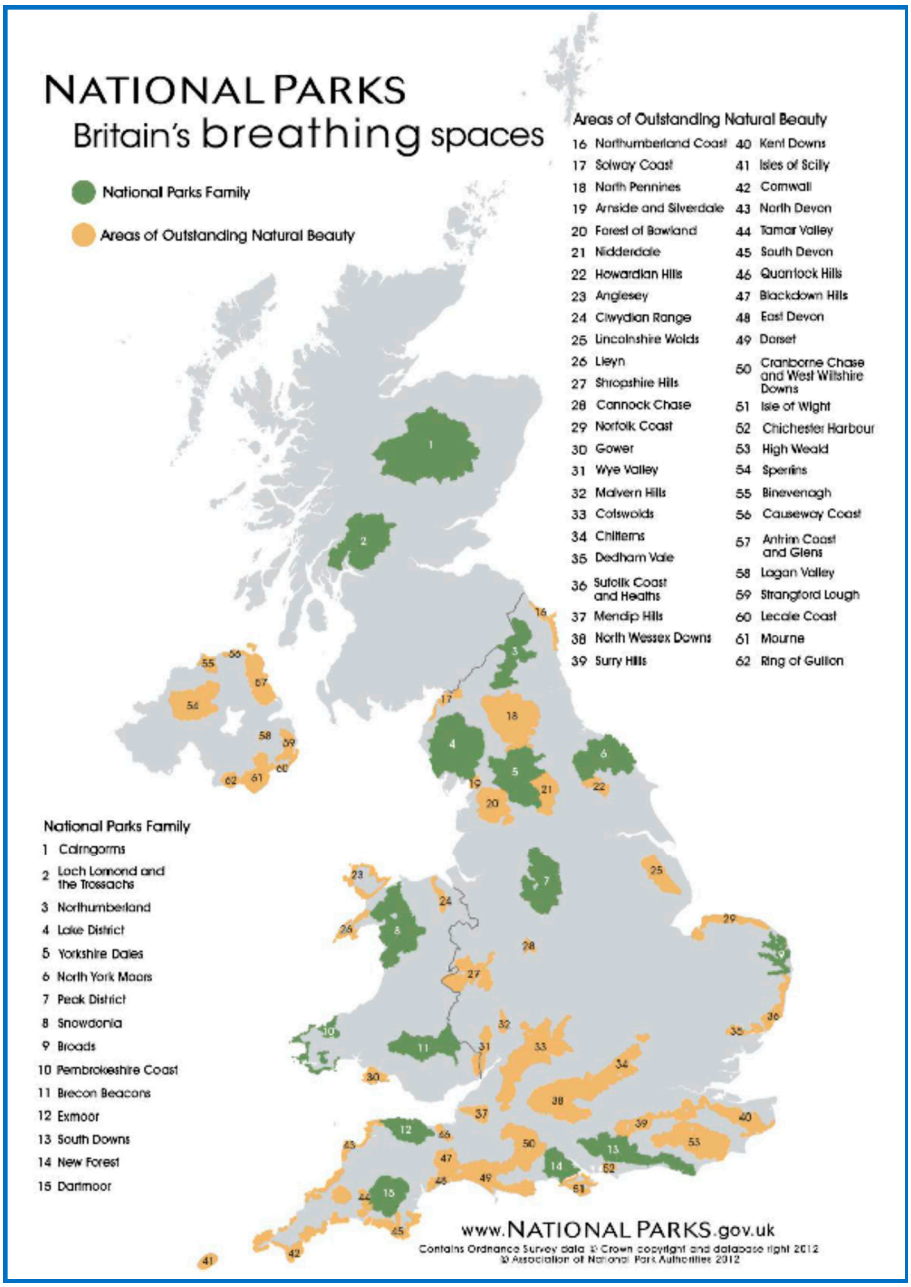

Figure 1. National Parks and AONBs in Great Britain (www.nationalparks.gov.uk) (accessed on 15 January 2022).

2.2. Post 1960

The first real attempt to move beyond mere descriptions of the British landscape to analyse it more rigorously began with the work of David Lowenthal of the American Geographical Society and Hugh Prince from University College, London. In two seminal papers in 1964 and 1965, *The English Landscape* and *English Landscape Tastes*, they described the content of the English landscape and English landscape preferences [12,13].

They identified variety, openness and atmosphere as key visual qualities of the English landscape and referred to it as "altogether so tamed, trimmed, and humanized as to give the impression of a vast ornamental farm, as if the whole of it had been designed for visual pleasure". Components which epitomised the English landscape were the bucolic (pastoral), the picturesque, the deciduous, the tidy (i.e., order and neatness), façadism,

antiquarianism (rejection of the present, the sensuous and the functional; having historical associations) and the ancient *genius loci*—the spirit of the place.

In the late 1960s, new quantitative approaches were developed by Fines, who used the preferences of experts in a survey of the East Sussex landscape (Figures 2 and 3); Linton of Scotland, who applied his own subjective scores to the landscape (Figure 4); and by Hebblethwaite of the East Hampshire AONB [14–16]. Linton assigned points for land forms and land use and combined the results.

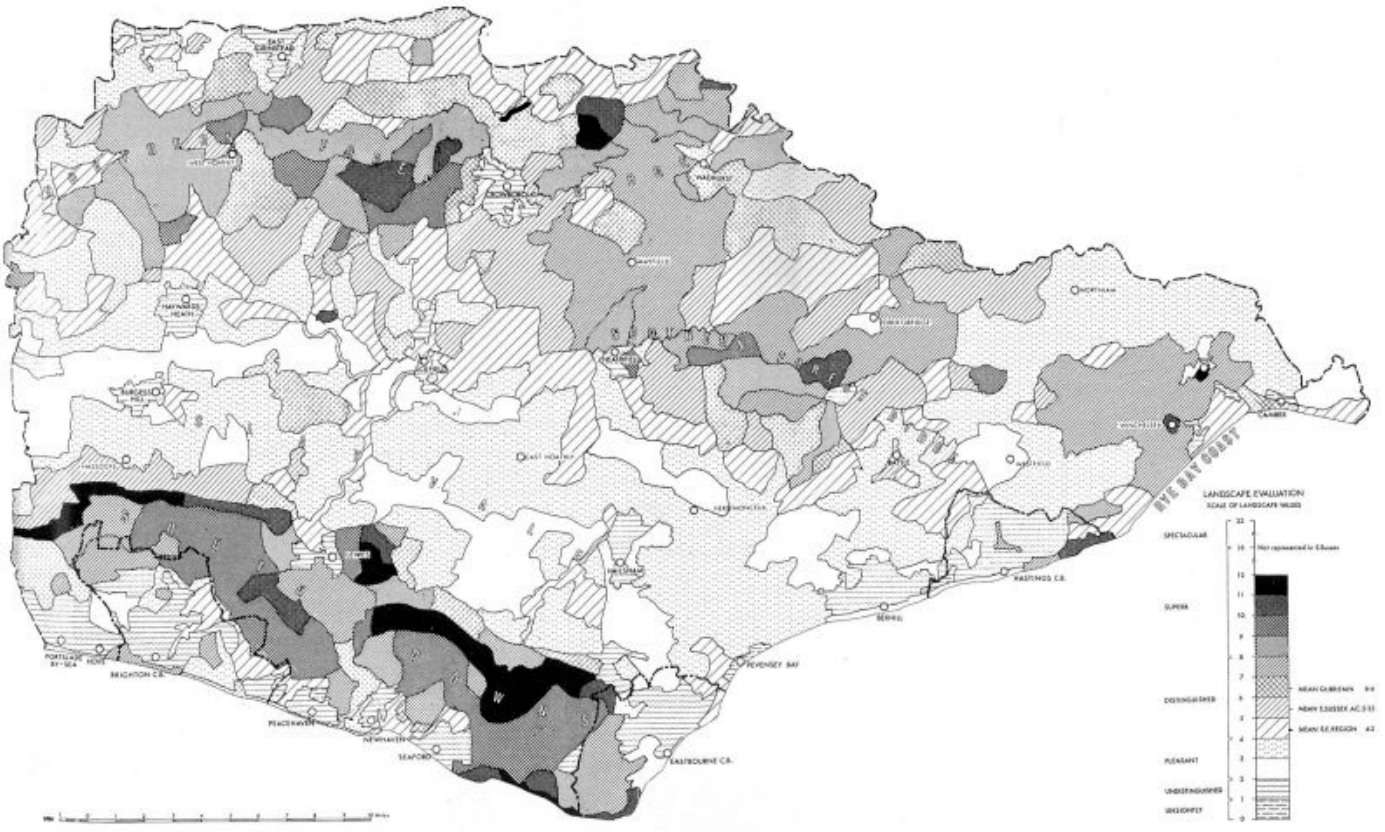

Figure 2. County of East Sussex, Landscape Evaluation Map (Fines, 1968. Note exponential scale 0–32).

Figure 3. East Sussex landscape, near Battle (1066, Norman Conquest).

Fines attempted to do something not previously attempted. He commenced his paper thus:

> *"there exists no recognized method of evaluating (Britain's landscape); probably because the assessment of the quality of landscape, . . . must inevitably be subjective. But if subjective judgement is inadmissible, then the planner is culpable whenever he delineates an area of great landscape value or refuses planning permission on grounds of 'visual amenity'."*

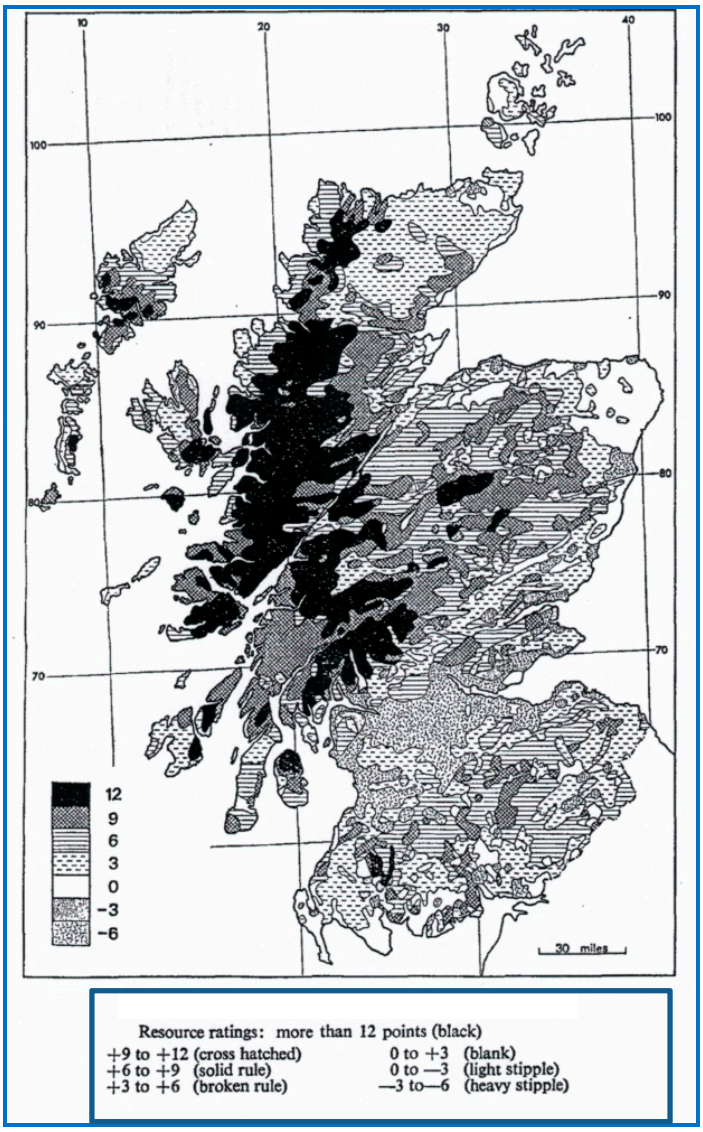

Figure 4. Linton's Scottish Scenic Resources (Linton, 1968. Points for land forms: Mountains, 8; plateau uplands, 3; bold hills, 6; low uplands, 2; hill country, 5 and lowlands, 0. Points for land use: wild landscapes, +6; richly varied farming landscapes, +5; varied forest and moorland with some farms, +4; moorland, +3; treeless farmland, +1; continuous forests, −2 and urbanised and industrialised, −5).

Similarly, Linton commenced his paper: "Scenery is a natural resource. Scenery that charms, thrills or inspires is a potential asset to the land in which it is found" [15]. Both Fines and Linton regarded landscape quality as a national resource of vital importance to the country. More sophisticated and objective studies followed based on component measurement and statistical analysis, including the Coventry–Solihull–Warwickshire study [17].

In 1975, Jay Appleton, a geographer at the University of Hull, published *The Experience of Landscape* [18], a wonderfully written liturgy of landscape, which espoused his famous prospect-refuge theory to explain why people found particular landscapes beautiful.

2.3. Manchester Report

To provide guidance for landscape assessment, in 1970, the Countryside Commission engaged the Department of Town and County Planning at the University of Manchester to recommend a standard approach to evaluate landscape quality for the Commission. The project examined techniques to evaluate the visual quality of landscapes and tested

statistical techniques to assess visual quality [19]. Following a detailed examination of the issues, the Manchester Study recommended two alternative methods for landscape quality evaluation:

Method 1. Field-based evaluation method. Survey all 1 km grid square survey units in the area with between 4 and 30 observers using a common scoring system, with the results being a mean and distribution for each survey unit. A control square of fixed landscape quality is selected, and the quality of all other survey units is compared with this to provide a common base for the landscape scores.

Method 2. Predictive evaluation method. Use factor analysis of the independent data (i.e., physical characteristics) to select components and regression analysis (to assess the influence of the independent variables on the dependent variable—the landscape quality score) to determine their weights based on a sample of survey units and use the field method as in the first method; the weights can then be applied to the remaining survey units.

The report detailed the method of each and their application.

Although the Commission had intended to prepare an advisory manual for planning authorities based on the report, its reaction to the Manchester Report was nonplussed.

Years later, Professor Carys Swanwick of the University of Sheffield identified the Manchester study as an exemplar of a "supposedly objective, scientific, often quantitative approach" which led "to a considerable degree of disillusionment with this type of work" [20]. She went on, "This was largely because many believed it inappropriate to reduce something as complex, emotional and so intertwined with our culture, as landscape, to a series of numerical values and statistical formulae". According to the 1987 landscape guidance by the Countryside Commission, "Many techniques (especially the so-called statistical methods) fell into disrepute. Practitioners tended to despair of the subject and leave it to the academics". Similarly, Warnock and Griffiths wrote of the "disillusion with the concept of landscape as quantifiable . . . into a typology of 'better' and 'worse' landscapes" [21].

It is also possible that many practitioners could not comprehend the statistical methods involved. Selman and Swanwick stated that the rejection of statistical approaches to landscape classification and evaluation led the Countryside Commission to the view that landscape character had to be "considered separately from the steps of evaluation or other forms of judgement" [22].

2.4. New Approaches

Swanwick described the evolution of the approach (Table 1) [20]. She identified the Manchester-type study as *landscape evaluation*, which identified "what made one area of landscape 'better' than another". She asserted that during the 1980s, the emphasis shifted to *landscape assessment*, which described why one area was different or distinct from another area rather than their relative value. This was followed in the 1990s by descriptions of landscape character. The Manchester Report cautioned against character assessment: "It is important not to confuse the analysis of landscape character, which is descriptive, and analysis of quality, which is evaluative"—a caution that fell on deaf ears.

Table 1. Key differences in the evolution of landscape assessment [20].

Early 1970s	Mid 1980s	Mid 1990s
Landscape Evaluation	**Landscape Assessment**	**Landscape Character Assessment**
Focused on landscape value Claimed to be an objective process Compared value of one landscape with another Relied on quantitative measurement of landscape elements	Recognised role for both subjectivity and objectivity Stressed differences between inventory, classification and evaluation of landscape Provided scope for incorporating other people's perceptions of the landscape	Focused on landscape character Divides process of characterisation from making judgements Stresses potential for use at different scales More recent emphasis on need for stakeholders to be involved

In the 1980s, there was continuing debate about the meaning of the phrase, *outstanding natural beauty*, in the National Parks Act. In 1985, the Countryside Commission said that the term meant *outstanding landscape quality*, as there were few areas in the country that were entirely natural [22]. Paradoxically, it is difficult to define an outstanding landscape without some form of evaluation; a mere description of landscape character would obviously not be sufficient.

The factors to be considered in reaching a judgement about *outstanding landscape quality*, however, were entirely descriptive: relative relief, landscape shape, natural quality (or wildness), semi-natural vegetation, dramatic contrasts, remoteness, unspoiled quality, continuity and extent, harmony of the works of man and nature and vernacular architecture. Quite a list, but no assessment of landscape quality.

The UK Secretary of State stated that the:

> *"assessment of landscape quality necessarily involves a subjective assessment and that within the consensus of informed opinion allied with the trained eye, and commonsense, the matter is one of aesthetic taste"*. [22]

In other words, leave it to the experts!

From the late 1980s onwards, the Countryside Commission and its successors addressed landscape assessment and published the following national guidance documents:

1987 Landscape Assessment, a Countryside Commission Approach. CCD 18 [23];
1993 Landscape Assessment Guidance, CCP 423 [24];
1999 Interim Landscape Character Assessment Guidance (Scotland) [25];
2002 Landscape Character Assessment: Guidance for England and Scotland [26];
2002 Topic Paper 1: Recent Practice and the Evolution of Landscape Character Assessment [27].

The Commission's first guidance in 1987 comprised a description of its physical characteristics and those which distinguished the landscape from other landscapes, but with no assessment of its aesthetic value. The 1993 guidance distinguished landscape types (e.g., chalk downs) from landscape areas (e.g., South Downs) which was a useful distinction. The guidance allowed for work at different scales with national or regional assessments providing the framework for more detailed assessments, again a useful contribution. It made explicit the criteria for designating landscapes, for example for AONB status. By including non-visual factors, such as history and wildlife, however, the guidance expanded landscape from a solely visual phenomenon.

The 2002 guidance defined landscape character as "a distinct, recognizable and consistent pattern of elements that make one landscape different from another, rather than better or worse", thus clearly differentiating it from qualitative evaluation [20].

Swanwick strongly urged:

> *"Subjective value judgements should be avoided and a distinction drawn between adjectives which seek to convey the aesthetic qualities of a landscape and those which deal with personal perceptions or values. So, words like bland, beautiful, attractive, degraded and ordinary should generally not be used since such judgements tend to be very subjective and 'in the eye of the beholder'."*

Previously, landscape was the visual appearance of the land, and the 2002 guidelines defined it as about the relationship between people and place; the interaction between the "natural (geology, soils, climate, flora and fauna) and cultural (historical and current impact of land use, settlements . . .)". It appears to be more similar to an environmental description than a landscape assessment.

Butler noted that the definition closely aligns it with that of the European Landscape Convention [28]. The definition:

> *" . . . moves away from the earlier understanding of landscape assessments as being a professional, aesthetic and objective representation. It recognises that in order to assess landscape there is a need to understand how it is perceived; dependent on feelings, associations, relationships and interactions. In this conceptualization, landscape is no*

longer just something objectively out there, but is recognised as the setting for everyday life, bringing into focus the practices which occur in the landscape."

Another useful shift was that in regarding landscape as based on perception, which varied from person to person, its assessment required the participation of local communities rather than just expert assessments.

The 2002 guidelines differentiated landscape quality and landscape value [26]:

- Landscape quality (or condition) is based on judgements about the physical state of the landscape, and about its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements, which make up the character in any one place.
- Landscape value is concerned with the relative value that is attached to different landscapes and expresses national or local consensus because of its quality and special qualities, including perceptual aspects, such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues.

In considering natural beauty and amenity, and in any other situation which requires that a landscape be identified as requiring special attention, judgments must be based at least in part on the concept of landscape value. This refers to the relative value or importance that stakeholders attach to different landscapes and their reasons for valuing them. The reasons may be set out according to a range of more detailed criteria that may include the following [20]:

- Landscape quality: the intactness of the landscape and the condition of features and elements;
- Scenic quality: the term that is used to describe landscapes that appeal primarily to the visual senses;
- Rarity: the presence of rare features and elements in the landscape, or the presence of a rare landscape character type;
- Representativeness: whether the landscape contains a particular character, and/or features and elements, which is felt by stakeholders to be worthy of representing;
- Conservation interests: the presence of features of particular wildlife, earth science or archaeology; historical and cultural interest can add to the value of a landscape as well as having value in its own right;
- Wildness: the presence of wild (or relatively wild) character in the landscape, which makes a particular contribution to the sense of place;
- Associations with particular people, artists, writers or other media, or events in history.

A field survey is an integral part of the guidance, and this includes a subjective assessment of aesthetic and perceptual aspects. Table 2 lists aspects that could be covered but emphasised that the list was not exhaustive, and surveyors were free to introduce their own words. The list first originated from the 1987 guidance labelled "The Subjective Checklist".

This checklist has the effect of rendering aesthetic judgement a cognitive analytical process rather than a product of affect, the likes and dislikes of the landscape.

Table 2. Aesthetic aspects of landscape character [20].

SCALE	Intimate	Small	Large	Vast
Enclosure	Tight	Enclosed	Open	Exposed
Diversity	Uniform	Simple	Diverse	Complex
Texture	Smooth	Textured	Rough	Very rough
Form	Vertical	Sloping	Rolling	Horizontal
Line	Straight	Angular	Curved	Sinuous
Color	Monochrome	Muted	Colourful	Garish
Balance	Harmonious	Balanced	Discordant	Chaotic
Movement	Dead	Still	Calm	Busy
Pattern	Random	Organised	Regular	Formal

The most recent guidance issued by Natural England includes a pie chart of "what is landscape?" (Figure 5) [29]. The reference to "preferences" in the Perceptual and Aesthetics segment suggests landscape aesthetics; however, it is the only reference in the document to preferences and does not explain it.

Figure 5. What is landscape? (Tudor, 2014, Reprinted with permission from Natural England, 2022).

In reference to aesthetics, the 2014 guidance explained the following:

- The Field Survey Sheet should include a checklist of aesthetic and perceptual factors including pattern, scale, texture, colour, complexity and enclosure, etc. The written descriptions should include the aesthetic and perceptual characteristics of the landscape.
- People's responses to landscapes are subjective; they are personal and influenced by the experiences of the individual.
- Factors include wildness, security, light quality, beauty and scenic attractiveness, and some of these can be perceived/experienced by senses other than sight, such as smell/scent, tranquillity, noise and exposure to the elements (wind and rain, for example). Associated descriptions might be:

  Security—Safe? Unsettling? Disturbing? Threatening?
  Stimuli—Monotonous? Interesting? Challenging? Inspiring?
  Tranquillity—Still? to Very busy?
  Movement—Tranquil? to Vibrant?
  Naturalness—Natural? Tamed? Managed? Artificial?
  Noise—Quiet? Distant? Intermittent? Loud?

2.5. Evaluation of Landscape Character Assessments

From a review of how landscape values are handled in LCAs, Butler concluded [28]:

"the values communicated in these assessments tend to be those of 'objective' outside experts, predominantly based on aesthetics and focusing on the physicality of landscape. This I argue leads to a questioning the legitimacy of the LCA approach."

The review of landscape assessment methods for World Heritage sites stated in respect of the LCA:

> *"This is a well-documented methodology that systematically describes the landscape and uses that information to inform judgments including those related to scenic value, protected area designation, and environmental impact assessments. Today, LCA, or some closely related approach, is in use in many other European countries and has been referenced in visual impact assessment work in New Zealand, Australia and Hong Kong, China."* [30]

A later review of landscape character assessments by British local councils found that 165 had been prepared, the majority in England [31]. Councils preparing landscape character assessments conduct desk and field surveys and then classify, map and describe the landscape's character. The background descriptions of the area provide a useful summary of the physical and human origins of landscape character, including its physiography, history, land use and development. The assessment derives landscape types and then subdivides these into landscape character areas—discrete areas of similar character. Each are then described in detail covering all of the above plus their visual elements and character, literary and artistic associations, tranquillity, condition of the landscape and pressures for change. Some 30 reports developed design principles for developments and a further 27 reports examined the landscape capacity and sensitivity.

Thirteen landscape character assessments conducted by councils were examined to assess the extent by which scenic values were cited.

- *Scenic* is rarely referred to; the few examples include "high scenic value" (Dartmoor), "providing strategic scenic viewpoints" (Royal Borough) and "coasts are protected for their special scenic . . . value". (East Riding).
- The term, *landscape*, is frequently referred to by the documents because they are landscape character assessments.
- *Aesthetics* is scarcely covered, an exception being the following reference: "designated in the mid-seventies for their aesthetic value" (Cheshire East).
- The term, *value*, is frequently used, though often in reference to cultural/heritage values and ecological/habitat/nature conservation values. Valuing the landscape is also cited (Northern Ireland, Yorkshire Dales). Less common was the following: "Landscape value is the intrinsic value that is attached to the landscape and often reflected in a designation". (East Riding).
- The following definition summed up the approach to LCA: "Landscape character assessment is an objective, *value-free* assessment of landscape concerned with character rather than quality or value" (Yorkshire Dales, emphasis added).

The survey of these LCAs indicates that they are not used for valuing scenic quality. Inasmuch as scenic values are referred to, it is to stress the objective, value-free approach that underlies the landscape character assessment.

A review of 78 LCAs conducted between 2007 and 2012 found that 43 did not contain a definition of landscape, while most of the remainder defined it as a perceived entity, e.g., the Peak District LCA [32]:

> *"Landscape is more than just the 'view'. It is about the relationship between people, place and nature. It is the ever-changing backdrop to our lives . . . the way different components of our environment—both natural and cultural—interact together and are perceived by us."* [33]

The survey found that all LCAs raised awareness of individual landscapes but because of the ambiguity of the word and its multiple meanings, it was "problematic to communicate the concept of landscape to the public". However, the public's involvement expanded their awareness and understanding of the landscape, even if it is "difficult to comprehend exactly what is being assessed". Because the LCAs were prepared by professionals with minimal public input, they probably fail to "recognize diverse and conflicting values bound up in the landscape and see it as a relatively harmonious and static entity". Butler and Berglund concluded from their study of 52 LCAs that "although 'experts' views are invalu-

able, for much of a landscape assessment they are unreliable for judging the values people attach to 'their' landscape" [34].

From his review of the treatment of landscape values by LCAs, Butler found that [28]:

> *"rather than addressing landscape as a lived experience, landscape planners, through LCAs, tend to handle it as an objective unit of analysis, representing a backdrop to predominantly an objective outsiders view; contrasting with the intimate experience of those who inhabit the landscape. The representations expressed in the individual LCAs focus predominantly on form, missing the relationships and practices which underpin the landscape, communicating it as a neutral surface; an area rather than the perception of that area."*

In 1993, the Countryside Agency commenced a pilot program called the New Map of England, which aimed to identify, describe and analyse landscape character types at a broad regional scale, and in 1996 produced the map. Figure 6 shows the latest iteration of the map of 2014. The Agency classified and described 159 character areas. Interestingly, the word 'landscape' is diminished—it is termed the "Character of England Map", not the "*Landscape* Character of England Map", although this is expressed in the explanatory text. In 2014, Natural England revised the National Character Area profiles to accord with the European Landscape Convention and other policies.

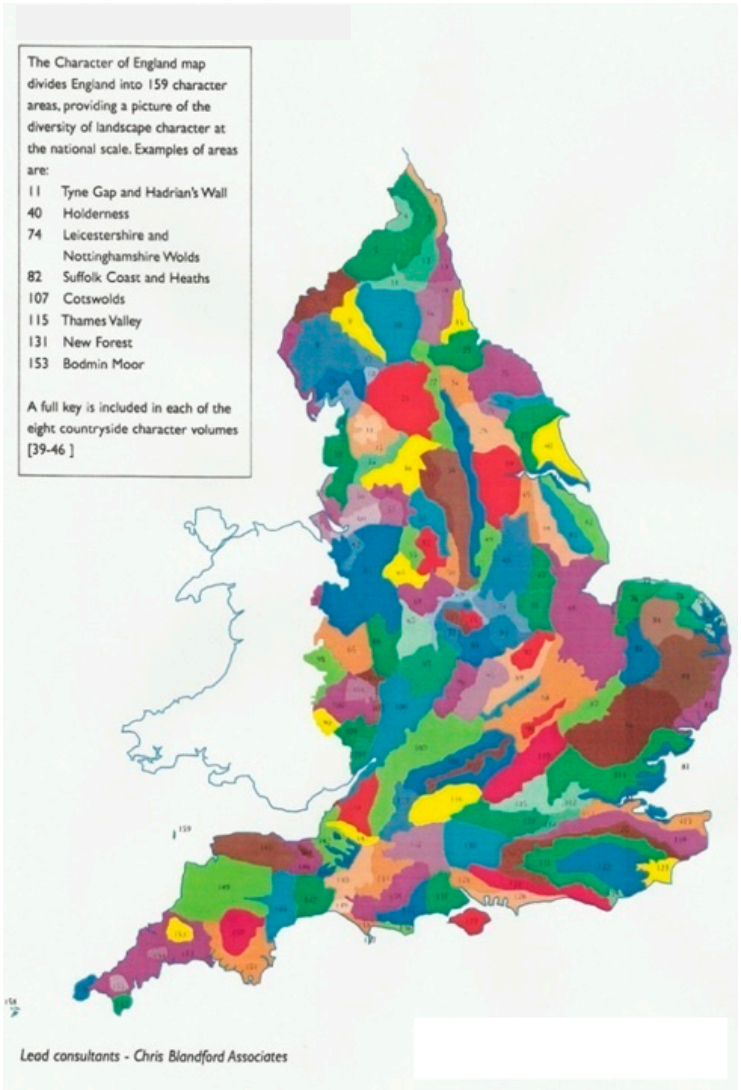

Figure 6. (Landscape) Character of England map (Countryside Agency) (Reprinted with permission of Natural England, 2022).

Natural England's program, Countryside Quality Counts, monitors the state of each of the 159 character areas. The first covered the 1990–1998 period and the second, the 1999–2003 period [35]. The latter reviewed data from a wide variety of sources and found that landscape character was maintained in 51% of the areas and actually enhanced in a further 10%. Twenty per cent of landscapes showed a loss or neglect, while a further 19% had new characteristics emerging.

2.6. Post-2000 Initiatives

From the early 2000s, there were signs that Natural England, the successor to the Countryside Agency, was interested in further investigating landscape values. The following summarises several studies to this end. During the early 2000s UK Government departments carried out many economic valuation studies, including of the natural environment and its features. As part of this, Swanwick and her colleagues from several universities reported on the valuation of agricultural landscapes [36]. They concluded that valuing on a whole landscape basis was preferable to valuing its component features as this is the way that people view and value landscapes. The contingent valuation approach was best suited to measuring people's valuation on a whole of landscape basis while choice modelling could be used for landscape components. The landscape character types and areas were suggested as the focus of the approach ranging from a national or regional scale down to a local parish level. They identified a typology of six agricultural landscapes for England and Wales, extending from arable agriculture and mixed agriculture through chalk and limestone agriculture and dairy and mixed agriculture to upland dairying and stock agriculture.

In 2010, Natural England launched the Character and Quality of England's Landscapes project (CQuEL) as its principal integrated monitoring program of landscapes and ecosystem services [37]. The project examined the definition of landscape under the European Landscape Convention but felt it was too focused on its cultural characteristics and suggested amending it to read " ... an area, perceived by people, whose character *and function* are the result of the action and interaction of natural and/or human factors" with the words *and function* added. The project was about the physical processes of the landscape and the services and benefits it provided.

In 2009, Natural England examined the services and qualities provided by landscapes through extensive interviews with the community [38]. Among its findings were:

- People talked in a way that suggested a sense of ownership about the landscape;
- Landscape provides places for peace and solitude, exercise and activity, escape, stress relief, and places for spending time with loved ones or for being alone;
- Landscape provides physical sensation, such as sound (or silence) and "the wind in your hair;"
- Landscape has a life-affirming quality;
- People had a range of places from nearby to distant.

The study surveyed 20 landscape features including the coast, water, woodlands, and villages and people's relationship to them.

Since 2009, Natural England in partnership with the Department for Environment, Food and Rural Affairs (DEFRA), has undertaken the Monitor of Engagement with the Natural Environment survey [39]. The main focus of the survey is to determine the time they spend in the natural environment, the places they visit, the frequency and their motivations for their trips and their perceptions of the quality and accessibility of the places they visit. It also seeks to capture other ways of engaging with the natural environment such as time spent in the garden and volunteering, and pro-environmental behaviours such as recycling.

In 2012 Natural England commissioned a study: EcoLaP—short for Econets, Landscape and People [40]. Econets is the abbreviation of Ecological Networks. The study sought to understand people's perception of landscape change, including its aesthetic and cultural value. It aimed to provide practical ways to use this qualitative information with

data on the natural sciences. It concluded that the "integration of cultural values in nature conservation is essential" and "their perceptions and cultural values are clearly a key for the successful implementation of econets".

The current Conservative Government released a 25-year plan in 2018 to improve the environment [41]. It included a target to *Enhance beauty, heritage and engagement with the natural environment*. The term 'beauty' was mentioned 24 times in the document. The target included as an action to "safeguard and enhance the beauty of our natural environment".

In 2019, the Department of Environment, Food and Rural Affairs (DEFRA) commissioned a wide-ranging study of landscape quality which examined approaches to landscape quality and values and the history of evaluating landscape quality [42]. Its purpose was to "inform DEFRA's monitoring and evaluation of landscape quality with a particular focus on the notion of 'natural beauty' and related aesthetic qualities". The study concluded that "we find in aspects of the aesthetic appreciation of landscape . . . a model for a more holistic and engaged approach to landscape . . .".

The significant point that these studies demonstrate is that Natural England and DEFRA are not blind to the aesthetic value of landscapes and have sought to better understand it and in particular how to integrate concern for the cultural value of landscapes into their work with the natural environment.

2.7. Britain—Conclusions

Britain has a long and distinguished history of regard for its landscapes, as evidenced by its poets, writers, painters and photographers. During World War II, people in Britain drew mental strength from the appeal and constancy of its rural landscapes.

Throughout the 20th century, much was written to describe and delight in Britain's landscapes and much action was taken via the establishment of national parks, AONBs and through planning policies, to safeguard landscapes from deleterious developments. From the late 1960s onwards, planners started to develop methods to measure and map the quality and features of the landscape. Quite sophisticated quantitative methods were developed and had they been further refined, there is much they could have achieved. However, it was not to be.

For reasons best known to itself, the Countryside Commission (and its successors) with the statutory responsibility for Britain's landscapes, retreated from evaluating landscape value (or scenic quality), instead describing and classifying its landscape character. Fear of being accused of subjectivity may have been the underlying reason for the agency's reticence. The new approach was devoid (as far as humanly possible) of subjective judgement. Curiously, although the criteria for designating AONBs included scenic quality, no guidance was provided on how to evaluate this. Scenic quality was largely obscured through the additional considerations, all of which could be objectively measured and mapped.

The meaning of the term *landscape* has shifted from referring to the beauty of the land to a relationship between people and the land. This evades its qualitative values and instead provides a footing for the focus on landscape character, a neutral and objective field to explore compared with the subjective field of landscape quality. Landscape quality no longer refers to the qualitative value of the landscape but to its condition and whether it needs repair! The aesthetic component is now covered by landscape value.

In Britain, landscape has digressed far from its original meaning, spurred by an aversion to subjectively valuing landscape quality. It is a sad state that Britain can no longer refer to the beauty of its landscapes but rather to a landscape in prime condition. It is to be hoped that the recent flurry of studies into landscape quality may indicate a change in attitude by the authorities and a return to measuring and mapping landscape quality.

Figure 7 models the development of landscape assessment methods in Britain. The early delight in rural beauty inspired attempts in the 1960s and 1970s to measure and map landscape quality based on its physical characteristics. These studies have persisted with physical landscape studies which describe and classify the landscape but do not measure its scenic quality. Frustrated with the failure of the early studies to assess landscape quality,

the Countryside Commission went in a different direction, that of describing the character of the landscape, again not its scenic quality. Meanwhile however, research had established the veracity of using landscape photographs as a surrogate of the landscape and this, together with the use of the Internet, digital photography, and other tools, has opened the way landscape preference studies.

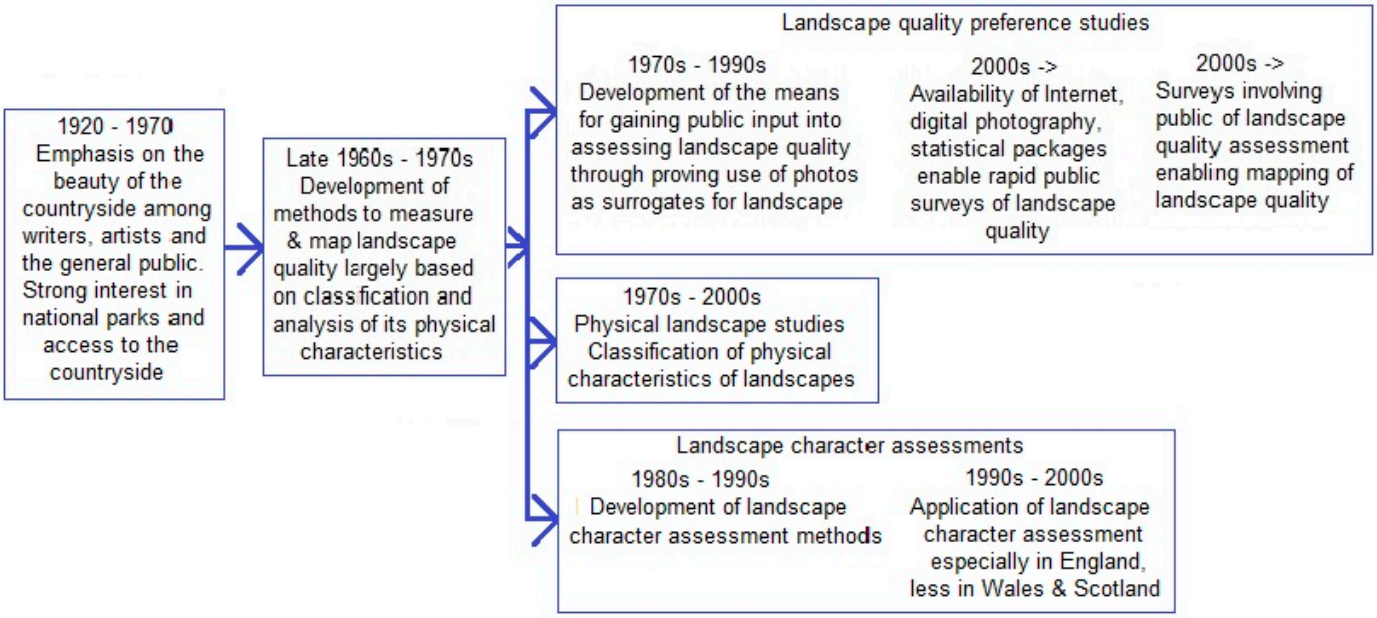

Figure 7. Evolution of landscape assessment methods—Great Britain.

It is unfortunate that Britain has focused its efforts on landscape character studies which do not address the delight that people have in the quality of the landscape. It is to be hoped that Britain will redress this lack and initiate landscape preference studies so that it may fulfil the public's interest in landscape quality.

3. European Landscape Convention

3.1. History

The European Landscape Convention originated in 1994 upon a recommendation by a committee of local and regional authorities in Europe to "to draw up, on the basis of the Mediterranean Landscape Charter, . . . a framework convention on the management and protection of the natural and cultural landscape of Europe as a whole". In 1995, the World Conservation Union (IUCN) advocated for an international convention on rural landscape protection in Europe. In response to these and other requests, the Council of Europe's Congress of Local and Regional Authorities (CLRAE) prepared a draft convention involving a large array of expert bodies in the process. CLRAE held a consultative conference in Florence in April 1998 and then the final draft was prepared. On 19 July 2000, the Committee of Ministers of the Council of Europe adopted the Convention and it opened for signatures in Florence on 20 October 2000. It entered into force on 1 March 2004.

3.2. Why a European Landscape Convention?

Of the reasons for the European Landscape Convention, Maguelonne Déjeant-Pons, the Executive-Secretary of the Convention, wrote in 2005 [43,44]:

> *"As an essential factor of individual and communal well-being and an important part of people's quality of life, landscape contributes to human fulfilment and consolidation of the European identity. It also has an important public interest role in the cultural, ecological, environmental and social fields, and constitutes a resource favourable to economic activity, particularly to tourism."*

In 2018 she wrote [45]:

"The developments in agriculture, forestry, industrial and mineral production techniques, together with the practices followed in town and country planning, transport, networks, tourism and recreation and, at a more general level, changes in the world economy, have in many cases accelerated the transformation of landscapes."

While European landscapes have been agricultural for centuries, the intensification of food and fibre production, producing more on less land through the use of chemicals, machinery and fossil fuels, is resulting in greater landscape and ecological impacts [46,47]. Added to this, the re-structuring of agriculture in the European Union and the radical socio-economic changes in eastern and central Europe have additional impacts on the landscape [48].

3.3. Purpose and Contents

The Explanatory Report of the Convention describes its purpose as [49]:

"to encourage public authorities to adopt policies and measures at local, regional, national and international levels for protecting, managing and planning landscapes throughout Europe so as to maintain and improve ***landscape quality*** *and bring the public, institutions and local and regional authorities to recognise the value and importance of landscape and to take part in related public decisions."* (emphasis added)

Succinctly put, its aim "is to promote landscape protection, management and planning, and to organize European co-operation on landscape issues".

It is worth noting that the reference to landscape quality clearly regards it as a qualitative attribute, not its condition, as in Britain's Landscape Character Assessment.

The Convention covers the entire territory of the Parties, including natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as everyday and degraded landscapes, thus recognising the importance of all landscapes.

The European Landscape Convention comprises a preamble and four main sections [50]:

Chapter I, Objectives and scope of the Convention, plus key definitions;

Chapter II, Measures to be taken at national level;

Chapter III, Basis for European co-operation, the measures to be taken at international level and the role of the Committees responsible for monitoring the implementation of the Convention;

Chapter IV, Procedures for adoption of the Convention and related matters.

The Convention defines *"landscape" as an area, as perceived by people, whose* ***character*** *is the result of the action and interaction of natural and/or human factors.*

Note that the focus is on *character*, not quality, which contrasts with its stated purpose. The UK was "highly influential in the development of the ELC, the text can be seen to embed much of the thinking—or the principles—by which landscape was already being planned, managed and designed in the UK" [7,51].

Writers have commented on the ambiguity and vagueness of the definition, necessitated to ensure its adoption across the disparate European communities [32]. In Sweden, from interviews at the national, regional and municipal levels, Dovlén found that the definition of landscape: " ... is advantageous in that it provides an inclusive approach, involves strengthening democratic values and gives emotional values legitimacy in decision-making, which is a major challenge for public authorities" [52].

The Council of Europe's website has translated the Convention into 39 languages, apart from the official languages of French and English. However, the definition of landscape varies across these languages, which may result in communication gaps in its implementation [7].

Olwig noted that the "notion of landscape as an 'area', to be judged by social criteria as a humanly shaped and perceived place . . . contradicts traditional landscape architectural and expert oriented ideas of landscape as a scenic space of land surface constructed and judged largely on visual aesthetic criteria and zoned spatially according to scientific data" [53].

The guidelines to the Convention state [54,55]:

> *"The concept of landscape in the Convention differs from the one that may be found in certain documents, which sees in landscape an "asset" (heritage concept of landscape) and assesses it (as "cultural", "natural" etc. landscape) by considering it as a part of physical space. This new concept expresses, on the contrary, the desire to confront, head-on and in a comprehensive way, the theme of the quality of the surroundings where people live; this is recognised as a precondition for individual and social well-being (understood in the physical, physiological, psychological and intellectual sense) and for sustainable development, as well as a resource conducive to economic activity."*

Landscape protection means actions to conserve and maintain features, while *landscape management* is about the "regular upkeep" of the landscape that guides and harmonises changes. *Landscape planning* concerns "strong forward-looking" actions to enhance, restore or create landscapes.

The guidelines state:

> *"Protective measures, which are currently being widely trialled, should not be designed to stop time or to restore natural or human-influenced characteristics that no longer exist; however, they may guide changes in sites in order to pass on their specific, material and immaterial features to future generations."*

3.4. Requirements and Objectives

Parties to the Convention are required to:

1. Recognise landscapes in their law;
2. Implement landscape policies for protection, management and planning;
3. Ensure participation by the public and of relevant authorities in landscape policies;
4. Integrate landscape into regional and town planning policies as well as other relevant policies, including agricultural and economic;
5. Identify and assess their landscapes;
6. Increase the awareness of societies of the value of their landscapes;
7. Promote training and education to this end.

"Landscape quality objective" means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings, i.e., it is a detailed statement of the characteristics that local people want recognised in their surroundings.

Parties are required to define landscape quality objectives. This involves, according to the Convention's guidelines:

> *To assess the quality of the landscapes identified, taking into account the particular value of different kinds assigned to them by the general public and interested parties, such as landowners and land users or land managers. The point of this evaluation is to provide a basis for judging which landscape features of an area are so valuable that they should be protected; which features need management in order to maintain the quality of the landscape; and which features or areas should be considered for enhancement. This process must take into account the concerned people's opinion and the interests linked to sectoral policies, and here views may well be highly subjective and differ considerably.*

This clearly links landscape quality with the landscape character features that generate it. Regarding the landscape quality objectives, the guidelines state:

> *Every planning action or project should comply with landscape quality objectives. It should in particular improve landscape quality, or at least not bring about a decline. The*

effects of projects, whatever their scale, on the landscape should therefore be evaluated and rules and instruments corresponding to those effects should be defined. Each planning action or project should not only match, but also be appropriate to the features of the places.

The Convention regards landscape quality as central to its purpose.

3.5. Parties

There are 47 possible signatory countries to the Convention and by January 2022, 40 had ratified it—85% of the total (Figure 8). Denmark excluded Greenland. Malta has signed but not ratified it. Notable absences from the Convention are Austria, Germany and the Russian Federation.

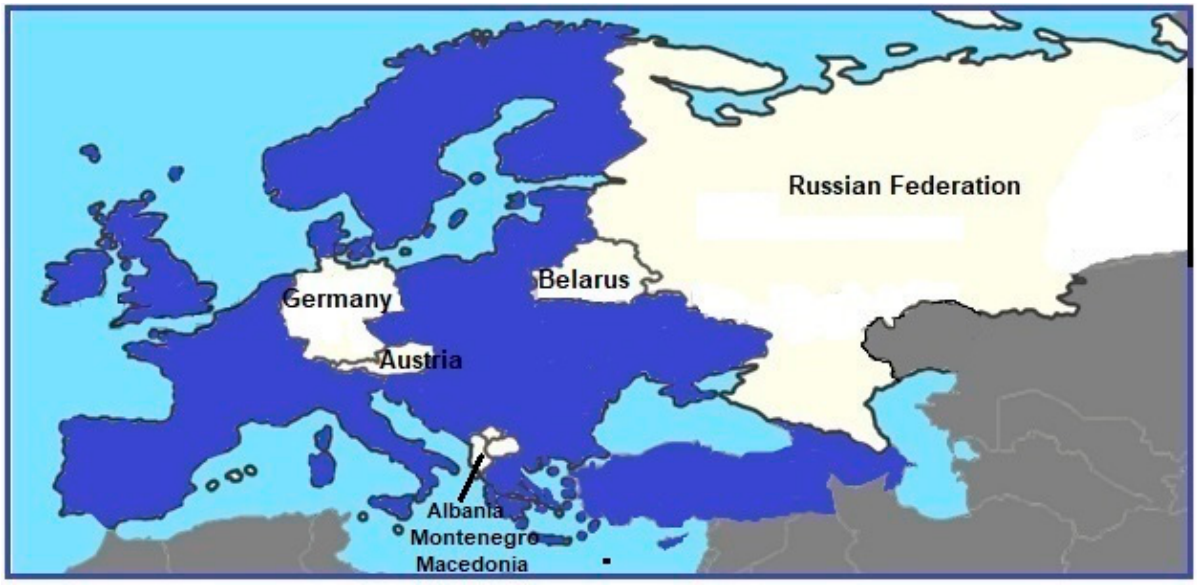

Figure 8. Ratification of the European Landscape Convention (Areas in blue have ratified the European Landscape Convention).

In 2016 the decision was taken by the Committee of Ministers to offer the Convention world-wide as an opportunity to protect, manage and plan landscapes according to common principles that apply to landscapes worldwide [54–56].

3.6. Processes

The process leading to landscape action involves (Guidelines):

- Knowledge of the landscapes: identification, description and assessment;
- Definition of landscape quality objectives;
- Attainment of these objectives by protection, management and planning over a period of time:
- Monitoring of changes, evaluation of the effects of policies and possible redefinition of choices.

Roe noted that although the Convention required monitoring implementation progress, it provided no indicators to assist [51]. Participation, consultation, pooling of ideas and approval (between institutions and the population, horizontal and vertical) should be organised at all stages in this process. Although the ELC does not define "public", the Aarhus Convention on Public Participation in Decision-making and Access to Justice on Environmental Matters defines it as "the public affected or likely to be affected by, or having an interest in, the environmental decision-making" [57,58].

Jones examined the role of public participation under the Convention and wrote [59]:

"Landscape is not simply a collection of material artefacts, but is concerned with the immaterial meanings and values people attach to their material surroundings. ***Nearly all***

> ***landscapes are special in some way to someone****, although not always consciously expressed."* (emphasis added)

Jones identified 14 means of public involvement and provided examples of many from Norway, including petitions, public inquiries, referenda, citizen's panels, focus groups, public meetings and local community control.

In examining public involvement in landscape-related research, a study in 2011 found limited involvement of stakeholders [60]. In Britain, the program of Landscape Character Assessments has been used as the tool to achieve the ELC's requirements but only a quarter of 52 LCAs involved the public, and these in a wide variety of ways [34].

In describing and analysing the landscape, parties have frequently found existing tools inadequate, as they compartmentalise knowledge, whereas "the landscape demands adequate responses within cross-disciplinary time and space constraints which can meet the need for knowledge of the permanent changes at local level" (ELC guidelines).

Landscape knowledge should understand the physical characteristics of the landscape, identifying traces left by natural and human processes; examine developmental processes, pressures and risks facing landscapes; and recognise the value systems of the expert and the public in their perceptions of the landscape. Actions should aim to integrate different sources of knowledge of the landscape and its history; cover the entire landscape, not just the outstanding areas; ensure access and transparency to the knowledge gained and encourage the development of landscape databases covering all aspects (ELC guidelines).

3.7. Instruments for Landscape Policies

The main categories of instruments are:

- Landscape planning: landscape study plans included in spatial planning;
- Inclusion of the landscape in sectoral policies and instruments;
- Shared charters, contracts and strategic plans;
- Impact and landscape studies;
- Evaluations of the effects of operations on landscapes not subject to an impact study;
- Protected sites and landscapes;
- Relationship between landscape and regulations concerning the cultural and historic heritage;
- Resources and financing;
- Landscape awards;
- Landscape observatories, centres and institutes;
- Reports on the state of the landscape and landscape policies;
- Trans-frontier landscapes.

Each of these are detailed in the Convention's Guidelines.

3.8. Landscape Awards

Commencing in 2009, a Landscape Award of the Council of Europe has been conferred every two years to authorities or NGOs who have taken steps to protect, manage or plan landscapes which are of lasting worth and provide models for others. It is for exemplary achievements and judging is by an international jury.

3.9. Effectiveness of the Convention

The ELC website provides access to the many international conferences, workshops, working group reports, national and regional symposia that have been held regarding the Convention. These provide a wealth of detailed information, particularly at the city, region and country level about the implementation of the Convention.

Although there have been many meetings examining the implementation of the European Landscape Convention, these tend to focus on detailed country by county and city by city projects. There does not appear to be any overall synthesis and evaluation of the effectiveness of the Convention.

In 2018, the Executive-Secretary of the Convention, Mrs Déjeant-Pons, wrote [45]:

> *"Since the adoption of the European Landscape Convention, major progress has been made towards the establishment of landscape policies at national, regional and local level. Drawing on shared objectives, these policies foster the quality of a common living environment."*

She also wrote that the Convention has:

> *" . . . led to developments in numerous European States, not only in their national and regional legislation but also at various administrative levels, as well as in methodological documents and experiments with active participatory landscape policies" . . . The Convention "is used as a benchmark by some countries to initiate a process of profound change in their landscape policies; for others it constitutes an opportunity to define their policy."*

> *"Landscape has been gradually introduced into governmental political agendas; an extensive international co-operation network in support of the implementation of the Convention has developed; the concept of landscape as defined by the Convention is being increasingly recognised by authorities and citizens; new forms of co-operation are emerging between the different tiers of government–national, regional and local—and between the ministries or departments of the same state or region; landscape-specific working structures (observatories, centres or landscape institutes) are being set up; landscape-specific laws and regulations are being adopted; states and regions are co-operating beyond their borders in the case of frontier landscapes; national landscape awards referring to the Council of Europe Landscape Award have been launched; . . . "*

According to one writer, the Convention demands:

> *" . . . from all governments that attention be given to the whole European landscape, urban and rural, terrestrial and marine, protected or degraded. This is a mighty ambition, allowing, quite properly, plenty of room for divergent interpretations".* [61]

A legal expert optimistically stated:

> *The Convention thus acts as a catalyst, whereby these countries will be stimulated to rethink—through a process of coming together, gathering and meeting between differing interest groups, administrators and experts—what it is that is meant by landscape in their res publica (i.e., that which is known by and concerns everyone), and how this landscape can provide an overarching framework for both cultural and scientific policy. It is thus the practice of implementing the Convention that is important, not the letter of the Convention understood as if it were statutory law.* [62]

In a survey of British Landscape Character Assessments, many based on the ELC, a 2014 study, found the documents to be essentially professional discourses on landscape, "as a tool for experts in the field of landscape and enhancing justification for those professions" [32]. They acknowledged that this was "contra to that contained in the ELC".

Scott examined Scottish development plans, landscape policy and six case studies to ascertain how well they contributed to ELC policy and practice [63]. He found that landscape needs to be more effectively integrated into land use planning and policy, and new ways are needed to involve the community. A National Landscape Strategy would assist. Overall, he found the ELC "champions a new way forward, moving from top-down elitist approaches" to more inclusive public involvement. However, the extent that this is achieved in practice is questionable.

De Montis examined the implementation of the ELC in planning systems in Spain, France, Italy, Switzerland, the Netherlands and the UK [64]. He found the ELC does influence planning practices, even in countries outside the ELC. Regional planning in France, Italy and Catalonia includes landscape protection and management, while landscape monitoring is carried out by observatories in Catalonia, the Netherlands and France. Dempsey and Wilbrand examined the role of the Convention at the regional level, focusing on the Catalina region of Spain and found it "lacks strong incentives or sanctions for effective implementation at the regional level" [65].

In Switzerland and Italy, the constitution and specific regulations protects the landscape. Article 9 of the Italian Constitution provides for protection of "the landscape and the historical and artistic patrimony of the Nation." However, in Italy, criminal syndicates have illegally constructed hotels and resorts on the Amalfi coast, scuttled ships with toxic waste off Mediterranean beaches, and have built dozens of illegal wind turbines on mountains, heritage areas and the coast in order to gain government subsidies, but many of the turbines stand idle [66]. They note that the ELC in its emphasis on local participation "does not acknowledge the possibility of *destructive or destabilizing* local actors at all" (emphasis added).

A survey in Norway found the "engagement of people is limited to the gathering of feedback from interest groups, politicians and organisations, rather than a comprehensive understanding of the use, perception and values that residents place on the city's landscapes" [53]. Jørgensen et al. advocates landscape as a 'common good' and a 'commons' [67]. Dovlén in Sweden found the "local level is central to translating the ELC definition of landscape into workable strategies" but this was contingent on support and resources from the regional authorities [52].

3.10. European Landscape Convention—Conclusions

The Convention is an innovative instrument, which reinforces the significance of landscapes in the life of the community. Implementation of Convention is having positive outcomes. Its requirements on Parties are quite onerous and demanding and the extent to which it represents community views rather than expert input is rather problematic. Despite its requirement for landscape quality objectives to be articulated, the definition of landscape and the focus of the Convention is on the character of the landscape.

4. European Landscape Convention Implementation by European Countries

In 2005, Dirk Wascher co-ordinated a review of Landscape Character Area mapping in Europe [68]. It summarised 51 examples of LCAs in 14 countries. The review found the meaning of LCA to differ from country to country, "expressing different views on what qualities and elements of the landscape are considered as most relevant". LCA is used as a mapping tool for protected areas in some countries and is also used to monitor and evaluate landscape features. The review found the need for "harmonised definition and approaches which will help assess and compare the landscape character at a range of scales throughout Europe".

Both Germany and Spain, similarly to England, have mapped their landscapes [60]. European landscapes as a whole have been mapped by numerous authorities, including Meeus, who based it on the land form, soil and climate as well as the regional culture, habits and history [69].

The application of LCA in a range of European countries is summarised below.

Austria

LCA was used for identifying spatial reference units and describing their potential for recreation activities, such as hiking and biking. Landscapes were ranked and the results mapped and used to allocate finance to municipalities to invest in "soft tourism"—hiking trails, horse riding trails and biking routes. LCA was also used as a spatial reference unit for the field survey of agriculture and biodiversity assessment [68].

Belgium

A 1:50,000 scale landscape map of Belgium has been prepared, based on land use, historical development, coherence, intactness and recognisability (i.e., sense of place), The maps cover vestigial elements of the traditional landscape and anchor places, which are places of highest historical interest.

A map of the landscape character of Belgium was produced based on natural features, geomorphology, drainage, land use, historical development features and infrastructure. In Flanders, traditional pre-1950 landscapes have been inventoried and serve as references for development assessment [68].

Czech Republic

A four-level LCA description and mapping has been developed, which covers biophysical, cultural and aesthetic criteria. In addition, a novel two-level national typology has been developed, which classifies the landscape into three types: anthropogenised (i.e., urban), cultural and natural landscapes. For each of these, the landscape value was subjectively assessed as increasing, basic (average) or decreasing [68].

Denmark

In the 1980s, 69 national landscape regions were defined based on geomorphology, soil, climate, land use and special themes. The program aimed to develop links between the natural and cultural landscape issues and spatial planning.

LCA is being developed in Denmark and includes biophysical, cultural and aesthetic criteria as well as public input. It aims to define landscape character units at the national, regional and local levels using both GIS and field-based inputs.

Counties in Denmark designate valuable landscapes for protection, including cultural/historic, aesthetic/visual and recreational. Aspects related to perception and visual impression have been included [68]. According to Caspersen [70] following the 2007 amalgamation of the 275 municipalities to 98, only a few have experience in LCA.

Estonia/Finland

In the 1920s, the Finnish geographer, Johannes Granö developed a method of defining and classifying landscapes, taking into account both biotic and abiotic features as well as perceptual qualities, which was ahead of his time. His "'landscape' observations included perceptions of landforms, water, coasts, vegetation, fauna, artificial forms (e.g., buildings), mobile forms (e.g., clouds), variable forms (e.g., seasons), colours and lights" [68]. He applied this approach to Estonia but also to Finland.

France

A national framework for landscape atlases has been developed based on mapping landscape character units covering biophysical and cultural/historical aspects. The mapping is field based and there is some public input [68].

The Protection and Valorisation of Landscapes law of 1993 (*Loi Paysage*) is the main French law on landscape and includes measures to integrate landscape into planning measures and policies. French departments prepare landscape atlases (*Atlas des Paysages*) at the regional level, which serve as reference documents on the landscape.

The Urban Planning Code (*Code de l'urbanisme*), which applies at the regional and local levels, requires the preservation of agriculture and forests, and the protection of natural environments and landscapes.

The 2009 Agreement on the Environment (*Grenelle de l'Environnement*, named after the Rue de Grenelle in Paris) defines actions to achieve sustainable development in France and includes the protection of agricultural and natural areas from urban encroachment [71].

Germany

In its 1976 Federal Nature Protection Act, landscape planning was included (*Landschaftsplanung*) with a mainly ecological dimension. Later reforms of the Act have applied landscape planning across Germany and measures to protect and improve landscape quality. A key principle is that all people must "conserve, protect and preserve the cultural, heritage and productive values of the landscape". Landscape programs, framework plans and plans are applied at the federal, state and municipal levels. These are required to be integrated with territorial and urban plans, thus affording them legal status. Landscape protection and management policies have been implemented across Germany for many years [71]. In 2004, a national mapping of 855 landscape units was completed, drawing on work in the 1960s to classify Germany's natural landscapes [68].

Brandenburg has conserved the diversity, character and beauty of its landscape. The landscape program is based on a geographical classification of natural landscapes. Lower Saxony divided the county into landscape character spaces (*Landschaftsbildräume*) based on native character/natural impact, historical continuity and diversity. The objective is to protect the landscape character.

Hungary

An early taxonomic classification of natural landscapes in the 1970s was supplemented in the 1980s by a national three-level hierarchical landscape character assessment based on geological and biophysical factors [68].

In a 10,000 km^2 area of conflict between nature, landscape and housing, the regional plan aimed to protect the ecology and landscape character. The plan designated protected landscape zones and LCAs in which housing was prohibited, and infrastructure was required to be underground.

An assessment of landscape character in 2011 in several areas of Hungary found key factors in the assessment were the presence of former surface mines, of which there were around 10,000, and lakes, which provided strong natural elements [72].

Ireland

Since 2001, councils are required to prepare a landscape character assessment for any new development plan. Twelve counties out of 27 had been completed by 2009 and a review found "considerable variation and inconsistency in terms used in LCAs e.g., landscape character units, image units, character types" [67]. Public consultation was generally poor and there was little consistency between counties at their borders. Most LCAs were appended to county development plans rather than integrated within them. The review recommended a National Landscape Character Assessment to provide overall guidance [68,73].

Arising from its endorsement of the European Landscape Convention, in 2010, Ireland embarked on an ambitious program to integrate landscape considerations into its policies and programs, commencing with a National Landscape Strategy. The Heritage Council has responsibility for this and takes it very seriously: "The Irish landscape is where tangible and intangible aspects of our culture (story, folklore, sense of place) intertwine. Together, these forge identity and belonging and provide inspiration". The Council proposed the establishment of a Landscape Observatory of Ireland to prepare the National Landscape Strategy. It also proposed a Landscape Ireland Act, landscape-proofing existing primary legislation, government programs and policies, together with research, public input and involvement. A landscape character assessment would also be conducted through the Heritage Council [74].

In 2013, the Heritage Council of Ireland published the Historic Landscape Characterisation (HLC), recognising that the landscape "houses the most detailed and faithful record of human history because it is an account of our actions". HLC does not replace landscape character assessment but rather strengthens the historic aspects of the landscape. By relating historic monuments with landscape patterns, it contributes to practical landscape management [75].

Italy

Work has been carried out in Italy to map its macro-landscapes covering 38 landscape types. It uses the European CORINE (Coordination of Information on the Environment) land cover levels 1 and 2 to derive landscape types and then uses bioclimate, geophysical and vegetation data with land cover level 4 data [68].

The Netherlands

The Ministry of Agriculture monitors the effects of change on the Dutch landscape, *'Meetnet Landschap'*, monitoring network. The system can generate typologies and mapping, including of landscape character and other products. The Dutch landscapes have been mapped based on soil and geophysical factors, which derived nine landscape types and 16 sub-types. This 'top-down' approach was complemented by a 'bottom-up' approach, which defined eleven landscape types [68].

Landscape quality principles are integrated into planning measures at national, regional and local levels, but landscape planning and management focuses more on the creation and design of new landscapes. The *Landschapsbeheer Nederland* organisation works through twelve provincial organisations to conserve and value the landscape through nature protection, landscape management and policy regarding new developments.

Deriving from the 1977 Perspective for Landscape Development (*Visie Landschapsbouw*) and the 1992 Landscape Policy Plan (*Nota Landschap*), which promoted the protection of aesthetic quality landscapes, in 1999, the Netherlands Ministries prepared the Belvedere Memorandum (*Nota Belvedere*), which focused on the historical and cultural dimension of the landscape in land-use planning. With the introduction of the European Landscape Convention, in 2008 the government drew up the Landscape Agenda (*Agenda Landschap*) to place the landscape as a key factor in the nation's policies [71]. This built on the Landscape Manifesto (*Landschaps Manifest*) of 2005 between more than 40 stakeholders to promote actions based on the following principles:

- The landscape belongs to everyone and is for everyone.
- Access to the landscape must be easy and beauty must be a significant aspect in its development.
- New planning actions should ensure the quality of the landscape.
- The landscape should be ecologically, economically, socially and culturally integrated.
- The landscape is a phenomenon that goes beyond borders.

The mention of beauty in this context is particularly significant, as the Convention itself skirts mentioning landscape beauty. The Netherlands Government has designated 20 areas as national landscapes on account of their natural, cultural and historical values. However, in 2012, the national government transferred functions relating to the landscape to regions and municipalities within the context of the Government's Strategy to Develop a Quality Landscape (*Landschap Ontwikkelen met Kwaliteit*, LOK). The Strategy established four bases:

- Natural quality: characteristics of the land, water, relief, physical geography, fauna and flora.
- Cultural quality: characteristics related to the cultural history, cultural renewal and architectural design.
- Quality for users: accessibility (recreational) and multiple uses of the area.
- Perceptive quality: spatial variation, informative value, contrast with the urban area, green character, peace and quiet, silence and darkness.

Again, the reference to perceptive quality is notable. The LOK is applied to regional and local plans and new projects can proceed providing they improve, or at least do not worsen, the landscape quality [71].

Northern Ireland

The Northern Ireland Landscape Character Assessment, 2000 identified 130 distinct areas of fragile landscapes at risk from developments. The assessment was based on geomorphology, setting, biodiversity, land use and cultural patterns. The assessment was based on extensive field survey and use of relevant maps. In 2003, the Government issued a policy: "Shared Horizons: Statement of Policy on Protected Landscapes in Northern Ireland", shared horizons reflecting the fact that most of the landscapes were on private land and were subject to management by various agencies and local authorities [76]. Declaring some areas as Areas of Outstanding Natural Beauty (AONBs) was considered the best way of protecting them. Management plans would then be prepared covering each area. The Mourne Mountains were proposed to be designated as a National Park.

Norway

The Norwegian Landscape Reference System covers landform; geology; water surfaces; vegetation; agriculture; buildings, technical installations and infrastructure. Landscape character is the combination of these components. Norway has 45 landscape regions, comprising 444 landscape sub-regions, which are further subdivided into landscape areas at the local level. The classification is based on landforms, geology, water, vegetation, agriculture and buildings and infrastructure. The National Monitoring Program for Agricultural Landscapes is based on 10 landscape regions [68].

Poland

The law in Poland provides no clear definition of landscape but states that landscape quality comprises ecological, aesthetical and cultural values of the specific area [77]. The environmental impact assessment system requires consideration of the development's landscape impacts. This involves a description of the landscape resources and assessment of the character and magnitude of landscape threats.

Portugal

A two-level mapping of Portugal has been completed based on biophysical, cultural and experiential inputs, yielding unique landscape character units [68].

Scotland

Scotland followed England in mapping its landscape character and has completed 31 regional LCA reports covering all of Scotland. The mapping integrates objective data covering biophysical, cultural and historic aspects with subjective data covering perceptual and aesthetic aspects. Nearly 4000 areas were mapped and these were allocated into 366 landscape character types.

Slovak Republic

A major *Landscape Atlas of the Slovak Republic* has been compiled since the mid-1990s and covers 25 maps covering the landscape and its character. Its database is at three levels: primary covering geophysical, land cover and biodiversity; secondary covering land use; and tertiary covering population, settlements and land uses [68].

Slovenia

Slovenia introduced a new strategic spatial planning framework in 2007, which incorporated landscape protection, including through spatial vulnerability analyses. A comprehensive inventory and evaluation of "visible morphological and symbolic qualities" underpins landscape management. Public and professional education and training is undertaken. Funding support is available for the maintenance of cultural landscapes through farming, so that the "Slovenian landscapes become an important contributor to national and European identity" [74].

Spain

The national landscape mapping of Spain identified 1263 homogeneous landscape units. These were then grouped into 116 landscape types. Ninety-four of the units were examined in greater detail [68].

In 2003, Spain published the *Atlas of the Landscapes of Spain* (*Atlas de los Paisajes de España*), which differentiated the landscape into three classes: basic units, landscape types and associations of landscapes [68].

The Catalan region in the north-east of Spain has championed the landscape with a Landscape Act in 2005 to protect, manage and plan the landscape and the establishment of the Landscape Observatory of Catalonia to increase knowledge of the region's landscapes and advise on the implementation of the European Landscape Convention. It produces landscape catalogues, which describes the landscapes and their values and sets quality objectives. Based on these, landscape directives are issued, specifying the quality objectives to be incorporated into national and regional plans [74].

Sweden

In 2006, the National Heritage Board was commissioned to recommend how the European Landscape Convention would be implemented in Sweden. It recommended consistent implementation across a range of policy areas. It also recommended a commission to develop a national landscape policy and the implementation of regional landscape strategies. Following Swedish ratification of the Convention in 2010, the Board was tasked with its implementation [74].

Switzerland

With the Swiss landscape central to its national identity, the 1962 Federal Constitution included landscape protection and was followed by a Federal Act to protect natural and cultural heritage (*Loi fédérale sur la protection de la nature et du paysage*, LPN). The Agriculture Act recognises farmers as important stakeholders in the landscape and the government

subsidises their contributions to landscape quality. Initially, landscape was considered in conjunction with historic and natural heritage protection; however, in 1997 the landscape was given a broader meaning, closer to the ELC. Countryside 2020 (*Paysage 2020*), approved in 2003, established goals for biodiversity and landscape [71]. In 2012, the landscape objectives were consolidated into the Landscape Strategy with two general objectives:

- The evolution of the landscape should take respect for its identity into account.
- A better understanding of the landscape services and their permanent preservation.

Under this, seven actions were developed including formulating objectives in terms of the quality and evolution of the landscape.

In 2010, The Swiss Landscape Observation Program was launched, which monitors the state and development of the landscape. The Swiss Landscape Monitoring Program (*Landschaftsbeobachtung Schweiz*) uses indicators of physical properties, evolutionarily and culturally determined landscape perception, and land use [78]. The Swiss Landscape Fund has funded 100 million euros of landscape projects since its establishment in 1991.

LCA amalgamates all policy sectors at the cantonal level, called the Landscape Development Plan. The LCA comprises: (a) development of a LCA for Switzerland and (b) development of indicators for sustainable landscape development. Cantons prepare management plans and landscape assessments [71].

Switzerland also has a program of identifying Landscapes of National Importance, which covers 162 areas and sites. These are based on three inputs: sites that are unique in their beauty, character or scientific significance; typical sites containing landforms, cultural-historical features or biodiversity; and natural monuments being individual features, including exposed geological sections or typical landscape forms [68].

In 2020, the Swiss Landscape Concept was updated, establishing 14 landscape quality objectives and assisting stakeholders at all levels to achieve high landscape quality. The objectives are implemented by cantons with projects that attract federal funding.

Wales

Since 1994, Wales has developed LANDMAP, a sophisticated method for compiling landscape character assessments through a GIS-based system of landscape data. The database covers geophysical, biodiversity, visual and sensory, history and archaeology, cultural and public perception information. The data are integrated and standardised for each aspect with attention to the qualities that constitute the landscape [68,74].

Implementation of the ELC—Conclusions

During the 1990s, landscape became an issue on the public policy agenda of many countries in Europe, many embarking on assessments of their landscapes, recognizing their value as a resource and an economic attraction. The passage of the European Landscape Convention in the early 2000s provided a framework to address landscapes in a comprehensive and holistic manner. The Convention's quite onerous requirements have been accepted by the majority of countries that have embarked on applying it. A wide variety of approaches are evident across the continent that adapt the Convention to individual needs and culture. Overall, the landscape has benefitted from the attention being given to it.

5. Other International and National Landscape Programs

5.1. World Heritage Sites

The World Heritage Convention was adopted in 1972 and provided for the conservation of cultural and natural sites. Article 2 defines "natural heritage":

- Natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;
- Geological and physiographical formations and precisely delineated areas, which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;
- Natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

Criteria

The World Heritage Convention established ten criteria:

1. Human creative genius;
2. Architecture or technology, monumental arts, town planning or landscape design;
3. Cultural traditions;
4. Building, architectural or technological ensemble or landscape that illustrates significant stage(s) in human history;
5. Traditional human settlement, land-use, or sea-use . . . representative of a culture . . . vulnerable under the impact of irreversible change;
6. Events or living traditions, with ideas, or with beliefs, and with artistic and literary works;
7. Superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
8. Earth's history;
9. Ecological and biological processes;
10. Conservation of biological diversity.

Figure 9 shows the global location of World Heritage sites and illustrates the strong Eurocentricity of listings. South America, Africa and Asia are, by comparison, poorly represented and UNESCO is emphasising these regions in future listings.

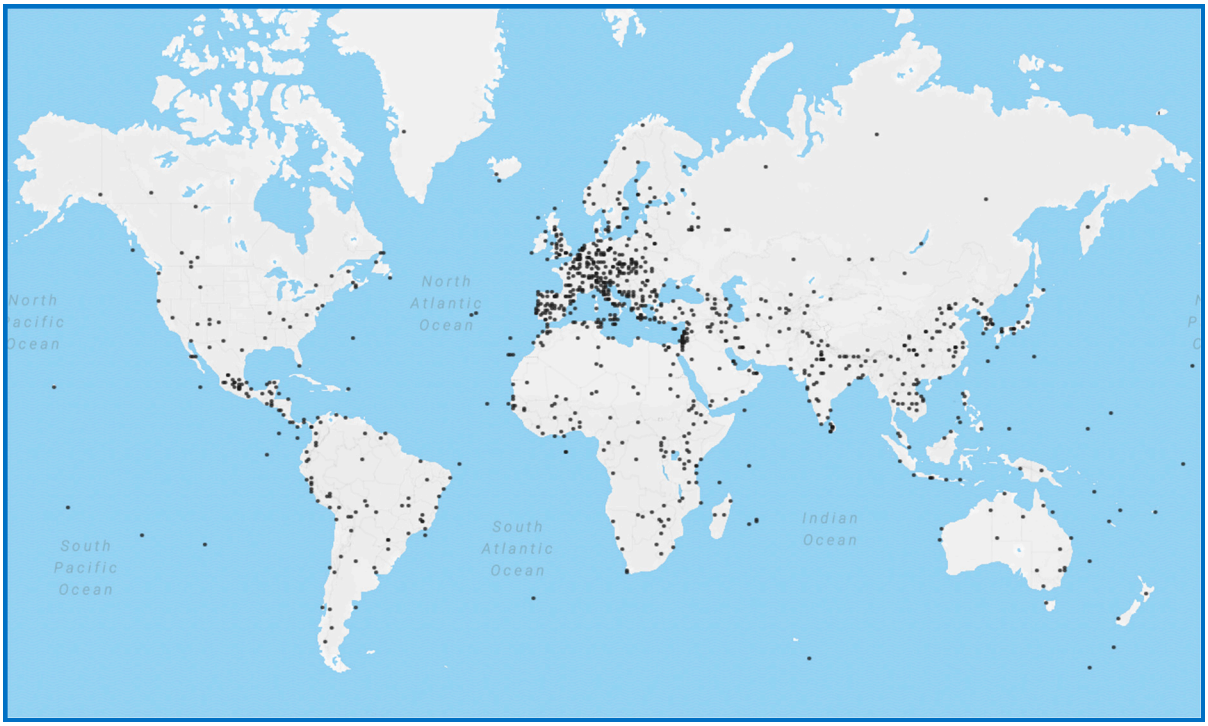

Figure 9. Global locations of World Heritage Sites (http://whc.unesco.org/en/list) (accessed on 17 January 2022).

The Operational Guidelines state: To be deemed of Outstanding Universal Value, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding [79].

Regarding sites proposed under Criterion 7, the Operational Guidelines state that for it to be of Outstanding Universal Value it should:

> *" . . . include areas that are essential for maintaining the beauty of the property. For example, a property whose scenic value depends on a waterfall, would meet the conditions of integrity if it includes adjacent catchment and downstream areas that are integrally linked to the maintenance of the aesthetic qualities of the property."*

Figure 10 shows the growth in the number of sites listed under Criterion 7.

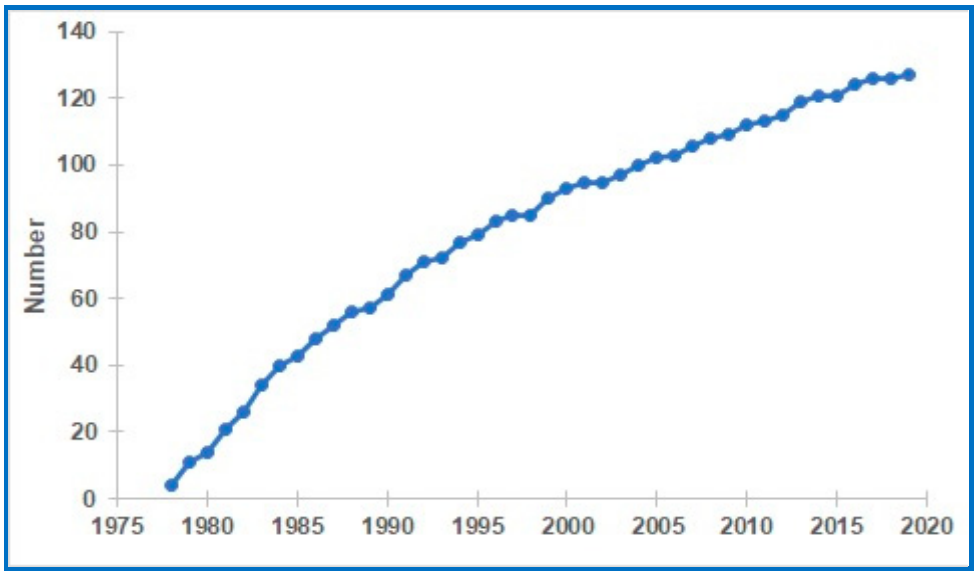

Figure 10. Cumulative listings of Criterion 7 sites (http://whc.unesco.org/en/list) (accessed on 19 January 2022).

Nominations

Nominations of sites for World Heritage listing are evaluated by two international bodies:

- Natural heritage nominations (including Criterion 7) are evaluated by the International Union for the Conservation of Nature (IUCN), based in Switzerland;
- Cultural heritage nominations are evaluated by the International Council on Monuments and Sites (ICOMOS) based in France;
- Cultural landscapes and mixed sites involve both ICOMOS and IUCN.

Cultural landscapes are defined by the Convention as "combined works of nature and of man" and include the following:

- Landscapes designed and created intentionally by man—gardens and parks;
- Organically evolved landscape—e.g., agriculture, either still current or extinct;
- Associative cultural landscape—religious, artistic or cultural associations.

Sixty-six cultural landscapes have been inscribed on the World Heritage list. Several publications of the World Heritage Center describe cultural landscapes in detail [80].

Examples of cultural landscapes include:

- Hadrians Wall, UK—part of the Frontiers of the Roman Empire theme.
- Blaenavon World Heritage site, Wales—a relict industrial landscape covering approximately 33 square kilometres.
- Solovetsky's historical, cultural and natural complex comprising the six islands of an archipelago, 290 km from Archangelsk in northern Russia. It includes monastery complexes, religious buildings, "hydrotechnical and irrigational constructions", stone labyrinths and burial mounds, and a 20th century labour camp.
- The Rideau Canal Corridor, an extraordinary cultural landscape running 202 km from Ottawa to Kingston, which was constructed between 1826 and 1832.

Other sites include:

- Lavaux, Vineyard Terraces, Switzerland (Lake Geneva);
- The archaeological landscape of the first coffee plantation in the southeast of Cuba;
- Royal Hill of Ambohimanga, Madagascar;
- Ligurian coastal region between Cinque Terre and Portovenere;
- The Loire Valley between Sully-sur-Loire and Chalonnes, France;

- Rice Terraces of the Philippine Cordilleras;
- The agave landscape and ancient industrial facilities of tequila, Mexico;
- Historic sanctuary of Machu Picchu, Peru;
- Incense route—desert cities in the Negev, Israel.

The Lake District in England was rejected as a natural landscape because of the adverse effect of human activities, such as forestry, but was re-submitted as a cultural landscape and accepted.

There are no cultural landscape sites inscribed as World Heritage in the United States.

Criterion 7 Sites

Criterion 7 of the World Heritage criteria—*superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance*—is clearly of most relevance here. As of 2019, 129 sites were inscribed on the World Heritage List on the basis of Criterion 7, usually in combination with other natural or cultural criteria. Of these, 107 were natural sites and 22 were mixed (cultural/natural) sites. The number of sites nominated under Criterion 7 has declined over the years, probably because it was most strongly linked with iconic sites in the early years of the Convention. Eight sites are inscribed solely under Criterion 7 (Table 3).

Table 3. Sites listed only under Criterion 7.

Site	Nation	Year
Sagarmatha (Mt Everest) National Park	Nepal	1979
Kilimanjaro National Park	Tanzania	1987
Huanglong Scenic and Historic Interest Area	China	1992
Jiuzhaigou Valley Scenic and Historic Interest Area	China	1992
Wulingyuan Scenic and Historic Interest Area	China	1992
Mount Sanqingshan National Park	China	2008
Monarch Butterfly Biosphere Reserve	Mexico	2008
Lakes of Ounianga	Chad	2012

Criterion 7 has been used more frequently in conjunction with other criteria than any other criterion—23 of the 29 mixed property inscriptions included Criterion 7.

There has been a recent trend towards "describing the simultaneous presence of various natural features of the physical landscape as conveying aesthetic value". An example is Wadi Rum in Jordan (Figure 11):

> *"Key attributes of the aesthetic values of the property include the diversity and sheer size of its landforms, together with the mosaic of colors, vistas into both narrow canyons and very large wadis, and the scale of the cliffs within the property."*

World Heritage Areas in the United States

Figure 12 shows the location of the 23 sites in the United States that have been designated World Heritage status.

Table 4 indicates that no sites in the US were listed under Criterion 7 alone but rather all were in conjunction with other criteria, especially Earth's history—geology (#8). It is surprising that Niagara Falls has not been listed as a joint nomination of the US and Canada.

Figure 11. Wadi Rum—a World Heritage Site in Jordan. Photo: Author.

Figure 12. World Heritage sites in the United States (https://whc.unesco.org/en/list/) (accessed on 19 January 2022).

Table 4. World Heritage Areas, United States and their listing criteria (Criterion 7 highlighted).

	1	2	3	4	5	6	7	8	9	10
Cahokia Mounds State Historic Site			X	X						
Carlsbad Caverns National Park							X	X		
Chaco Culture			X							
Everglades National Park								X	X	X
Glacier Bay							X	X	X	X
Grand Canyon National Park							X	X	X	X
Great Smoky Mountains National Park							X	X	X	X
Hawaii Volcanoes National Park								X		
Independence Hall						X				
La Fortaleza and San Juan National Historic Site in Puerto Rico						X				
Mammoth Cave National Park							X	X		X
Mesa Verde National Park			X							
Monticello and the University of Virginia in Charlottesville	X			X		X				
Monumental Earthworks of Poverty Point			X							
Olympic National Park							X		X	
Papahānaumokuākea			X			X		X	X	X
Redwood National and State Parks							X		X	
San Antonio Missions		X								
Statue of Liberty	X					X				
Taos Pueblo				X						
Waterton Glacier International Peace Park							X		X	
Yellowstone National Park							X	X	X	X
Yosemite National Park							X	X		
Total	2	1	5	3	0	5	10	10	9	7

Criteria:

1. Human creative genius;
2. Architecture or technology;
3. Cultural tradition;
4. Significant stage(s) in human history;
5. Traditional human settlement;
6. Events or living traditions;
7. Exceptional natural beauty and aesthetic importance;
8. Earth's history;
9. Ecological and biological processes;
10. Conservation of biological diversity.

Review of Criterion 7

In 2012, IUCN carried out a comprehensive review of Criterion 7: *Study on the application of Criterion 7* [81].

Criterion 7 provides for the nomination of sites which *contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance*. The report examined the development of the Criterion and its application in several nominations, differentiated between *superlative natural phenomena* and *exceptional natural beauty and aesthetic importance*, examined trends and issues in its application, and examined methods for assessing natural beauty and aesthetic importance.

The report made the following key findings:

Criterion 7 contains two distinct ideas, firstly, *superlative natural phenomena* and secondly, *exceptional natural beauty and aesthetic importance*. The first concept includes animal gatherings and migrations and the highest, biggest, deepest or largest examples of physical features, such as cliffs, mountains, canyons, waterfalls, glaciers, caves and trees, all of which should be judged objectively on a global basis.

The latter concept, *exceptional natural beauty and aesthetic importance*, addresses people's subjective perceptions of aesthetic beauty contained in the natural environment. Nominations can be under either one or the other concepts, or both; most nominations cover both. The assessment of *exceptional natural beauty and aesthetic importance* is regarded as the harder of the two.

The UNESCO manual on preparing nominations offers little assistance beyond using current scholarship and recognised assessment approaches to support the justification [82]. Nominations should not confuse the aesthetics of cultural properties and cultural landscapes.

Criterion 7 has the same standing as other criteria under the World Heritage Convention and clearly refers to natural beauty.

The challenges of the Criterion: *exceptional natural beauty and aesthetic importance* are firstly, to assess it in a systematic, rigorous and transparent way; secondly, to conduct a comparative analysis at a global scale to enable nominations to be assessed in context; and thirdly, to clarify the relationship of aesthetic values applying to natural beauty with the aesthetics of cultural features.

Many national parks and areas have been dedicated on the basis of their scenic beauty. An extensive, multidisciplinary body of research has developed on assessing the aesthetics of natural environments. Because vision is the dominant sense, most research focuses on the visual quality of landscapes, while acknowledging the influence of sound, olfaction (odours) and experiential and emotional responses. While some researchers assert that the assessment of natural beauty requires scientific knowledge of the landscape, others contend that while knowledge can inform, aesthetic judgement is not based on cognition but on preferences. Preference-based research has indicated that the positive preferences are evoked from water, topographic variation, woodlands and naturalness [83].

Basis of IUCN Assessment

The IUCN review relied heavily on Britain's landscape character approach (see Britain section). The term, landscape character, is defined as "the physiographic, ecological and/or cultural features that distinguishes a landscape as a recognizable type" and is distinct from the term "scenic value", which is defined as "an assessment of the attractiveness or the aesthetic experience of a particular landscape" [84].

Although most nominations have relied on expert aesthetic assessments, there is increasing recognition of the need to involve the public and stakeholders in the assessment.

While nominations should be based on measurable indicators of scenic beauty along with quantified comparisons of natural beauty and aesthetic importance, few nominations have attempted this, relying instead on qualitative descriptions. One measurable indicator used is tourism data (which is only a surrogate of scenic beauty and is influenced by affluence, accessibility and interest). Providing only photographs of the area is considered insufficient. The methodology should make more systematic and rigorous assessments and enhance objectivity, transparency, validity and reliability.

The recommendations of the IUCN Review were:

1. Nominations to clarify whether they contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance or both and what values are conveyed;
2. Nominations should provide a rigorous and systematic identification of attributes;
3. Nominations should provide the same degree of global comparative analysis as expected under other criteria, including of natural beauty and aesthetic importance relative to other areas;
4. Global typologies should be further developed as a framework for internationally comparing properties;
5. The relationship between natural and cultural beauty should be further developed and should examine cultural perspectives (i.e., influences) of landscape preferences.

The report addresses the very difficult area of aesthetic quality and of the need to make judgments between areas on the basis of their significance relative to other areas. It makes a

valiant attempt and covers the field very well. It does, however, tend towards maintaining the present expert-based qualitative assessment of aesthetic quality and fails to further examine the methodologies that have been developed to quantifiably assess the aesthetic quality of natural beauty. While it emphasises the need for reliability of assessments, by which it means that different expert assessors will reach the same result, it does not examine whether in practice this actually occurs, and it is probable that commonality is rarely achieved.

5.2. UN List of Protected Areas

Protected Areas are "A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" [85].

Protected areas are the *raison d'etre* of the IUCN; their origins extend back to the 1930s, when the first attempts to define protected areas were made. The first list of protected areas was published in 1961, and this has since been updated many times. The latest UN List of Protected Areas in 2018 covered 238,563 marine and terrestrial protected areas from 244 countries, covering approximately 17.92 million square miles (46.41 million km^2) [86]—an area one and a half times the area of the African continent or nearly five times the area of the United States (Figure 13) [87,88]. In 1962, there was a little over 9000 areas covering less than one million square miles (2.6 million km^2)

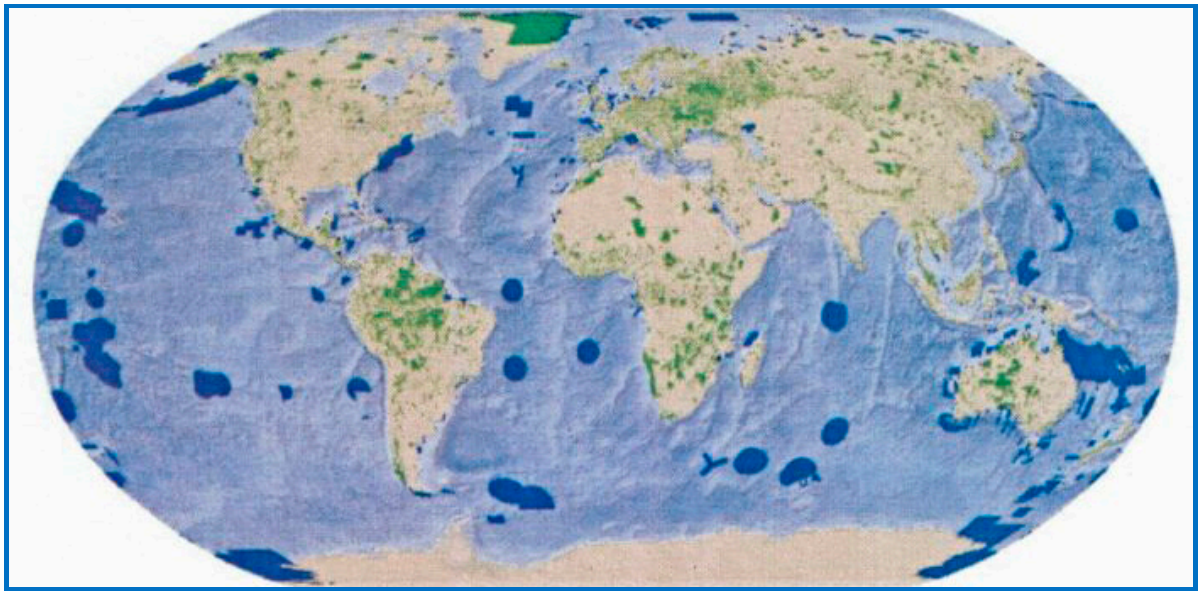

Figure 13. Protected Areas UNRP-WCMC, 2018. Terrestrial areas—green; marine and coastal areas—blue.

Protected areas cover six categories: strict nature reserve, wilderness area, national park, natural monument or feature, habitat/species management area, protected landscape/seascape and protected area with sustainable use of natural resources.

Category 5 Areas

Category 5 covers protected landscapes or seascapes and are defined as follows:

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value; and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

Their distinguishing features are that they include high and/or distinct scenic quality, a balanced interaction between people and nature over time, and unique or traditional land-use patterns, such as in agriculture or forestry. Best practice guidelines have been issued by IUCN for their management [89,90].

Under Category 5 in 2018, there were 49,728 Protected Areas covering 2,873,127 miles^2 (7,441,366 km^2). Around 589,900 miles^2 (1,527,835 km^2) are Category 5 terrestrial protected areas, 29,046 miles^2 (75,229 km^2) are coastal and 2,254,181 miles^2 (5,838,302 km^2) are the marine environment.

The World Database on Protected Areas (WDPA) is a joint product between the United Nations Environment Program (UNEP) and the International Union for Conservation of Nature (IUCN), and it is managed by UNEP-WCMC based in Cambridge—see www.protectedplanet.net (accessed on 15 January 2022).

5.3. National Scenic Areas

The dedication of National Scenic Areas reflects a nation's desire to recognise, protect and manage areas of outstanding scenery. National Scenic Areas exist in the US, Scotland, Taiwan and China.

Nine National Scenic Areas have been designated in the United States and a further six have been proposed. The existing areas include the Columbia River Gorge, Mono Basin, and the Indian Nations National Wildlife and Scenic Area. These are areas popular with people and of less stringent management than wilderness areas.

Scotland has 40 National Scenic Areas, mainly remote mountainous areas "popularly associated with Scotland and for which it is renowned". They include coastal areas and seascapes. The NSA's are a substitute for national parks of which there are only two in Scotland. They are under local authority control rather than a national park authority.

Four National Scenic Areas have been declared in Taiwan: Northeast Coast, East Coast, Penghu area and the Alishan area, each with its unique character and under careful management. Additional areas will be dedicated, including the Sun Moon Lake, in the central mountains and the Hualien-Taitung Valley.

China has designated the Top Ten Scenic Areas based on their natural beauty. They include the Yellow Mountains, Zhangjiajie Precipitous Pillars, Li River and Yangshuo, Hangzhou Mountain and the Rainbow Mountains of Zhangye and Jiuzhaigou. These areas are heavily promoted for tourism.

5.4. Australia

The Australian landscape is vastly different from the English landscapes from which the early settlers came, and it took a century before the landscape was appreciated for its indigenous qualities. Australia's national anthem, *Advance Australia Fair*, composed in 1878, speaks of Australia's landscapes: "Our land abounds in nature's gifts, of beauty rich and rare". The first national parks were established about this time to protect outstanding scenery.

A century later, in the 1970s, the National Trust, a not-for-profit NGO, compiled lists of outstanding landscapes and then sought to develop a standardised approach for their classification. Aesthetic areas were nominated for the newly established National Estate Register; however, the Australian Heritage Commission declined to register them until a methodology for classifying aesthetic landscapes could be developed. Professor Julius Gy Fabos from the United States was engaged to review the state of the art of landscape assessment, to examine the studies undertaken and to provide directions for future landscape assessment [91]. He was critical of the National Trust nominations and advocated the parametric approach for future studies.

A review of some 85 landscape assessment studies between 1970 and 2015 found nearly half the studies were for environmental management purposes, a further 24% were academic research and 12% for forestry visual management systems [92]. Of the studies, 55% were physical descriptions, 27% were preference based and 13% were experiential. The author has carried out eight of the preference studies.

Despite the national government not undertaking a national assessment of outstanding landscapes, this has not prevented it from nominating eight World Heritage Areas based

on their "exceptional natural beauty". under the World Heritage Convention, including the Great Barrier Reef, Kakadu and the Tasmanian wilderness.

5.5. New Zealand

During the 1970s up to the mid-1980s, the landscape assessment was conducted by landscape architects in public agencies mapping biophysical and visual features and identifying landscapes of similarity [93]. Following the legislative and administrative reforms of the late 1980s, landscape architects were mainly found in private practice. In 1991, the far-reaching Resource Management Act was passed, which included "protection of *outstanding natural features and (outstanding) landscapes* from inappropriate subdivision, use, and development" (Section 6b)) (emphasis added). Landscape assessments were largely of the likely visual effects of resource consent applications and/or site selection and design. In addition, district and regional landscape assessments, based largely on visual/biophysical features, were conducted, many at the local government level. The criteria used varied from consultant to consultant and community input was generally minimal. The outputs were used to guide councils' decisions on development applications and in appeals to the Environment Court.

Since 2000, landscape assessment has benefitted from community input, thus the descriptions of aesthetic value reflect community preferences. A deficiency is that they remain descriptive, not quantitative, and thus are not amenable to statistical analysis. An example is the assessment of the Banks Peninsula near Christchurch:

> *"(this) combination of simple landform, evidence of heritage or historic settlement and fragmented land cover patterns gives the (Banks) peninsula its distinctive landscape character and high aesthetic value."* [94]

The Environment Court, rather than the landscape profession, has played a key role in defining the terms of the Resource Management Act.

6. Conclusions

Despite its long and distinguished history of valuing its beautiful landscapes, Britain retreated from attempting to measure and map them, instead describing the character of the landscape. While there are many outstanding landscapes in Britain, describing landscape character as outstanding makes no sense! Landscape character is a poor substitute for comprehending landscape quality.

Britain's experience has been replicated in the European Landscape Convention, which Britain had a close hand in drafting. While the ELC has had a positive influence on awakening interest and concern about the state of Europe's landscapes, and in stimulating remedial action, it is difficult to excite the community about the character of the landscape in the way that people travel to see beautiful landscapes and which have had such a major influence in art, literature and music.

The World Heritage Convention, which predates much of Britain's work in this area and also the ELC, recognises *areas of exceptional natural beauty and aesthetic importance*, although it offers no guidance on how to measure this. The 2012 review [30] suggested a global comparative analysis, comparing the nominated area with other areas of natural beauty and aesthetic importance. However, it tended to endorse the British approach on landscape character assessment.

The United States is the world leader in applying psychophysics to the understanding of how we humans comprehend scenic quality. Researchers including Ervin Zube (1931–2002), Gregory Buhyoff, Terry Daniel, Stephen and Rachel Kaplan, Paul Gobster, Thomas Herzog, Bruce Hull, Joan Nassauer, James Palmer, Russ Parsons, Robert Ribe, Elwood Schaffer, Herbert Schroeder, Richard Smardon, Arthur Stamps, Roger Ulrich and Joachim Wohlwill (1951–1987)—of these and others, have created an immense wealth of knowledge about aesthetics and scenic quality in particular (see 92 for a summary).

The key is recognizing that landscape assessment is not a cognitive, analytical process but rather is largely affective, based on our preferences and our likes and dislikes,

which are immediate and non-analytical. Prior knowledge of what is being viewed can inform our assessment but fundamentally, it is affective. Understanding this can lead to methods that measure and map scenic quality. The subjective quality of aesthetics can be assessed objectively.

While Britain has led the world in recognising landscape character, it has failed to embrace the research from the US and apply this to measure and map scenic quality. However, while the United States has led in our understanding of landscape aesthetics, it has not applied this knowledge to measure and map the scenic quality of its own landscapes, such as its National Parks.

Therefore, the challenge is to embark on the application of the immense knowledge in the recognition, protection and management of our landscapes.

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