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World Heritage and wind energy planning

Protecting visual integrity in the context of the energy transition

Inspiring practices from four European countries

Published in 2021 by the United Nations Educational, Scientific and Cultural Organization, 7, place de Fontenoy, 75352 Paris 07 SP, France

Supervision:
Isabelle Anatole-Gabriel, Chief of Europe and North America Unit,
UNESCO World Heritage Centre

Author:
Jana Weydt, Consultant,
UNESCO World Heritage Centre

Coordination:
Burcu Ozdemir, Maria Liouliou, Charlotte-Caroline Lambrinidis,
UNESCO World Heritage Centre

External revision:
Martiale Zebaze Kana,
UNESCO Office in Harare

Graphic Design:
Aurelia Mazoyer, UNESCO

Translation, copy editing, proofreading:
Amplexor S.A.

Printed in France

This publication was made possible thanks to the support of the France-UNESCO Cooperation Agreement.

With the support of the France-UNESCO Cooperation Agreement

This publication was financed by the French Ministry for Ecological Transition

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Acknowledgements

The editorial team would like to thank all partners and experts for their prompt support and readiness to contribute to this study despite its short timeframe. Partners in five countries provided input and advice on selected examples and case studies, including the Lake Neusiedler World Heritage Association in Austria, the Ministry of Foreign Affairs and the Competence Centre for Nature Conservation and Energy Transition (KNE) in Germany, Michael Kloos Planning and Heritage Consultancy, the Ministry for the Ecological Transition in France, the Cultural Heritage Agency (RCE) of the Ministry of Education, Culture and Science and consulting firm NC Advies in the Netherlands, and Historic Environment Scotland in the United Kingdom.

In particular, the editorial team would like to thank Hannes Klein and Gregori Stanzer (Austria), Annabelle Marechal, Marie Mahin and Wolfgang Borst (France), Michael Kloos, Mathis Danelzik and Birgitta Ringbeck (Germany), Henk van Kessel and Cees van Roijen (the Netherlands), and Alice Lyall, Michelle Anderssen and Laura MacKenzie (United Kingdom). Without their support and input, this publication would not have been possible.

Special thanks go to the French Ministry for the Ecological Transition for their generous technical and financial support in this project.

At the World Heritage Centre, the Europe and North America team provided attentive support during the process, especially Fernanda Arraes Hertelendy, Clemens Küppers, Charlotte-Caroline Lambrinidis, Maria Liouliou, Burcu Ozdemir and Réka Viragos, and in the Science Sector, Martiale Zebaze Kana.

Isabelle Anatole-Gabriel
Chief of Unit
Europe and North America
World Heritage Centre

Abbreviations

(ÖIR)	Austrian Institute for Spatial Planning
(cf.)	Compare
(DBU)	German Federal Environmental Foundation / Deutsche Bundesstiftung Umwelt
(DTM)	Digital Terrain Models
(EIAs)	Environmental Impact Assessments
(EU)	European Union
(PPE)	French Long-term Energy Plan
(DRAC)	French Regional Directorate of Cultural Affairs / Direction Régionale des Affaires Culturelles France
(HIAs)	Heritage Impact Assessments
(HEPS)	Historic Environment Policy for Scotland
(IAIA)	International Association of Impact Assessments
(ICOMOS)	International Council on Monuments and Sites
(IUCN)	International Union for Conservation of Nature
(KNE)	Competence Centre for Nature Conservation and Energy Transition / Kompetenzzentrum für Naturschutz und Energiewende
(LIA)	Landscape Impact Area
(NGO)	Non-Governmental Organization
(OLDP)	Orkney Local Development Plan
(OUV)	Outstanding Universal Value
(PPE)	Programmation pluriannuelle de l'énergie
(LEP)	Regional Development Programme / Landesentwicklungsplan
(SoUV)	Statement of Outstanding Universal Value
(CCC)	UK Committee on Climate Change
(UNESCO)	United Nations Educational, Scientific and Cultural Organization
(WHCBS)	World Heritage Capacity Building Strategy
(WHLP)	World Heritage Leadership Programme
(WWF)	World Wide Fund for Nature

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Forewords

Stéphanie Dupuy-Lyon,
Ministry for the Ecological Transition, France

The energy transition and heritage and landscape protection are two challenges at the heart of public policy in France at the Ministry for the Ecological Transition. In a world facing global heating and biodiversity loss, France aims to accelerate its energy transition by increasing the share of renewables, particularly wind, in its energy mix. To achieve this, the Long-term Energy Plan (*Programmation Pluriannuelle de l'Energie*) aims to double the installed capacity of renewable electricity in France by 2028.

This accomplishment cannot come at the expense of our rich and valued national heritage. Thus, it must incorporate the views of local residents and draw from a landscape analysis of renewable energy projects that objectively evaluates their impact on their local areas.

World Heritage properties showcase of our national heritage, and are an excellent example of this balancing act. Wind energy developments near World Heritage properties require objective assessment of their compatibility with preservation of the outstanding universal value of these sites, including tools to describe and spatialize the sensitivity of these sites to wind energy projects.

Several projects have been executed in this way, both in France and elsewhere in Europe, making World Heritage sites into 'pilot sites' that allow us to hone our methods in order to improve impact studies and planning for wind energy projects.

I therefore welcome the World Heritage Centre initiative to promote and share these 'inspiring practices' developed in different European countries to preserve the integrity of these properties during the energy transition.

This document examines four case studies and the experience gained from these to shed light on how countries with developed wind sectors have tried to balance the energy transition and heritage protection. It highlights the need for stakeholder dialogue and offers us starting points for an informed discussion of how to develop wind energy while respecting the heritage value of these sites.

Stéphanie Dupuy-Lyon
Director-General of Planning, Housing and Nature
Ministry for the Ecological Transition, France

Isabelle Anatole-Gabriel,
World Heritage Centre, UNESCO

Achieving a balance between conservation of the Outstanding Universal Values (OUV) of World Heritage and development activities is challenging. For several years now, the World Heritage Committee has been requesting or recommending a growing number of Heritage Impact Assessments (HIAs) and Environmental Impact Assessments (EIAs) on projects, which may impact the OUV of the World Heritage property, as part of the reactive monitoring process for the state of conservation of properties. The Issues and contexts vary from case to case. Methods and good practices are not prescriptive, but requests for HIAs or EIAs are sometimes incorrectly perceived as a kind of penalty. The understanding of these tools and their integration into conservation and management processes still leaves room for improvement.

The identification and creation of renewable energy sources play a key role in mitigating climate change. On several occasions, the World Heritage Committee has recognized the negative impact of climate change on World Heritage properties, as well as the potential for renewable energy sources to address this problem. This is particularly evident in the Policy on the Impacts of Climate Change on World Heritage Properties and the World Heritage Sustainable Development Policy.

However, increasing development of renewable energy projects, such as wind farms, biomass production, hydropower plants and solar power plants, poses a considerable challenge to the conservation and management of World Heritage properties, especially in the European region. This may even occur when these projects will be located outside of World Heritage property boundaries or buffer zones.

Renewable energy infrastructure can endanger a property's Outstanding Universal Value in a multitude of ways. In cases of cultural World Heritage sites, renewable energy projects often threaten the property's visual integrity. For natural World Heritage sites, threats to a property's visual integrity are compounded by potential risks to wildlife and natural habitats. In both cases, the social and economic implications must also be factored in. HIAs and EIAs are the key documents in determining the threats posed by renewable energy projects within or in the vicinity of World Heritage properties. These assessments must be submitted to the World Heritage Centre and the Advisory Bodies before they can take an irreversible decision.

This study, based on case studies, gave us the opportunity to compile, review and analyze the experiences and expertise around HIAs and EIAs as well as policies and guidelines established by the States Parties on renewable energy projects, and particularly wind firms. I firmly believe that this initial study will be relevant and helpful to all States Parties pursuing projects of this kind.

Isabelle Anatole-Gabriel
Chief of Unit
Europe and North America
World Heritage Centre

About the document

This study presents examples from four European countries and shows how they deal with wind energy development in relation to protecting the visual integrity of World Heritage properties.

Whereas this document's initial focus lay exclusively on heritage impact assessments for particular World Heritage properties, it soon became evident that the framing policies and guidance provided by the States Parties were vital to a full understanding of each HIA example. The solutions and tools implemented in the various countries are diverse and offer a wealth of material from which to take lessons and deduce good practices and useful approaches to share internationally. Each case contributes in its own way to the inspiring practices and lessons learned.

The actual case studies are preceded by contributions from the French Ministry and UNESCO elaborating the challenges at play in the discussion on World Heritage protection and the energy transition and key factors such as HIAs and the concept of OUV (Chapter 2). The Berlin-based KNE supplements these views with information on experience from a moderated stakeholder dialogue on the matter as means to avoid and resolve conflicts in Germany. Finally, a description of the current international reference framework draws from international efforts to develop and improve tools and policies (Chapter 3). Recent activities attest to intensive discussions around the tools for dealing with OUV and its evaluation in view of global changes, dynamic developments, and local disruptions.

Chapter 4 gives the country cases in alphabetical order according to their English names: Austria, France, Germany and the United Kingdom with a focus on Scotland.

Each country case begins with an overview of the national and local goals for renewables, and in particular wind energy. The 'policy highlights' section covers aspects of the regulatory or guidance frameworks for the World Heritage property. They offer a great deal of potential to identify approaches we can learn from, and share the lessons learned and good practices. The heritage impact assessments – or rather preparatory assessment studies – are presented in a table with different categories to allow comparison, despite the different types and objectives of each document. These may also offer recommendations and give technical and methodological details of what may work best in different contexts. Each case concludes with a set of lessons learned and recommendations on the policy and guidance framework as well as the development of preparatory heritage studies for replication in other contexts.

This study closes with a set of lessons and good practices. These focus on recurring, overarching matters, and include the importance of a clear and well-documented definition of the OUV and its attributes, participation and consultation processes, public outreach, and the challenges of visualizations (Chapter 5).

In conclusion, this document compiles information as a basis for further exchanges and debate, rather than offering a final list of best practices, recommendations, and must-dos. It aims to share ways to facilitate processes and enhance cooperation between the numerous stakeholders, across borders, for high-quality development of wind energy and the energy transition with respect to World Heritage and the cultural, historical and natural environment.

1

Key factors at play - contributions from France and UNESCO and the experience of a dialogue in Germany

Archaeological Border Complex of Hedeby and the Danevirke

1. Impact studies – a top priority for World Heritage property preservation

French Ministry for the Ecological Transition

Protecting the outstanding universal value (OUV) of properties while ensuring sustainable development is a major challenge in the field of World Heritage. Recent years have seen an emphasis on the importance of impact studies and the need for a comprehensive and reliable assessment of the impacts of projects that could affect World Heritage properties.

In 2011 and 2013, respectively, advisory bodies ICOMOS and IUCN published guidelines on heritage impact studies and environmental assessments for World Heritage properties.

In Decision 39 COM 7, issued in Bonn in 2015, the World Heritage Committee highlighted that impact studies are a top priority:

> *'Taking note of the benefits to States Parties of systematically utilizing Heritage Impact Assessments (HIAs) and Environmental Impact Assessments (EIAs) in the review of development projects, encourages States Parties to integrate the EIA/HIA processes into legislation, planning mechanisms and management plans, and reiterates its recommendation to States Parties to use these tools in assessing projects, including assessment of cumulative impacts, as early as possible and before any final decision is taken, and, taking into account the need for capacity-building in this regard, requests the States Parties to contribute financially and technically towards the development of further guidance regarding EIA/HIA implementation, by the Advisory Bodies and the World Heritage Centre, based on case studies and field experience.'*

Further to its partnership with the World Heritage Centre under the France-UNESCO Cooperation Agreement, France, by way of its Ministry for the Ecological Transition, would like to respond to the request from the Committee by making a financial and methodological contribution to this top priority for World Heritage.

The partnership thus formed with the World Heritage Centre (Europe and North America Unit) was initially dedicated to data collection and identifying case studies and best practices for conducting impact studies for World Heritage properties. This initial survey culminated in a one-day meeting on impact studies held on 5 December 2017 at UNESCO headquarters in Paris, drawing on work underway at ICOMOS, IUCN and ICCROM, as well as on initiatives in Germany and France and work at universities. This meeting identified an interest in developing and disseminating these shared experiences with impact studies, in view of the global challenge of balancing the preservation of the outstanding universal value of World Heritage and development activities.

Thus, this document is based on documentation from specific case studies in Europe and is intended to report on and analyse the various practices and methods used by the States and managers to develop working documents to assess the potential impact of development projects on the OUV of properties. It is intended for World Heritage practitioners and stakeholders in sustainable land management: competent national and local authorities, property management structures, businesses and sponsors, local residents, NGOs, etc.

It was decided to prioritize development projects for the energy transition and for renewables, given the critical nature of this challenge at the European level.

1.1. Challenges in the energy transition and World Heritage conservation

The energy transition and heritage conservation are two global challenges with the same goal of sustainable development and the same responsibility to future generations.

The development of renewables is critical in Europe. France addresses these topics in the Law of 17 August 2015 on the energy transition for green growth, and further develops them in the Long-Term Energy Plan (*PPE*). The goals are ambitious and greatly accelerate the pace of development for renewables, with wind energy at the top of the list.

Wind development involves historically unprecedented changes to landscapes. This means having landscapes evolve for the energy transition while preserving the aspects that make up their value and attractiveness, and answering the question: how can we ensure that land evolves for the energy transition while also preserving its heritage value?

The appearance of wind projects in the vicinity of a World Heritage site, whether a monument, cultural landscape, or natural site, again raises the question of compatibility between these new types of infrastructure and preservation of the heritage and landscape features of a site with internationally recognized value. This issue is compounded by the fact that the stakeholders, local and national authorities, managers and wind developers lack the systematic analysis framework and tools to formalize and objectively describe the impact on the outstanding universal value of the property.

For several years now, the French Ministry for the Ecological Transition, in collaboration with the Ministry of Culture and the partners, has been developing tools

and methods to help incorporate the energy transition into the management of World Heritage properties, covering several factors: on the one hand, essential prior knowledge of the aspects characteristic of the areas where wind projects will be installed (heritage, landscape, visual and functional relationships, OUV attributes); on the other hand, amendment of existing regulations to include performance of an environmental impact study for every wind project and a requirement to take a proactive approach in land use planning.

This has yielded several initiatives, such as:

- addition of a special section on World Heritage properties in the 'Ministerial guide on impact studies for onshore wind projects' intended to help project owners conduct these studies;
- proactive performance of Landscape Impact Area (LIA) studies to objectively determine the sensitivity of the OUV of a property to landscape impacts from wind projects;
- or also studies on the OUV documentation of a property ('database' or 'booklet') to provide an effective description of the vital yet difficult concept of the OUV and explicitly share the main characteristics of the OUV and each of the attributes that express this.

In particular, the 'Landscape Impact Area' (LIA) methodology used in the Vézelay case, and described in this document, offers an assessment and decision-making tool developed by France for listed World Heritage properties. It includes a preliminary stage to propose an effective translation of the value (OUV) of the property into landscape preservation objectives. It aims to provide knowledge, descriptions and recommendations regarding the appropriateness and compatibility of wind installations in areas around the listed property.

These are vital tools to support decision-making in order to find the right balance between sustainable development, the energy transition and heritage property conservation. The Ministry for the Ecological Transition offers this document to share these practices and compare them with other 'inspiring practices' developed at the European level.

2. The concept of the outstanding universal value (OUV) of World Heritage

UNESCO, World Heritage Centre

2.1. Heritage that is of value to humanity

The concept of the outstanding universal value (OUV) of World Heritage first appeared in 1972, when UNESCO adopted the Convention Concerning the Protection of the World Cultural and Natural Heritage. This concept captures the spirit of the Convention: that the world contains heritage properties whose significance to humanity justifies protection of their value by all. A site can be cultural, natural or mixed (combining cultural and natural characteristics), or a cultural landscape ('the combined works of nature and man'). Although the Convention recognizes different natural sites, the OUV remains the key justification for adding a property to the World Heritage list.

Use of the term 'OUV' has changed drastically over time. Indeed, the first properties entered on the list were mostly monumental and archaeological sites and/or historic cities. After these initial entries, the definition of 'heritage' experienced a shift, in particular towards a renewal of its meaning to our societies. The definition of 'heritage' expanded, with the World Heritage Committee recognizing properties whose outstanding universal values are industrial, scientific, agricultural, or even consisting in an combination of different qualities (industrial and urban, architectural and landscape, scientific and agricultural, etc.). The most salient example of this change is the cultural landscape, whose value is determined by interactions between human communities and their environment.

This development highlights an underlying paradigm shift from one conception of heritage to another. The first, which is still in use, emphasizes preservation of physical structures and materials from the past; this is the conventional view of heritage. In this regard, monuments and sites must be physically preserved because they constitute a legacy to be passed on to future generations. This concept appears in the Venice Charter (1964). The second conception protects a property or natural space based on values attributed by different social groups (referred to as 'stakeholders'); this is the 'value-based' approach. Thus, under this approach, the experts are not the only parties that identify and designate heritage to be conserved due to its OUV.

The World Heritage Convention was a forerunner to the value-based approach to heritage conservation, in that since its adoption by the international community, its

implementation has focused on identifying and protecting the OUV of every property, i.e. on values based on its significance to all of humanity.

Under both approaches, the statement of outstanding universal value of the World Heritage property is the reference text for developing property conservation and management strategies to enable long-term conservation. Thus, the purpose of World Heritage property management is to ensure long-term preservation and protection of the OUV of the listed property.

The value of a listed property is also universal and outstanding. To say that a World Heritage property is 'outstanding' means that it is the most representative example due to its status as a heritage type. 'Universal', for its part, means that the value of the property is recognizable to all of humanity, and not exclusively cultural, for instance, and that the property is representative of its culture of origin.

In addition, the universal nature of a World Heritage property involves all of humanity in its protection and conservation, not just the national community of origin.

2.2. OUV: a term defined gradually

The first general definition of 'OUV' appeared in the 2005 edition of the Operational Guidelines for the Implementation of the World Heritage Convention (the 'Guidelines'), in paragraph 49: '*Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity.*' 'States Parties' to the Convention had previously commented on and elaborated certain aspects of the OUV on numerous occasions, but never provided a complete definition. For instance, the universal nature of the value, highlighted in the definition of the term 'OUV', is at the core of the initial considerations of the Committee, in 1977: '*The definition of "universal" in the phrase "outstanding universal value" requires comment. Some properties may not be recognized by all people, everywhere, to be of great importance and significance. Opinions may vary from one culture or period to another. As far as cultural property is concerned, the term "universal" must be interpreted as referring to a property which is highly representative of the culture of which it forms part.*'. The World Heritage Committee also held several meetings of experts to further define the concept. Thus, the Expert Meeting held in 1998 in Amsterdam as part of the Global Strategy highlighted the fact that '*The requirement of outstanding universal value characterising cultural and natural heritage should be interpreted as an outstanding response to issues of universal nature common to or addressed by all human cultures*'. This definition highlights the opportunity offered by the OUV to create collective responses for human cultures.

Along with definition of the OUV, ten criteria (five for cultural properties and five for natural properties) were adopted to evaluate applications for the World Heritage list. These offer a framework to assess the various types of cultural heritage, based on the definition of cultural and natural heritage from Articles 1 and 2 of the Convention (historical, scientific and artistic value). The definitions of these criteria were greatly influenced by the UNESCO advisory bodies (ICOMOS, ICCROM and IUCN). These criteria stem from a desire to formalize the application process for the list by setting up a single consistent framework for analysis, thus providing an adequately broad definition of OUV. This can be used to determine the value of a property, and thus also to justify its listing.

One of the main changes to the definition of OUV is the addition of two further concepts (authenticity and integrity) and the requirement for an appropriate management plan for the property. These concepts were initially regarded as supplemental aspects of OUV, but have now become essential and inherent components of this value. 'Integrity' refers to the completeness of the site: this means that the property features all elements necessary to demonstrate and express its OUV, as well as suitable and appropriate boundaries, adequate surface area and a satisfactory state of conservation. 'Authenticity' as defined in the Guidelines entails that the '*cultural values [of a property] (as recognized in the nomination criteria proposed) [must be] truthfully and credibly expressed through a variety of attributes.*' (Guidelines of 2005, paragraph 82). The 2005 amendment to the Guidelines also introduced the requirement to have an appropriate management plan as a precondition on the OUV. The management plan constitutes the guarantee of proper management and protection of the property. Thus, the listing of a property may be delayed due to failure to submit a proper management plan. Moreover, in certain specific cases, such as properties involving Indigenous peoples, the traditional management system is an essential part of the integrity of the property, and thus also part of its OUV.

The OUV of a property is therefore based on these four principles: the selection criteria, integrity and authenticity (the principle of authenticity only applies to cultural properties) and use of an appropriate management plan.

Finally, one key point related to the OUV is the statement of outstanding universal value (SOUV), issued when a property is added to the World Heritage list. Statements of universal value, required since 2007, are formally issued by the World Heritage Committee. A SOUV expressly states the features of the property that justify its entry on the list and indicates the state of conservation of the property at the time of its

listing, as well as any threats that negative factors that could pose to the property, so the management plan can address these. The statement gives the criteria under which the property was selected and details the authenticity and the functional, structural and visual integrity and of the property, based on tangible and intangible attributes. All of these qualities of the property must be protected by suitable provisions of the law and administrative measures. Issue of the statement formally enters the property on the World Heritage list. The statement therefore constitutes the reference document for the agreement concluded between the State Party, which pledges to conserve the OUV of the site, and the international community, which recognizes its global significance. In addition to its use in determining and monitoring the state of conservation of the property, the text of the statement of OUV is critical because it is the only official text that explains the value of a property to the public and the site managers. It is this text that a State Party uses to commit to protecting a World Heritage property, by setting out general guidelines. Thus, the more precise the definition of a property, the easier its overall protection. The statement of outstanding universal value is therefore crucial.

Experience has shown however that statements are sometimes difficult for local managers to use, in particular, because the text is brief and removed from its context after its drafting for the application file. As a result, parties lack specific explanations detailing the implications of the OUV for conservation. Moreover, classification of the value of a property with different criteria may create artificial divisions that complicate subsequent interpretation of the OUV because it is no longer considered in its entirety. Finally, another issue is changes in practices between the different site managers over time. Indeed, the managers that prepared the application for a site and the managers that succeed them may not understand the OUV of a property in the same way as their predecessors.

2.3. The key role of OUV in sustainable property development

The OUV should not merely be an initial concern, only considered during an application for the World Heritage list. Once the OUV has been demonstrated by experts and verified by the World Heritage Committee, it must be maintained, or even improved. Thus, in accordance with the basic values and characteristics that justified its listing, the description of the OUV of a property may be improved by a better understanding of its dimensions and their required conservation objectives and priorities. The operational qualities of the text of the SOUV are sometimes inadequate to clearly describe its spatial and multidimensional expression. The knowledge, expression and objectives of conservation can be improved and clarified for the general public. Further, because the Convention is based on the concept of heritage *of value*, management plans and approaches to property conservation management must be responsive, as some of these heritage values may change over time. One example here would be cultural landscape maintenance techniques: traditional and manual methods may be mechanized without this affecting the integrity of the landscape.

As highlighted above, some values of World Heritage properties depend on social groups that participate in their description and conservation. These values may therefore evolve over time, in line with social, economic, cultural, environmental, and other changes. These shifts may give rise to conflicts between different heritage values attributed to a property, such as those related to its uses. One example here would be if the intended use of a historic building in an urban centre changes, turning housing for local residents into commercial space for a multinational corporation. In such cases, it will be necessary to determine the priorities of the values to define the conservation and management objectives. This is because even if the OUV evolves, it must still guarantee protection of the property.

In conclusion, we should emphasize that the OUV serves various functions, which are refined over time. Its function is first and foremost to demonstrate the value of the property to all of humanity. Thus, the SOUV is also a tool for public communication and education and must be accessible to all, in all parts of the world. It is not directed solely at heritage professionals and site managers. The purpose of the SOUV, and its implications for conversation and management, must be understandable to all persons involved in protecting the history and value of a site entered on the World Heritage list, because heritage education is one of the objectives of the Convention and UNESCO. Finally, the SOUV must bring together parties from different levels: local managers, local and national public officials, international advisers, experts, developers, political, administrative, and economic parties, etc. These functions of the OUV, which have grown more complex over time, are assets in the development of effective governance and protection of World Heritage properties, especially in the context of the energy transition.

3. Stakeholder dialogue on wind energy development near UNESCO World Heritage Properties

the Competence Centre for Nature Conservation and Energy Transition (KNE), Berlin

3.1. Introduction

The mandate of the Competence Centre for Nature Conservation and Energy Transition ('KNE') is to make a positive contribution to implementation of an energy transition that is compatible with the natural and historical environment. It promotes the search for joint solutions by helping make debates more objective and factual and helping avoid and resolve conflicts. To achieve this, the KNE identifies topics that stakeholders believe require clarification and improvement. Among other activities, KNE organizes stakeholder dialogues that can take on different forms and pursue different goals.

The KNE Stakeholder Dialogue is a communication and collaboration tool for detailed discussion of complex issues with all relevant parties, and for determining whether common denominators exist despite the different views and interests among the various stakeholders. The KNE offers a protected discussion platform and acts as a neutral moderator and process designer.

The aim of the stakeholder dialogue on 'Energy transition near UNESCO World Heritage Properties', co-financed by the German Federal Environmental Foundation ('DBU'), was to identify reasons for existing conflicts between planned wind turbines and World Heritage sites and develop suggestions for improvement. The dialogue required intensive collaboration between participants. Although they did not share the same points of view, participants worked together to propose viable measures to improve the compatibility of the energy transition and World Heritage conservation.

3.2. The stakeholder dialogue as a structured work and discussion process

The idea behind KNE stakeholder dialogues

A common trait of all KNE stakeholder dialogues is their objective of identifying key questions and partners as well as common goals. To support this exercise, KNE provides an appropriate structure and organizes and moderates the process with competence and care.

KNE stakeholder dialogues aim to:

- help clarify complex issues that repeatedly lead to conflicts and problems;
- work towards mutual understanding between stakeholder groups and promote their cooperation;
- foster the development of solutions and, more specifically, facilitate work on common recommendations.

The topic of the stakeholder dialogue

The German Commission for UNESCO gave initial impetus to the stakeholder dialogue on 'Energy transition near UNESCO World Heritage Properties'. It had observed an escalation in conflicts in the vicinity of various World Heritage properties, and informed KNE of the need for discussion.

Further conversations revealed that conflicts are due, in particular, to different perceptions around World Heritage properties and the potential impacts of wind turbines. Research by KNE showed that in recent years, at least 15 German World Heritage properties had been involved in disputes regarding possible negative impacts from wind energy projects. On the one hand, World Heritage conservation stakeholders reported cases in which planned wind turbines would have threatened the visual integrity of a property, which in their view made these ineligible for approval. On the other hand, wind energy companies expressed their deep discontent regarding what they perceived as unreasonable protection requirements in the environment of World Heritage properties. Further discussion found that the stakeholder groups lacked knowledge about one another. Therefore, all stakeholders welcomed the proposal to establish a stakeholder dialogue as a secure and common platform for reconciliation and exchange to promote new ideas and solutions.

Participants in the stakeholder dialogue

In the run-up to the dialogue, KNE asked relevant organizations if they would like to send a participant. In addition, the members were consulted in preliminary discussions and, in the first two sessions, on whether further groups or persons should be involved. This resulted in the inclusion of additional members. The stakeholder dialogue brought together representatives from German World Heritage conservation, monument protection, wind energy development, municipalities and other relevant parties. It was vital to involve participants from German state governments, as the protection of monuments and World Heritage falls under the responsibility of the individual federal states. In addition, the UNESCO World Heritage Centre of sent a participant, which enabled exploration of the interaction between the regional, national and international levels.

The path towards joint recommendations

Preliminary work, initial interviews and background discussions to include external expertise: The preparatory phase involved interviews with various persons from all relevant stakeholder groups to get a clearer picture of the facts, possible problems, conflicts and their causes. The KNE project team visited several World Heritage properties to conduct background discussions with stakeholders on the ground and compare the interim results of the dialogue with the experiences of 'external' stakeholders. In some cases, these exchanges also resulted in inclusion of additional aspects in the stakeholder dialogue.

Process in five sessions: The stakeholder dialogue comprised five meetings. After the first session, a provisional plan was prepared to deal with the various topics. It was adjusted as needed over the course of the subsequent sessions. The initial sessions focused on the identification of problem areas, the collection of questions and the exchange of information on World Heritage conservation and wind energy developments. Later sessions focused on the text of the joint recommendations.

Minutes of meetings: KNE took detailed minutes of each meeting, which were subsequently reviewed by the participants. The approved minutes provided a key foundation for development of the common recommendations.

Collaboration of participants outside meetings: The participants initially contributed to preparation of the sessions and definition of the scope and content by way of questionnaires and in individual discussions. Starting from the third session, they also worked on the drafts of the resulting documents between meetings. Some participants further prepared short presentations on specific aspects or practical examples and enriched the fruitful and lively exchanges in the discussions.

Origin and nature of the joint recommendations

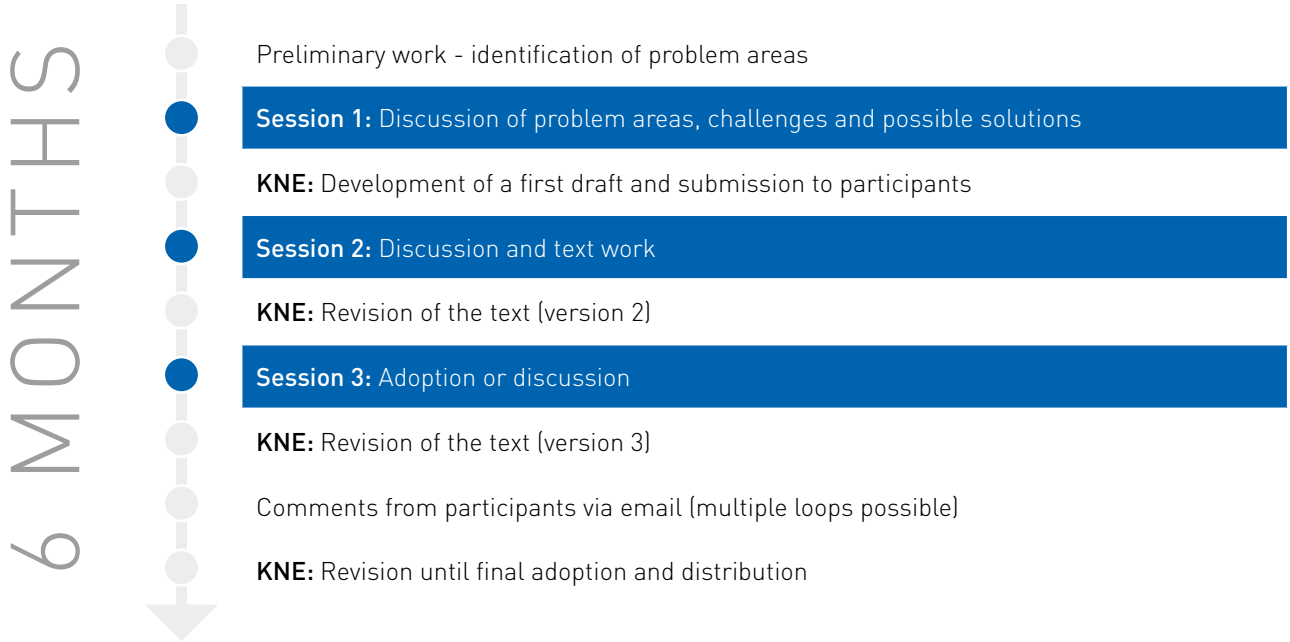
How did the joint recommendations come about?

Each recommendation took about six months to prepare. At first, KNE provided an initial draft for a recommendation on a certain topic, developed in consultation with volunteer participants. The document then went through several revision stages of before adoption of the final version. KNE coordinated revision during and in between the sessions, and incorporated participant feedback into the texts until final agreement was reached on a version. Although laborious, the revision process allowed for fine-tuning and honing of key aspects in a way that would not have been possible otherwise.

Consensus and dissent in the stakeholder dialogue

The recommendations were based on the principle of consensus. Each participant had a veto regarding the overall recommendation and specific wording.

The recommendations thus represent a compromise between participants that worked out their common denominators.



What is the nature of the joint recommendations?

The stakeholder dialogue has been a working process in which the participants usually consulted their organizations but did not represent the official position of their organizations. Parallel coordination of the decision-making processes in the respective organizations would hardly have been feasible, it would have limited the participants' flexibility in finding new approaches in discussions, and in changing opinions on certain points. As a consequence, the results do not represent the official positions of the organizations involved.

Rather, they should be understood as suggestions for improvement. Of course, a nationwide stakeholder dialogue cannot precisely align its recommendations with the different situations in the individual federal states. It does however offer the opportunity to look beyond the framework conditions of one's own federal state and examine adapted solutions already existing in other states. Hence, the stakeholder dialogue does not claim that each recommendation is equally relevant to all federal states or World Heritage properties; it aims to provide ideas to those in charge and support their search for improvement measures.

3.3. Results of the stakeholder dialogue

The results of the stakeholder dialogue include:

- the identification of recurring problem areas when wind turbines are planned near UNESCO World Heritage properties;
- collectively formulated and endorsed recommendations on what could be done to reconcile wind energy development and World Heritage conservation;
- Results from discussions on related problem areas, which did not yield joint recommendations, but rather proved to be controversial among participants.

The core results of the stakeholder dialogue are the joint recommendations on how to better reconcile wind energy planning and World Heritage requirements and clarify issues in a less conflicting way. The recommendations describe instruments that the stakeholder dialogue considers beneficial. They provide guidance on the design of these tools so they contribute effectively to the reconciliation of the two major goals of the energy transition and the conservation of World Heritage. The proposals are not mutually exclusive, but can coexist and complement one another.

Below is a brief description of the problem areas discussed and a summary of the resulting recommendations.

3.4. Structures and processes

Communication structures and processes

As a basis for smooth and reliable planning procedures, the group of stakeholders called for improved and timely involvement of all stakeholders, including at the international level, in planning and authorization processes. This required the clarification of roles, and improved guidance with regards to responsibilities and procedures, in particular on behalf of World Heritage conservation. As a simple practical method, the group proposed the introduction of a 'factsheet' for each property with information on the structures, contacts and protection frameworks (management plan, etc.) relevant to wind energy planning near and with respect to a property. This factsheet would compile information about the property and the relevant planning considerations in a single document and provide an easy reference not only for advising conservators, but also for authorities in charge, planners and developers who deal with heritage conservation occasionally for specific projects. This factsheet would go beyond the content provided by most dedicated websites, which typically feature historical or tourism-related information. Moreover, it would complement the general information on World Heritage conservation provided in the handout from the Education Ministers Conference of 2017 and make the site-specific structures and systems in place more transparent.

Another specific proposal to clarify processes involves the need to improve communication with the international level of World Heritage conservation. A need exists for a better public distinction between the respective roles of ICOMOS Germany, an informal advisor at the national level, and ICOMOS International as an official advisory body of the World Heritage Committee. The two organizations are often confused with one another, which may hinder clarification processes. However, in exceptional cases the option to invite an Advisory mission may serve as a last resort for advice after exhausting national capacities to clarify a matter at the national or regional level. Dialogue participants further recommend preparation of a guidance document on Heritage Impact Assessments, which should complement the ICOMOS Guidance and lead developers and conservators through the process and requirements in the German context.

A third proposal seeks to improve consideration of these issues in land use planning and authorization procedures. In recognition of continuing challenge of identifying suitable areas for wind turbines, the dialogue supports the idea to optimize the potential of regional planning to define and clarify land use at an early or even pre-planning stage. This requires the adequate and timely involvement of all relevant stakeholders to avoid any technical or political

irritation from informal communications. This also applies for authorization processes.

Evaluation methods and measures for heritage impact assessments: the quest for a definition of the OUV that suits planning purposes

This touches on an apparent dilemma: the quest for reliable and consistent frameworks on the one hand, ideally in the form of a 'clear line' setting out the spatial limits of a property's visual integrity, and on the other hand the relative nature of heritage and its spatial effects. The latter varies depending on the scope and dimensions of a planned intervention and requires case-by-case examination. As an approach, the dialogue recommends that the statements of OUV of a property be specified in terms of spatial and planning implications. Many statements of OUV lack practical applicability and provide little to no hands-on indications for the planners, decision-makers or conservators in charge. A study on the OUV would support protection of a World Heritage property and ensure due consideration and description of the relevant attributes. It would thus increase planning certainty and allow consideration of the property in the planning from the outset. Altogether, the group of stakeholders agreed that decisions required case-by-case studies, and that *preventive* assessments based on a number of technical and spatial assumptions carried a high risk of inadequacy. They also recognized that the mere visibility of a turbine does not necessarily have a considerable negative impact on a setting,

Towards a good practice framework for the development of visualizations

Unanimously, all participants and external stakeholders, practitioners and experts from across the different interest groups agreed on the need to develop a framework for good technical practice for visualizations. This should improve quality, provide guidance, and increase the potential to assess projects objectively and share them in the most neutral possible way.

3.5. Outcomes

Conclusions can be drawn at three levels, and include:

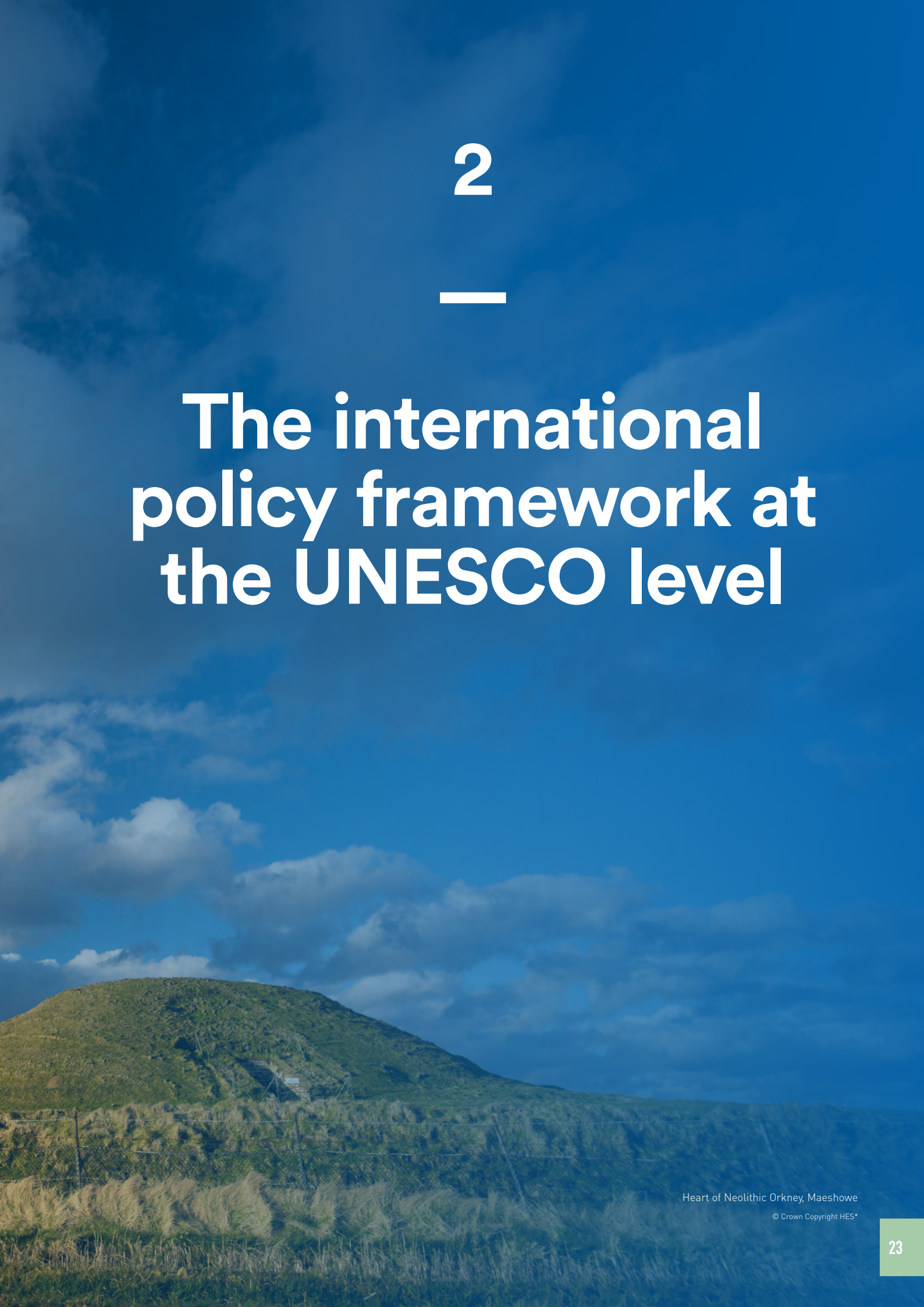
Discussions and work processes involving representatives of different interests are too infrequent, at least in Germany. The stakeholder dialogue has contributed to mutual understanding of both perspectives and brought about many moments of agreement on drawbacks and the desire for improvement. *Recommendations should be seen as stepping-stones for future dialogues and exchanges. Members of the dialogue support the idea that the solutions to the complex problems are best found together and would therefore like initiatives to continue in this cooperative spirit.*

- Many different aspects at the content level have been discussed and recommended. However, it remains challenging to negotiate the preservation of the internationally awarded World Heritage status between German parties and within the German legal framework. All parties involved call for increased reliability and predictability in the processes that determine the compatibility of wind energy development and World Heritage conservation.
- In terms of process design, KNE could learn a lot from the stakeholder dialogue. One of the challenges that warrants attention in the future is to achieve a more balanced composition of participants. Another challenge concerns the conflict of objectives between the desire to work substantially and extensively on topics and the time that participants can spend on the process. No easy solution is available for this, but rather a conscious trade-off between benefits and drawbacks.

The positive evaluations – including a 98% positive rating for the double moderation – show that the work of KNE was perceived as very conscientious. Appropriate handling of revision requests and other concerns required a proper understanding of the concerns and sensitivities of all participants. As neutrality is of the utmost importance for KNE, it was felt that it was critical to uphold this quality in the stakeholder dialogue – all participants should see their voices reflected in the recommendations. KNE's participants also noted their appreciation that the dialogue provided the opportunity to better understand other points of view and interests and to address each other in various points. This is rarely possible in the everyday life of the participants. It was KNE's job to create a space for the participants, but they had to seize the opportunity themselves. KNE is grateful for their engagement.

2

The international policy framework at the UNESCO level



Heart of Neolithic Orkney, Maeshowe

Before focusing in on the four national case studies, this chapter gives a broad overview of international efforts related to HIAs and associated policies at the UNESCO level. Documents indicate the growing recognition of the Convention's quality as a driver and contributor to sustainable development and human wellbeing. Committee decisions and their background working documents attest to this concern, leading to the adoption of a dedicated policy in 2015 that anchors sustainable development as guiding principle for the Convention's actions and processes and underscores the recognition of Heritage Impact Assessments (HIAs) and Environmental Impact Assessments (EIAs) as transparent planning and implementation tools. The Committee encouraged the Member States to follow up in this spirit, promote its widespread use and adapt their own policies and suitable tools. Capacity building serves as a key pillar in promoting and implementing the strategy.

1. World Heritage and sustainable development

In 2015, the General Assembly of the World Heritage Committee adopted the Policy for the Integration of a Sustainable Development Perspective into the Processes of the *World Heritage Convention*, hereinafter the 'Policy', (Decision 20GA 13). This provides guidance to States Parties, practitioners, institutions, communities and networks to increase the collective benefits of World Heritage (and heritage in general) to society while simultaneously using sustainable development approaches to enhance heritage conservation and protection. The integration of a sustainable development perspective in conservation and management strategies seeks to link up with protection of the OUV by considering the wellbeing of present and future generations.

In line with UNESCO's overarching goals in the Medium-Term Strategy (C4) 'to foster equitable sustainable development and to promote peace and security and consistency with broader sustainable development objectives'. Its structure borrows the three dimensions of sustainable development from the UN 2030 Agenda for Sustainable Development, i.e. environmental sustainability, inclusive social development and inclusive economic development. A fourth category, fostering peace and security, rounds out the Policy's general structure, which is further subdivided into several sub-topics.

The Policy recognizes the close links between cultural and biological diversity as a strength and opportunity to increase efficiency in conservation. Accordingly, the core dimensions cover all types of properties equally – natural, cultural or mixed, including cultural landscapes. States Parties are encouraged to 'achieve appropriate balance, integration and harmonization between the protection of OUV and the pursuit of sustainable development objectives' (WHC-15/20.GA/INF.13: 4, II.9) and therefore to consider larger planning and development scales that reach beyond the property's boundaries. Implementation of the Policy requires capacity building at all levels. Thus, States Parties should provide support by promoting scientific research and developing educational programmes and training activities, as well as tools and guidelines to sustain the Policy.

HIAs and renewable energies are mentioned under Environmental Sustainability and the sub-topic 'Protecting biological and cultural diversity and ecosystem services benefits'. In particular, the Policy recommends using environmental, social and cultural impact assessment tools to plan and develop larger projects, such as infrastructure projects, to avoid or mitigate negative impacts on World Heritage properties and their wider settings. It further recommends promoting the use of renewable energy sources (see also WHC-15/20.GA/INF.13: 6, point 15.ii). For information on the Policy's background and progress in implementation, see WHC/19/43.COM/5C.

2. Capacity building: the World Heritage Capacity Building Strategy (WHCBS) and the World Heritage Leadership Programme (WHLP)

The World Heritage Committee approved the World Heritage Capacity Building Strategy (WHCBS) in 2011 (Decision 35 COM 9B). It is presented as an innovative global strategy with a more people-centred and inclusive approach to capacity building than the previous strategy. Considered better suited to respond to the growing needs and development pressures, it underpins the role of World Heritage as a catalyst for sustainability. To boost efficiency and respond promptly to the most pressing challenges, such as climate change, the strategy embraces an integrated approach to the work through the Convention for both natural and cultural sites, which intrinsically link it up with the Policy adopted four years later. For information on the strategy, see WHC-11/35.COM/9B.

The *World Heritage Leadership Programme* (WHLP) is a six-year capacity building project, launched in September 2016, to support implementation of the Policy in the framework of the WHCBS. ICCROM and IUCN run the joint programme in partnership with the Norwegian Ministry of Climate and Environment and in collaboration with the World Heritage Centre and ICOMOS. Other entities,

universities and Category 2 Centres partner with the programme worldwide.

In line with the objectives of the two framing documents, the WHLP aims to improve World Heritage conservation and management practices as a means to contribute to sustainable development and the wellbeing of communities. It seeks to use the international platforms of World Heritage properties to showcase, exchange and develop best conservation and management practices and skills. It further pursues exploration of conservation practices in the broadest sense to achieve excellence, set standards and share innovative models of sustainable development.

One of the five programme modules is dedicated to Heritage Assessments. In this context, the WHLP had organized an international workshop in 2018 to discuss current shortcomings and challenges for World Heritage in different impact assessment processes and identify opportunities and possible solutions. The Advisory Bodies also participated in meetings of the International Association of Impact Assessments (IAIA) to promote the importance of heritage in those assessments. Currently, the programme is developing a web-based platform to provide guidance and other relevant material on topics such as impact assessments. The WHLP also plans to revise some of the existing resource materials, guidance and advice documents to integrate both cultural and natural conservation perspectives. In particular, this involves revision of the management manuals Managing Cultural World Heritage and Managing Natural World Heritage, as well as the guidance notes on heritage impact assessments by ICOMOS (2011, see below) and on environmental impact assessments by IUCN (2013, see below). Finally, the Enhancing Our Heritage Toolkit, originally developed for the managers of natural World Heritage properties, is under evaluation for use with cultural heritage properties. For the latest implementation report on the WHLP, see WHC/19/43.COM/6.

3. Results of the second cycle of the periodic report in Europe regarding Heritage Impact Assessments and Environmental Impact Assessments

The Helsinki Action Plan resulted from the Second Cycle of the Periodic Report Exercise in Europe and North America and was adopted in 2015. Two of the objectives are of particular interest in the context of this document:

One involves calls for more effective impact assessments to improve the management of a property. Actions 19 and 20 refer to required training for site managers on HIAs and/or EIAs, their appropriate timing and the interpretation of and responses to these assessments. The actions further suggest integrating HIAs into European EIA practice by way of EU institutions (e.g. by producing guidance materials with technical support from the World Heritage Centre and the Advisory Bodies).

The other objective involves protection of the OUV and the need for a 'clear definition of the OUV and its attributes as a basis for informed management decisions to ensure the effective protection of World Heritage properties'. The actions proposed under points 9 and 10 would 'clearly identify attributes of OUV and include them as a key component of the management plan/system' and 'resend methodological examples for the identification of attributes of OUV with input from States Parties and Advisory Bodies'. To view the action plan and the complete Final Report on the Results of the Second Cycle of the Periodic Reporting Exercise for the Europe Region and Action Plan, see WHC-15/39.COM/10A. For the latest report on the follow-up activities to the Helsinki Action Plan, see WHC/19/43.COM/10A.

4. HIA as a recurring conservation issue in state of conservation reports

The analytical report on the state of conservation reports submitted for consideration by the 39th session of the World Heritage Committee states that the use and function of Heritage Impact Assessments is a recurring matter of concern. The 'synthesis of emerging and recurring conservation issues which might have strategic consequences (Part II)' highlights the merits of Heritage Impact assessments as 'useful planning tools' helping to harmonize development and conservation and inform decision-making at the property level. The report refers to a recurring misperception of the tool as a document that 'needs to be assessed by the Advisory Bodies' rather than as serving for internal planning purposes (see also WHC-15/39.COM/7, p. 7, point II C 29). Accordingly, in this regard, Decision 39 COM 7.11 echoes the aspects listed in the Helsinki Action Plan. It encourages State Parties to integrate the tool into legislation and planning mechanisms and iterates previous recommendations to include it routinely and as early as possible in planning processes, to strengthen capacity building and support the development of appropriate guidance by the Advisory

Bodies and the World Heritage Centre, based on case studies and field experience.

5. Guidance notes by ICOMOS on HIAs (2011) and by IUCN on EIAs (2013)

ICOMOS published a guidance note on Heritage Impact Assessments in 2011 to assist States Parties 'in evaluating impact on the attributes of OUV in a systematic and coherent way' (ICOMOS 2011: Purpose). Developed during an international workshop held by ICOMOS in Paris in September in 2009, just a few months after the delisting of the Dresden Elbe Valley, the guidance note was intended to strengthen the use and influence of HIAs. Considering the over 100 HIAs requested by the Committee between 2011 and 2018 in accordance with the principles set out in the Guidance Note, the normative impetus of the document seems to have been considerable (see also Patiwael et al., 2019: 334). Indeed, the note stresses the need to focus on the OUV when assessing potential impacts on World Heritage properties, and thus corrects the shortfalls of most heritage assessments conducted prior to 2011. The guidance note comprises some 20 pages and addresses the full spectrum of stakeholders, including managers, developers, consultants and decision-makers, the World Heritage Committee, States Parties and affected communities.

The document encourages States Parties to adopt rational methodologies for early, clear and transparent data as a basis for balanced and demonstrable decision-making. It sets out principles and options to approach and evaluate potential impacts on OUV and suggests the involvement of expert teams to cover the various skills and competencies required in an assessment. Consultation processes should ensure sustainable results in a given local environment. All in all, HIAs are described as beneficial planning tools with multiple assets. Their cooperative nature and participatory aspects enable sustainable and locally appropriate solutions. HIAs help manage change or *continuity* (cf. Kloos 2017: 3) in an iterative way. They involve consultation processes (such as scoping) that may feed back into planning and allow the balancing of key questions related to sustainability, potential public benefits, the proportionality of changes, and heritage values (see also ICOMOS 2011: 4, 11).

Whereas the general principles seem fair and balanced, practitioners have criticized some weaknesses of the proposed methodology. The evaluation method, described as 'a defensible system for assessing/evaluating impact' (idem: 8, No 5), proposes a colour-coded structure, which has become the emblematic rainbow-coloured grid found in many HIAs submitted by States Parties. The structure allows cross-checking of different attributes and their values against the severity of potential impacts and strives for maximum objectivity and transparency in assessment. Practitioners however have stated that the scale left too 'much room for negotiation and interpretation' and had considerable potential for people to reach relatively subjective opinions on where you score the various impacts' (Patiwael et al., 2019: 342).

Another aspect in the context of this document is the vagueness around *how to obtain* the crucial 'baseline' or 'core documentation' of the OUV and its attributes. Whereas the note highlights the importance of knowledge and full understanding of a property's OUV, the questions of where to find this information and who should provide it remain open. Indeed, the text states that Statements of OUV *should* set out 'clearly the attributes that reflect OUV and the links between them' (ICOMOS 2011: 1) but adds 'there is often a lack of baseline documentation' (idem: 3). It further states that SoUVs are 'an essential starting point [however] sometimes they are not detailed enough in terms of attributes to be directly useful to impact assessment work' (idem: 7). The guidance note, in fact, suggests that such gaps should be compensated for and provided in the course of an HIA (see also the chapters on Suggested procedures for HIAs (2), Data and documentation (3), and Methods and approaches appropriate to the property – optimizing available tools, techniques and resources (4)). However, in practice, it may seem less feasible or efficient to leave the identification of attributes, related to the very essence of a property, to an external assessor. This gap may require further consideration in view of the sensitivity and complexity of the task, as well as clarification of who is in charge.

In other words, the guidance note does not sufficiently differentiate between the core function of an HIA as a project-related impact assessment and the prerequisite baseline studies on a property, which *should* be covered by SoUVs. Heritage assessments are based on but should not necessarily produce new baseline information on OUVs and their attributes. These should be provided by the nomination file, or otherwise by the official 'keepers' of the property – the management or the responsible authorities. At the same time, 'preventive' studies conducted by heritage professionals should exercise caution when devising potential development projects. To improve the quality of HIAs, Patiwael et al. (2019) stress the importance of multidisciplinary HIA teams.

IUCN published an Advice Note on Environmental Assessments in 2013. This 12-page note gives principles and highlights key considerations and procedures. It does

not suggest any evaluation method and may therefore seem clearer and more straightforward. Other guidance on heritage impact assessments has been produced by individual states or theWorld Bank and may also be considered for future development of the tool (see Kloos 2017: 5).

After the first decade of practical application, the current revision of both the ICOMOS and the IUCN notes by the WHPL may be a good opportunity to check for appropriate adjustments.

Selected bibliography and links

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3

Inspiring practices for a World Heritage-compatible energy transition: policies, communication, heritage impact assessments

in Austria, France, Germany and the UK/ Scotland

Vézelay, Church and Hill
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View from Mahdberg of Donnerskirchen to Fertö.

Austria

Introduction

Austria boasts ten World Heritage properties, including three cultural landscapes and one natural property. No information is available on whether any of these have been affected by wind energy developments besides the Fertő/Neusiedlersee Cultural Landscape. Over two thirds of this transboundary property between Austria and Hungary lies in Austria, in the northern part of the Federal State of Burgenland, known for being particularly rich in protected areas and wetlands. The good practice case below describes the Austrian focus on regional planning to steer the rapid energy transition in the region since 2002 in a way that took conservation of the World Heritage property into consideration in all stages. In 2013, the Federal State of Burgenland became a self-sufficient renewable electricity producer. In the same year, Austria invited an advisory mission of the International Council on Monuments and Sites and the International Union for Conservation of Nature (ICOMOS-IUCN) to look at the compatibility of wind energy development with the protection of Fertő/Neusiedlersee Cultural Landscape. The mission report raised concerns about saturation of the surrounding landscape and recommended preparing a dedicated visual study of the property and its wider setting to obtain a clear baseline for impact assessments to support protection of the property's visual integrity. Although this study is still pending, the results will feed into decision-making and will also be duly considered in the update to the management plan.

The case study gives an overview of the planning tools in place and highlights a publication by WWF Austria presenting the energy transition in Burgenland as a 'good practice' example of ecologically compatible development of wind energy with highly effective working principles based on cooperation and sensitivity to cultural assets.

Energy transition and goals in Austria and the Federal State of Burgenland

Austria's goal is to reduce CO_2 emissions by 36% by 2030, as set out in the #mission2030 Austrian Climate and Energy Strategy (available in English, see the Ministry for Sustainability and Tourism and Ministry for Traffic, Innovation and Technology, 2018). In 2018, renewables accounted for some 72% of all electricity, putting Austria at the forefront of the European electricity sector, although a considerable amount of net energy imports were required. It is worth noting here that Austria is one of the few European countries to have banned nuclear power, back in 1978.

According to the #mission2030 strategy, the federal government aims to generate 100% of its electricity demand from renewables by 2030 (national balance). This requires the development of all types of renewable energies, infrastructure, storage devices and investments in energy efficiency. To accelerate this process, the government intends to encourage the public's participation and investment in the energy system as users and producers ('prosumers') (see also Ministry for Sustainability and Tourism and Ministry for Traffic, Innovation and Technology, 2018: 9, 41f, 53). The development of services, energy-efficient products and technologies should be supported by awareness and information campaigns, as well as training programmes.

Within this context, the Federal State of Burgenland is spearheading the energy transition in the country, and follows the neighbouring State of Lower Austria in wind energy generation. At a distance of some 70 km from the Alps, the area around Fertö/Neusiedlersee has excellent

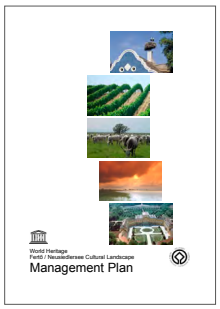
wind conditions and is Austria's most profitable area for wind energy. With windspeeds comparable to most coastal regions of the North Sea, enjoying two widely varying wind directions, the Parndorf Plain is considered one of Europe's windiest onshore areas.

Benefitting from these conditions, the region has undergone major development in the production of renewable energy, and wind power in particular. Over the last 20 years, it went from an 'electricity importer' to an electricity producer, at least in terms of figures. This turnaround happened in 2013, when its energy surplus was first exported to neighboring regions, thus reaching the objective of a decision taken by Burgenland's provincial parliament in 2006, and incorporated into the regional development plan in 2011. A comprehensive planning approach since 2002 was key to the rapid growth of the sector. It followed cooperative working principles, involved different specialized bodies and was framed by a rigorous approval procedure and policies. In 2013, the regional planning approach was recognized as one of twenty national good practice models for spatial planning conducted in the spirit of the 2011 Austrian Spatial Development Perspective *(for further details on the Perspective, see https://www.oerok.gv.at/raum/oesterreichisches-raumentwicklungskonzept/oerek-2011).*

In 2009, Burgenland's provincial government published the 2020 Climate Strategy, which was updated in a participatory process in 2019 to define the way forward up to 2050. The vision foresees 100% of energy production from renewables by 2050; whereas electricity reached this milestone in 2013 thanks to wind power, the remaining challenges involve heating and mobility. It is not clear whether the goal of the 2020 strategy has been met: 50% of total energy consumption from renewables.

Policy highlights and support tools

Management plan (2003-2013)



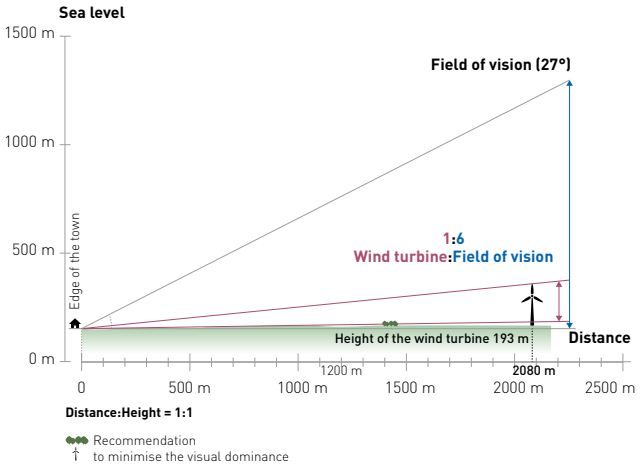
Austria and Hungary plan to update the 2003-2013 management plan in the near future in a joint exercise. The current version refers to wind energy development in the area also described in the Protection and Management Requirements of the Statement of Outstanding Universal Value, referring to the visual sensitivities of the property affected by high-rise buildings and wind turbines, i.e. the 'protection of important views, bearing in mind long-distance visibility due to flat-land characteristics of the wider setting, and in the face of development pressures (high-rise buildings, wind turbines, etc.) in the broader setting of the property.' (see also http://whc.unesco.org/en/list/772). Moreover, the medium- and short-term objectives for protection of the landscape and the environment involve the development of wind energy outside the World Heritage property under the favourable wind conditions present. This section also recalls that the property and its buffer zone are excluded from any wind energy development and refers to the 2002 Regional framework perspective (see also 2003 Management Plan, 4.I and 4.V).

Regional framework perspective for wind turbines (2002, 2005, 2010)

The Regional framework perspective for wind turbines was first adopted by the provincial government of Burgenland in 2002. An external office, the private Austrian Institute for Spatial Planning ('ÖIR'), has since supported the process and developed methods and conducted studies including view studies, before defining suitable areas and no-go zones as well as height limits of around 100 to 186 m for wind farms in Burgenland. The document was supplemented and updated in 2005 and 2010, to reconsider the zoning and height limits in light of new scientific data (such as from ornithological monitoring), technical developments, and energy goals. Compared to earlier versions, the 2010 plan shows some suitable areas that have decreased in size, split up into smaller entities and have a tendency to move farther away from the World Heritage site (see also ÖIR 2010b, ÖIR and MECCA 2012: 18). Overall, the zones provided sufficient space to reach the 100% renewable energy objective in 2013.

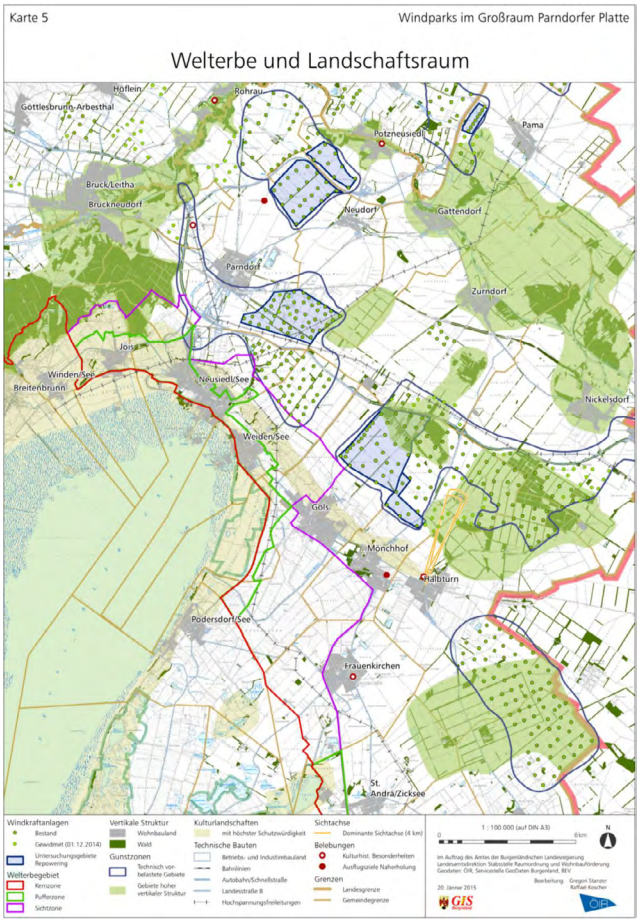
Master plan for repowering (2015)

The latest 'update' to the series of strategic perspectives is the 2015 Master plan for repowering. For many years, Burgenland was the only Federal State in Austria to develop such a thorough and binding basis for planning wind turbines and repowering in particular. The document highlights the opportunities offered by repowering as a means to improve design and 'clean up' a landscape with layouts that better 'blend into' a given landscape, striving for calmer arrangements with fewer and more unified facilities. Based on the zoning and methods set out in the Regional framework perspective, this examines six of the existing suitable areas in terms of their potential as repowering areas, meaning generally fewer but larger facilities. To examine potential impacts on the landscapes and adapt the zoning to the requirements of repowering, one of the methods applied is visual dominance analysis. This helps measure the visual impact of possible installations of wind turbines in the landscape in relation to settlements, to define maximum heights of blade tips and generate quantitative data for better comparison. The applicability of dominance analysed for assessment of potential impacts on the visual integrity of an OUV remains questionable and has not been confirmed by the Advisory Mission. Therefore, pending clarification of the appropriateness of the methods and instruments developed in previous perspectives, the master plan excluded the suitable areas closest to the property.



Source: Ill. 3, ÖIR 2015: 32

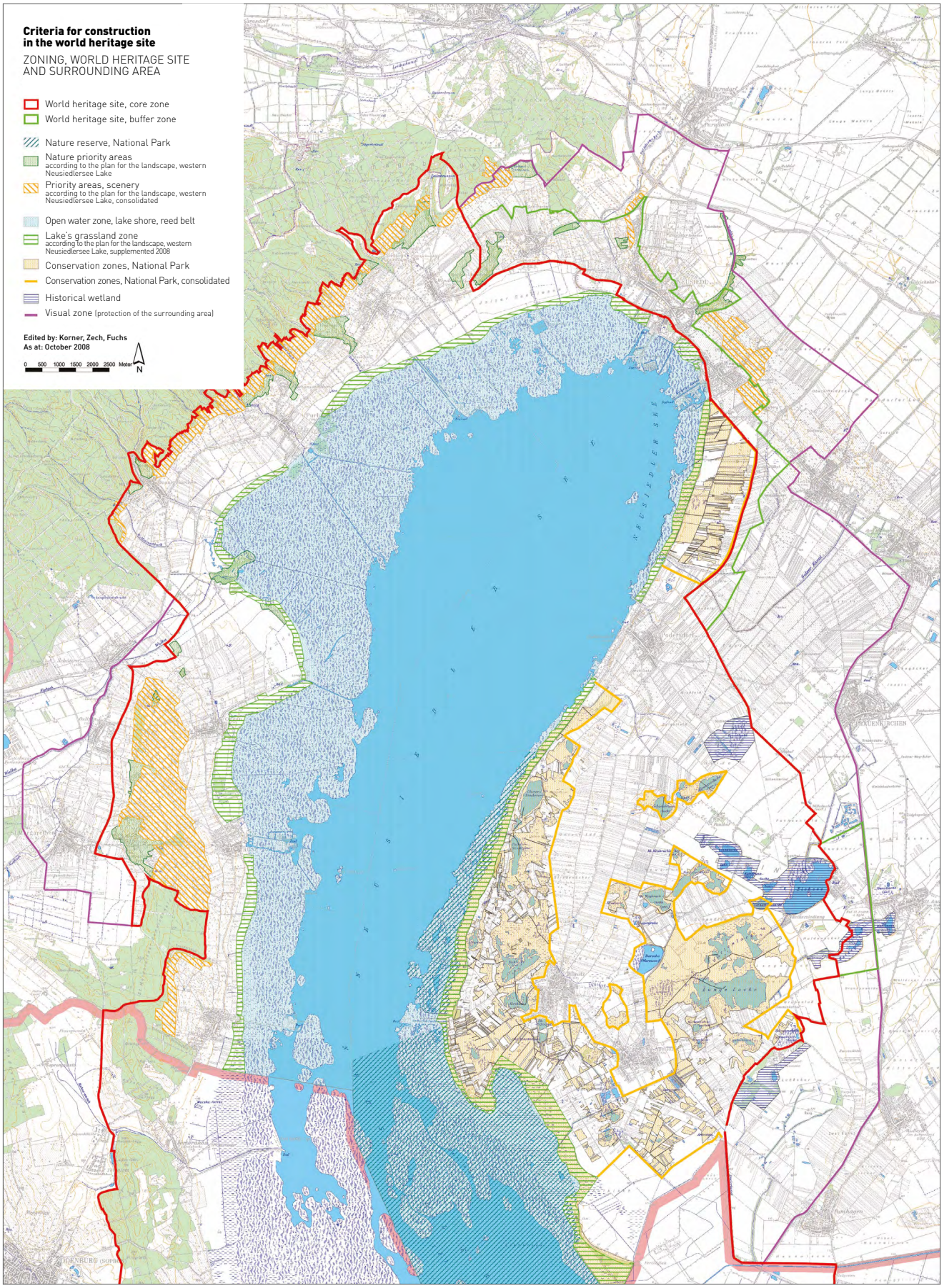
Instead, the authors give general strategic considerations, including the tendency to move wind farm planning away from the property, the exclusion of wind development from the buffer and visual zones, the need to examine the potential cumulative effects of wind farms and to assess the visual carrying capacity of the landscape (see also ÖIR 2015: 54). To ensure optimal consideration of World Heritage matters and adequate evaluation criteria, the expert team involved the Burgenland Environmental Advocacy Office ('Landesumweltanwaltschaft'), in its role as a member of the World Heritage Advisory Board on Design.



Source: ÖIR 2015, p. 30

Regional development programme (LEP) (2011)

Zoning for wind energy was included for the first time in the 2011 Regional development programme (Burgenland Government Office (2012)), which sets out the main pillars for sustainable development of the region over a period of 10 to 15 years. The document declares that wind farms are only permitted in suitable zones. It also includes the obligations and framework in terms of World Heritage conservation, declaring the management plan as well as the 'criteria for constructions in the World Heritage area' (see also chapters below on the Building Criteria and Design Council) to be binding documents. It does not foresee any further development of wind energy capacities beyond the 100% provision.



Zoning of the World Heritage property and surrounding area

Regional suitable zones for wind energy are the basis for the area planning and site zoning of what is called a 'Green area for wind turbines' ('G-WKA'). These areas require further in-depth examination to examine their suitability within the framework of a Strategic Environmental Assessment (SEA).

Projects undergo a rigorous approval process in line with the conditions set out in the Directives for European Environmental Impact Assessments (EIAs) and transposed into Austrian law. As part of a simplified or regular EIA process, impact statements or assessments contain the description of *substantial* impacts on the environment, including not only fauna, flora and habitats, but also landscapes and cultural goods as well as their interactions. It is customary and required to support claims with visualizations of the projects in photographic montages. The Federal Monuments Office ('Bundesdenkmalamt') is always informed of the projects (see also ÖIR and MECCA 2012).

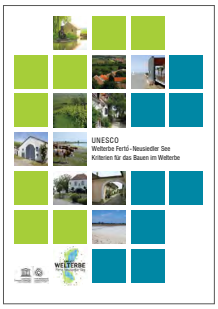
Sight protection zone

The development of a sight protection zone followed an ICOMOS/IUCN/UNESCO Reactive Monitoring Mission in 2007, which had visited the World Heritage property to examine the potential adverse effects of a 73m-high hotel planned some 3.8 km away from the property and 1.9 km away from the buffer zone. Although a compromise was found for this building considered to be intrusion in the skyline (the parties agreed on an alternative design that was shorter), the mission encouraged the development of zoning regulations to prevent further high-rise developments in the area in the future. Regulations should be based on an appraisal of the visual and cultural qualities of the setting.

The sight protection zone followed in 2008 to support the buffer zone and better protect important views away from the property that extend beyond the buffer zone. The zone is based on existing distinct topographical borders within the site (e.g. site boundaries, rivers, forest borders) as well as infrastructure lines (e.g. railway lines). It was voluntarily incorporated into the regional framework perspective for wind energy (2010) and the LEP (2011). Although devised for high-rise building projects on the outskirts of the World Heritage site, the visual zone with its height limits has also been applied to wind energy planning. In March 2019, the zone was included in the amended building regulations of the federal state of Burgenland (see also § 3(4)). Moreover, the management is considering adapting the zone's boundaries during revision of the management plan.

Building criteria and Design Advisory Board

In December of the same year, the general assembly of the managing body, the Lake Neusiedler World Heritage Association, decided to create a Design Advisory Board ('Gestaltungsrat') to support decision-making around the architectural and urban development within the World Heritage property. This is made up of the expert members of the pre-existing Village Renewal Advisory Board of the provincial government of Burgenland and supplemented by the environmental ombudsman, the managing director of the World Heritage Association, the two organizations of community representatives in Burgenland and a representative of the provincial nature and landscape protection office.



In December 2009, a team of Austrian and Hungarian experts and stakeholders established the 'Criteria for constructions within the World Heritage property' (Lake Neusiedler World Heritage Association, 2011). The criteria for building projects were supplemented in 2019 with a short guide for architectural projects within the property (Lake Neusiedler World Heritage Association, 2019). The documents offer guidance and encourage high-quality design within the World Heritage Fertő-Neusiedlersee Cultural Landscape. They are available on the property's website (https://www.welterbe.org/seiten/18) and provide the following tools: relevance criteria to decide whether further examination by the Design Advisory Board is necessary, assessment criteria for the Design Advisory Board, and a list of required project information for project assessments. In particular, the catalogue of criteria to be met by new projects could serve as a model for a similar questionnaire for wind energy projects.

An advisory mission by ICOMOS and IUCN (2013)

In 2013, Austria invited an ICOMOS and IUCN advisory mission to inspect the wind energy development and the potential risks of a negative impact on the OUV. The mission concluded that the landscape was saturated and that wind farms already irreversibly affected the visual integrity. Although recognizing the 'very elaborate and robust policies for strategic planning (i.e. Regional Master Plans)' in place, it criticized the lack of appropriate consideration of the OUV and visual attributes of the setting in the processes: 'Current planning processes seem to not deal adequately with the visual impact of wind farms, nor their impact on OUV' (ICOMOS/IUCN 2013: 12). To remedy this shortcoming, it strongly recommended preparation

of a 'visual study of the setting', provision of a baseline for impact assessments and planning purposes in the future, identification of the spatial implications in a 3D model and where applicable, reconsideration of the boundaries of the property's buffer zone.

The available documents attest to different understandings of the visual aspects of the OUV and the setting in particular. Consequently, this may have led to different conclusions regarding the impacts of wind farms in the area. For instance, the Reactive Monitoring Mission report from 2007 (ICOMOS/IUCN/UNESCO 2007) mentions that the boundaries of the buffer zone had been the subject of debates since the listing of the property. It refers to differing views on the setting and the role of the Parndorf Plain: *'It seems that until the mission took place the property and the Parndorf development site were seen as completely independent, unrelated entities although forming part of the same landscape setting'* (ICOMOS/IUCN/UNESCO 2007:3). The 2013 Advisory Mission states that the boundaries of the property's buffer zone were insufficient to ensure protection of the broader visual setting of the mostly flat landscape around the lake, and lacked justification (see also ICOMOS/ IUCN 2013). A visual study should therefore be an appropriate means to create an exclusion zone for wind farms and support decision-making around relocating future wind farms away from Fertő/Neusiedlersee Cultural Landscape. The study should define a visual frame to identify potential visual interference between the axes of planned wind turbines and incoming and outgoing views of and from the property. To avoid an additional increase of existing impacts, the mission also recommended conducting a 'carrying capacity study' of the landscape and supports the principle of moving developments away from the property. Recommendations also touched on policymaking when suggesting integration of cultural heritage impact assessments into the EIA process according to the 2011 ICOMOS Guidance on Heritage Impact Assessments.

In the 'Conclusions and recommendations concerning the overall protection of the cultural landscape and its setting', the authors make an interesting point about the different notions of the phenomenon of a 'new kind of human landscapes' (ICOMOS 2013: 26). Whereas ICOMOS had the impression that stakeholders were satisfied with what they considered a 'clean industry' and 'a good economic device in their landscapes' (ibid.), the advisory mission criticized this attitude as ignoring 'the fact that this mixture of energy and agriculture production farms has created a new landscape different from the millenarian landscape that the property aims to protect' (ibid.). In response, the mission recommends raising public awareness on the matter with visualizations, to improve efficient protection of the property.

The Austrian State Party reportedly appreciated the mission's advice, as it helped to sharpen the focus on the property's OUV, even if a number of technical details could not be fully clarified. Indeed, the mission report has become a recurring reference in relevant documents related to the region's wind energy development.

Participation and communication

WWF Austria published a brochure on the 'success story' of the wind energy development in Burgenland and the merits of regional planning (Bell and Schellmann, 2014). The report of over 40 pages retraces the history and relevant factors that contributed to reaching the goal of 100% renewable electricity in 2013. It describes analytical and critical aspects and highlights positive lessons by deriving recommendations for replication in other regions. An additional section outlines the special consideration for the World Heritage property. In the introduction, WWF Austria presents the energy transition as a means of combatting the climate crisis and explains that WWF Austria proactively supports the development, as a technical adviser and stakeholder, to facilitate an optimal transition. It is directed at planners and decision-makers, as well as the broader public, presents convincing arguments in favor of wind energy development, emphasizes the importance and sustainable effect of participation and expresses a message of solidarity and cooperation, encouraging stakeholders at all levels to support ecologically compatible and sensitive development of wind energy.

View from Tannenberg in Jois to the vineyards.
© Manfred Horváth Photographie / Verein Welterbe Neusiedler See

CASE STUDY
Fertö/Neusiedlersee Cultural Landscape

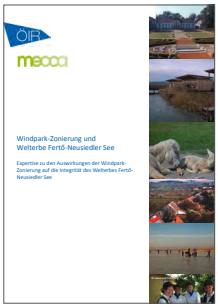
General information on the property

Property name	Fertö/Neusiedlersee Cultural Landscape
Year of listing	2001
Criterion	(v)
'Type' of site and landscape setting	Cultural landscape; flat lands surrounding large lake with scenic views; to the east of the lake lies the aesthetically characteristic and sensitive area with forested slopes and entangled patterns of varying land types, ranging from vineyards and lawns to the reed belt, including the 'cherry blossom region', to the north lies the arid and technically dominated Parndorf Plain.
Area of property	68,369 ha
Area of buffer zone (ha)	6,347 ha
Total area (ha)	74,716 ha
Other national zoning applied for the protection of the property	A visual zone or sight zone ('Sichtzone') was developed to support the buffer zone. Established in 2008, it was published in 2011 as part of a special building policy for construction projects in and near the World Heritage property, and was integrated into the amended building regulations in 2019. This considers visual relations within the area as well as distinct topographic or infrastructural features and boundaries (e.g. site boundaries, woods, streams, railways). The zone has a direct landscape relationship with the property, and more important projects require heritage impact assessments and approval.
Statement of Outstanding Universal Value (SOUV) - criteria	*Criterion (v): Lake Fertő/Neusiedler has been a crossroads for different cultures for eight millennia, graphically demonstrated by its varied landscape, the result of an evolutionary and symbiotic process of human interaction with the physical environment.*
Statement of Outstanding Universal Value (SOUV) - Integrity	The listed property, located on the Austro-Hungarian border, not only is characterized by diversity, but has also maintained – in terms of both natural and cultural aspects – its landscape and socio-economic and cultural features, as well as its land use forms, the several century-long continuity of its viticulture and stock raising, and the rich characteristics of settlement architecture and structure related to land-use. The integrity of the property is based on geological, hydrological, geomorphological, climatic, ecological as well as regional and cultural historical characteristics. The landscape of Lake Fertő/Neusiedler has advantageous natural and climatic conditions, which have made it suitable for agricultural cultivation and stock raising for thousands of years. The water, the reed beds, the saline fields, alkaline lakes and their remains, the row of hills enclosing the lake from the west with forests and vineyards on top, represent not only natural geographical component features, but also hundreds of years of identical uses of the land and the lake, making the area a unique example of humans living in harmony with nature. Lake Fertő/Neusiedler is Among the world's saline lakes, and its surrounding area is unique in terms of the organic, ancient, diverse and still living human/ecological relationship characterizing the lake and society. The characteristic human-made elements of the cultural landscape include the traditional, semirural architectural character of the settlements around the lake, the settlements' structures, the unity of the homogeneously arranged buildings on squares and streets, and several 18th- and 19th-century palaces in their landscape settings. The centuries-long viticulture, viniculture and reed management contribute to the continuity of land use as well as to the continuous use of traditional building materials.

Much of the value of the area lies in the genuinely unchanging qualities of its way of life, the preservation of vernacular architecture and a landscape based on traditional and sustainable use of a limited range of resources. Though tourism is both a challenge and a catalyst to this, associated development and insertion of intrusively modern construction will need to be controlled. Maintaining these characteristics and the conditions of integrity will entail the development and enforcement of guidelines and zoning regulations to ensure that new development does not occur on open land and that it respects the form and scale of traditional buildings.

Vernacular architecture in the property.

Focus on the HIA document

Title	 Wind farm zoning and the Fertö/Neusiedlersee Cultural Landscape World Heritage property *Original title: Windpark-Zonierung und Welterbe Fertö-Neusiedler See. Expertise zu den Auswirkungen der Windpark-Zonierung auf die Integrität des Welterbes Fertö-Neusiedler See*
Year of study	2012
Commissioned by	Office of the Provincial Government of Burgenland, Austria
Author	ÖIR (Austrian Institute for Spatial Planning) and MECCA
Format (No of pages)	PDF, 57 pages (including 4 pages of annexes)
Availability (online or contact)	Internal working document, not publicly available. Contact site management: post.welterbe@bgld.gv.at

Purpose of study **Proposed typology:** **(a) Prospective study for development or spatial planning** **(b) Evaluation of status quo** **(c) related to specific project**	Type (b) and (c) The study was compiled in preparation of the ICOMOS Advisory Body Mission in March 2013 with the aim of showing how the State Party accommodated World Heritage conservation. Particular attention was given to aspects related to landscape and visual values and the development of wind energy. In an initial stage, the authors retrace the regulatory framework for the protection of the property, which has undergone constant updates and adjustments since the property was listed in 2001. The document also refers to the rapid development of renewable energy in the Federal State of Burgenland, thanks to an efficient regional planning approach. It describes the relationship between wind energy and World Heritage conservation in other countries. A comparison of the situations leads to the conclusion that the visual integrity of Lake Fertö/ Neusiedler is less sensitive to the development of wind energy in the wider setting than in many other cases, e.g. the emblematic Mont Saint-Michel (France). The study closes with an impact assessment for existing wind farms and gives excerpts from the assessments of three approved wind farm projects at different development stages (underway or planned).
OUV 'translation'	The authors believe that the OUV of the property consists principally in the characteristic variety of different landscape types. Without deepening the analysis, the study explains that the assets are sufficiently preserved within the property, the buffer zone and natural preservation areas (e.g. Ramsar wetlands, biosphere reserve, national park, Natura 2000). The wider landscape setting, they argue, in particular towards the *Heideboden* or the Parndorf Plain, is not and has never been relevant to the OUV of the property. These areas are traditionally used for intensive agriculture and a gravel pit, and are highly affected by technical infrastructure (e.g. motorway, electrical towers, railways).
Area under examination	The authors refer to the position of wind parks in relation to the World Heritage property within distances of up to 30 km away from the World Heritage property. For the more detailed assessment however, the authors limit the area to a distance of up to 10 km. This distance, they argue, corresponds to the annual *average visibility* taking the changing weather and atmospheric conditions into account. Visibility beyond 10 km is relatively rare. The authors consider a distance of a suitable zone from the property 'some 5 km from the visual zone and 7 km from the property' as 'far away' (see also ÖIR and Mecca 2012: 20).
Landscape analysis	With reference to the management plan, the authors refer to the 'natural geographical entity' of the property and to the variety of at least 12 different landscape types on both the Austrian and Hungarian sides. The authors further describe the division into three zones of different sensitivity in the special building policy for constructions near the World Heritage property from 2011. According to that zoning, the area to the west of the lake is the most prestigious in terms of landscape quality and beauty, and therefore the most sensitive to visual impacts. At the same time, developments on the Parndorf Plain or similar places may have distant effects, yet should not have any dominant or distorting impacts on the visual integrity in any case. The zones are shown on a map and in photos taken from the selected viewpoints.  Landscape view of the World Heritage Cultural Landscape of Fertö/ Neusiedler See. © Manfred Horvath Photographie/ Verein Welterbe Neusiedler See*

Identification of viewpoints	The authors chose a number of viewpoints to document the cultural landscape from different perspectives and provide the 'characteristic views' over the various types of landscapes. The choice is therefore rather aesthetic without particular scientific, literary or historical justification.

Landscape with Neusiedler See near Fertőrákos

The documentation of the views in six photos is accurately detailed and explained in the caption. First, a map shows the location of the viewpoints, the view direction and distance to the closest existing or planned wind energy facility. The points are located at the periphery of the property and directed towards the lake – views outside the property are not considered relevant to the site's appraisal. Second, the authors explain the technical details on the equipment (i.e. Nikon D7000 with a sensor) and the visual basics of the shots in terms of angle of view, focal length and picture diagonal. The latter should help understanding of the photos with respect to the dimensions of the human field of vision.

Visibility study	Visibility studies are a basic part of the identification of suitable zones within the framework of regional planning and are therefore not further explained in this study. In combination with a dominance analysis, they serve to assess the height and position of a turbine in detail. In this context, regional planning in Burgenland also sets blade height limits. The study examines the visual conditions in the region to obtain an average maximum distance of 10 km for the study (see above 'area under examination').

Landscape view of the World Heritage Cultural Landscape of Fertö/ Neusiedler See, Western shore, turbines at the horizon, 2012.

Visualizations of wind farms		The study presents examples of photomontages of three wind farm projects. All images are accurately specified with names and sources, dates and photographic details similar the method used in the photo documentation. The projects had been approved earlier and their visual impacts were inspected by the ICOMOS/IUCN Advisory Mission. The photo points for these projects (marked as FM on the map) are located just outside the buffer zone and as closely as possible to the wind farms, i.e. at distances of 2, 4 and 6 km. They go away from the lake, directly towards the projected wind farm. In these specific project-related visualizations, the turbines show more technical specifications and variety in terms of colour and blade direction. Additional graphic marking in the images is kept rather orderly: simple text lines refer to the content (viewpoint or depicted object), one example indicates existing turbines with red circles to contrast with the planned project, another example retouched the turbines to adjust them to the weather conditions shown. The photos convey the blurry effect of the atmosphere, as turbines tend to loose contrast in the distance despite cumulative effects. The examples are followed by brief general explanations of methods and principles of professional photomontages. The tone is rather educational, as if addressing a broader public. It includes explanations of technical steps (choice of viewpoints, focal length, calibration of directions, and required information for photo documentation including exact geo-references), as well as recommendations that photomontages should be produced using specialized software and reflecting average visibility and weather conditions as a basis for contrasts. Images could be adjusted accordingly by means of image software such as Gimp2. Moreover, visualizations should depict whole structures and choose appropriate image sections according to the human visual field. The study argues that photomontages are more realistic and comprehensive than visualizations based on virtual landscape images. The document shows some examples of photomontages taken from the impact assessments of developers. The authors indicate certain wind turbines with circles in the visualizations.
Details on visualizations	**Technical devices, hardware, software**	The report gives some specific technical information, which conveys a spirit of transparency and credibility for the analysis. Instruments included various cameras (Nikon D7000 with DX-format sensor (23.6*15.6 mm); Canon 450D (22.2*14.8 sensor) and a miniature camera), standard GPS device, compass for the calibration of directions, a tripod and a level for the horizontal position. WindPro 2.6 (EMD) was used for the photomontages, control points generated through aerial photos or GPS tools as additional support tools for detail adjustments, and Gimp2 is suggested as possible image software.
	Selection of viewpoints and their presentation (criteria, number, etc.)	• 12 viewpoints, directed towards the property, and across the lake to the turbines • Identification of 3 points for photomontages at a distance of 2, 4 and 6 km to the planned facilities (blade height: 186 m), less distance to existing lower structures (blade height 100 m)
	Distances identified	Distances across the lake reach up to 30 km, however the study argues that the local visual conditions only attain an average visibility of up to 10 km (see also above: 'area under examination').
	Data on wind turbines (height, capacity, blades, etc.)	The only technical detail on the turbines is the blade height of 186 m as per the maximum height allowed in the regional plan. The three photomontages show differentiated types and positions of the turbines, which may indicate some details of the specific plans they visualize without specifying them to the reader.
Evaluation method and criteria		The authors use the international comparison to show that other European properties have more characteristic silhouettes to protect. Moreover, domination analysis reveals that newer projects are farther away and have less, and therefore acceptable, impact. No reference to ICOMOS guidance.

Outcome/analysis	• The suitable areas for wind energy are concentrated on two areas that are not part of the characteristic landscape and thus considered irrelevant to the property's integrity. • Visible wind farms are not dominant on the silhouette as viewpoints with far-reaching views are over 20 km away from turbines, and therefore have negligible impacts. • The silhouette is not a protected asset of the cultural landscape. • Highly sensitive areas of the landscape are located in the western part of the property and are not affected by the new wind farm projects. • New projects are further away than the existing wind farms and are therefore less visible. • The closest wind farms already existed at the time of listing and are therefore part of the inventoried setting. • Wind energy development is compatible with the visual integrity of the property.
Results	The study remained an internal document. It fed the discussions during the Advisory Mission and the management retained the information for the conservation of the property.
Feedback	The 2013 ICOMOS/IUCN report shows that the experts disagree with the conclusion of the assessment because the landscape, in their opinion, is saturated and the visual integrity 'irreversibly' impacted. They found a lack of awareness of the OUV and its attributes and suggest conducting a study of the setting as well as a carrying capacity study on the landscape to set a recognized baseline for evaluation of future development projects.
Lessons learned & recommendations	Positive • Inspiring comprehensive study with a focus on how the State Party deals with World Heritage conservation in view of energy transition, shedding light on a wide range of considerations (description of larger policy and regulatory framework, comparison with other European cases, presentation of tools and methods for heritage impact assessment) • Interesting comparison with other cases of World Heritage and wind energy development to showing that a wider setting for the surrounding landscape is not a key asset for the OUV • Technical details provided in each image of the photo documentation and the visualizations • Provision of accurate and detailed maps Points for improvement • Rather narrow analysis of the OUV and the significance of the wider setting • Selection of the viewpoints could be supported. • Both points could be remedied by a dedicated setting study.

Recommendations and lessons learned

POLICY FRAMEWORK

- The recommended clarification of visual attributes of OUV and the wider setting will provide a basis for impact assessments at any planning stage and increase planning certainty. This tool facilitates appropriate consideration in planning processes. It may, under certain circumstances, increase their weight in relation to other factors related to fields such as economic growth, tourism or agricultural production.
- *Training in or raising awareness of visual integrity of a World Heritage property among government authorities, including Heritage Conservation.*
- Advisory mission is as an efficient means to obtain valuable and impartial advice from international experts and case-specific informal guidance: the 2013 Advisory Mission provided important insights and recommendations, which influenced planning processes and will also guide the upcoming evaluation and revision of the management plan.
- Regional Planning, as a consensus working tool, promotes sustainability through early participatory consultation and communication processes in a pre-planning phase for wind energy developments. *The participatory process has been praised as a key asset and 'secret recipe' (Bell, Schellmann 2014: 20), to reach the unusually broad acceptance and support of wind energy development in the region.* As such, it may ultimately be considered the guarantor of a sustainable energy transition.
- Encourage media and press or partner stakeholders (e.g. WWF) to promote the property and considerations about wind energy development, to raise awareness and increase credibility and acceptability.
- Develop guidance for landscape assessments on the basis of proven scientific methods, consider Annex IX of the ICOMOS/ IUCN Advisory Mission Report (2013), a bibliography on visual issues on the landscape.
- Develop projection criteria (based on the example of the building criteria) for wind energy projects.
- Define a Visual Zone in support of a buffer zone (see also LIA in France).

HERITAGE IMPACT ASSESSMENTS

- Provide technical details for each image of documentation or visualization.
- Provide accurate and detailed maps.

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Austrian Site Management: www.welterbe.org/

Hungarian Site Management: www.fertotaj.hu

Vézelay, Church and Hill

France

Introduction

In 2019, France had 45 properties on the World Heritage List (39 cultural, 5 natural and 1 mixed). The development of renewable energy, in particular wind energy, is perceived as a growing factor that can affect the Outstanding Universal Value (OUV) and integrity of these properties. In particular, properties with landscape settings that contribute to the expression of the OUV are prone to negative impacts from large installations such as wind turbines. In France, more than 15 properties have been or still are involved in wind power issues. The Mont Saint-Michel case of 2011 is among those receiving the most media attention (see also Association of French World Heritage Sites, 2017: 47). France has launched a number of interesting initiatives to better reconcile policies related to World Heritage protection and implementation of the Energy Transition within the broader efforts to support the national energy transition. The authorities are aware of the sensitivity of the topics and debates and seek out appropriate responses in a spirit of knowledge-sharing, participation and dialogue. A variety of efforts are described briefly below and reflect the aim to develop guidance and set standards to instill transparency and objectivity as a means to prevent conflicts and heated arguments.

Energy transition and goals in France

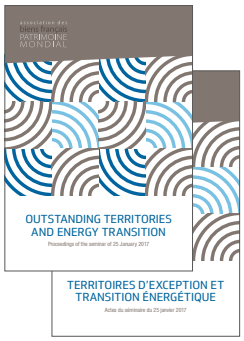
France's energy objectives are set out in the Long-term Energy Plan ('*PPE*') developed to support the Law of 17 August 2015 on the energy transition for green growth. This is a binding operational tool for public authorities and was developed in a participatory process between 2017 and 2019. The process involved a large number of stakeholders, numerous workshops and a public debate in 2018 organized by the National Public Debate Commission. The compiled draft was published in 2019 and is currently pending final revision and official approval. Objectives include doubling the production of renewable energy from almost 20% in 2017 to 40% by 2030. The Plan foresees development by means of repowering and new installations. 'In total, the transition from 15 GW in 2018 to 34.1 GW by 2028 will result in an increase in wind farm capacity from 8,000 masts at the end of 2018 to approximately 14,500 by 2028, an increase of 6,500 masts.' (see also Ministry for the Ecological and Inclusive Transition, 2019a: 20). The main energy source in France is still nuclear power, providing over 70% of the country's electricity. This largest share of any country in the world, and should be reduced to 50% by 2035. In numbers, wind power produced some 16.5 TWh of electricity in the first half of 2019 or 6.7% of French electricity consumption (see also https://www.statistiques.developpement-durable.gouv.fr/publicationweb/216). In terms of the 13 regions of France, the *Grand Est* region, home to World Heritage property Vézelay, Church and Hill, has the second highest number of wind farms, with 3,527 MW of the 15,757 MW of total installed wind power in France (see also Ministry for the Ecological and Inclusive Transition, 2019b). The *Grand Est* and *Hauts-de-France* regions together produce about half of France's wind power. In the first half of 2019, for the first time, France topped the European ranking for newly installed onshore power, with 523 MW, coming in ahead of Sweden (460 MW) and former leader Germany (287 MW) (see also IWR, 2019).

Policy highlights and support tools

France also applied the participatory approach in the development of the Long-term Energy Plan ('*PPE*') (see also Ministry for the Ecological and Inclusive Transition, 2019a), a strategic document covering both energy production and consumption goals for the next ten years.

Inter-ministerial working group and related actions

In view of the complexity and the multitude of factors at play, the Ministry for the Ecological Transition (Ministry of the Environment) and the Ministry of Culture teamed up to establish an inter-ministerial working group in 2013 to jointly address the challenges arising in the course of the energy transition and their potential impact on landscapes and heritage. Cooperation between the ministries extends to the local and decentralized levels to comprehensively address the protection of heritage and landscapes, including the management of sites and planning. One significant achievement of the working group was the 2016 update to the Guidance for the Development of Impact Assessments for Onshore Wind Farm Projects *(cf.* Ministry of the Environment, Energy and Oceans, 2016) described below. As part of the update, the ministries, with the support of the Association of French World Heritage Sites, also organized several meetings and conferences to communicate with various stakeholders. Noteworthy among these events was the Outstanding Territories and Energy Transition seminar, held in January 2017, in which French and European representatives from Germany, the Netherlands and the United Kingdom shared their experiences related to the energy transition and World Heritage conservation (see also Association of French World Heritage Sites, 2017). The proceedings from the seminar provide the valuable arguments and different points of view of the various participating stakeholders. These may fuel future discussions and help to improve conditions and processes outside of France as well.



Guidance for the development of impact assessments for onshore wind farm projects (2016) and the single environmental authorization (2017)

Within the framework of modernizing environmental law and implementing of the Energy Transition Act of 2015, the Ministry for the Ecological Transition introduced a single environmental authorization process in March of 2017 to simplify and shorten administrative processes. It places the focus on the preparatory phase and increases foresight, readability, and legal certainty. The guidance for impact assessments is an implementation tool for this simplified process and introduces special consideration for World Heritage into the general requirements on all wind farm projects located in or near a listed property. Its objective is to assess the impact of a project on the integrity of a property, and determine the impact on a property's OUV.

In 2015, the Directorate-General for Risk Prevention ('*DGPR*') launched a consultation process to revise the Guidance for the development of impact assessments for onshore wind farm projects (2005, 2010) and incorporate the latest regulatory changes, feedback from case reviews and lessons learned from available case law. The revision focused on the three areas of biodiversity, landscape and – the newly added – World Heritage. Several meetings were held with relevant stakeholders such as representatives of Ministries, the wind industry and environmental and heritage associations. The draft guide resulting from this collective effort was the subject of consultations with authorities, associations and bodies dedicated to protecting nature and architectural and landscape heritage. The process concluded in 2016 and the revised document was published in 2017.

The guide is directed at both project managers and assessment providers and includes special consideration for World Heritage conservation. After giving some background information on the broader political and economic context of the guide, including national, European and international commitments to fight the climate crisis and diversify national electricity resources, the document introduces the hands-on and methodological aspects of heritage impact assessments, dedicating an entire chapter to the special considerations for World Heritage properties. It describes the concept of and requirements for World Heritage conservation and sets out methodological recommendations and underlying guiding principles, such as proportionality, replicability, objectivity and transparency as well as practical advice on matters such as the required documentation. The guide is intended to help reconcile the long-term objective of preserving the OUV of World Heritage properties in France with the wind energy deployment set out in the Law on the energy transition for green growth and the European Renewable Energy Directive. To maintain its relevance, the guide will be revised periodically and incorporate regulatory changes and technical developments where applicable.

Vézelay, Church and Hill
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CASE STUDY
Vézelay, Church and Hill

General information on the property

Property' name	Vézelay, Church and Hill (Also listed as part of the serial property of the Routes of Santiago de Compostela)
Year added to the World Heritage List	1979 (listed without buffer zone) Minor boundary modification in 2007 (adding a buffer zone)
Criteria	(i), (vi)
'Type' of site and landscape setting	Clear skyline with a central focus on a single hill crowned by the basilica
Area of property	183 ha
Area of buffer zone (ha)	18,373 ha
Total area (ha)	18,556 ha
Other national zoning applied for the protection of the property	*Aire d'Influence Paysagère de Vézelay* (Vézelay Landscape Impact Area, (LIA)) The LIA is a French tool developed for World Heritage properties to support decision-making related to wind farm planning in the wider setting. It includes a preliminary step to propose an operational translation of the OUV of a property into landscape conservation objectives. It aims to identify knowledge, descriptions and recommendations related to the appropriateness and compatibility of wind farm projects in areas under examination. *LIAs designate perimeters for consideration of the relevant visual relationships of a landscape, including important views of and from a World Heritage property. Perimeters can go beyond the buffer zone, but are directly related to the property.*
Statement of Outstanding Universal Value (SOUV) - criteria	The World Heritage Committee adopted the retroactive statement of OUV in 2019 at its 43rd session. The text is not available in English at the time of preparation of this document but will eventually be translated . (see also Decision 43 COM 8E, and working document WHC/19/43. COM/8E.Add, p. 4). Below is an informal translation of the French original. *Criterion (i): The Basilica of Saint Mary Magdalene of Vézelay is one of the masterpieces of Burgundian Romaneque art. The central nave (1120-1140), strikingly punctuated by its bicolour double arches, is adorned with a series of capitals unique in their style and variety of subjects. Its sculpted portal situated between the nave and narthex, with the 'Mission des Apôtres' (Mission of the Aposteles) on the tympanum, makes it one of the major monuments of western Romanesque art.* *Criterion (vi): In the 12th century, Vézelay Hill was a location of choice where, reaching a kind of peak, medieval Christian spirituality gave birth to a variety of different forms, ranging from prayer and epic poetry ('chansons de geste') to a crusade.*
Statement of OUV - Integrity	As part of the Statement of OUV, the official English translation will be provided eventually (see explanation above). The following is an unofficial English translation: *Vézelay, the 'Eternal Hill', fully retains the landscape characteristics of the site where its abbey was founded in the Early Middle Ages. It is dominated by the abbey church and the village, which sprang up around the abbey and its activities, ending at the foot of the slope. Beyond this, fields, meadows and forest extend all around.*

Focus on the HIA document

Title	 Vézelay Landscape Impact Area and wind turbine projects Original title: *Aire d'Influence Paysagère de Vézelay et projets éoliens*
Year of study	2017
Commissioned by	Bourgogne-Franche-Comté DREAL (Regional Directorate for Environment, Land Planning and Housing)
Author	Bourgogne-Franche-Comté DREAL, conducted with the support of DRAC (Regional Directorate of Cultural Affairs) and UDAP 89 (Departmental Union for Architecture and Heritage) and the Ministries of Environment and Culture
Format (No of pages)	PDF, 169 pages (including 60 pages of annexes)
Availability (online or contact)	www.bourgogne-franche-comte.developpement-durable.gouv.fr/aire-d-influence-paysagere-de-vezelay-et-projets-a7082.html contact: sbep.dreal-franche.comte@developpement-durable.gouv.fr
Purpose of Study **Proposed type:** **(a) Prospective study for development or spatial planning** **(b) Evaluation of status quo** **(c) related to specific project**	Type (a) prospective study for development planning The 'Landscape Impact Area' study in Vézelay was launched to address to the widely varying approaches found among the increasing number of projects starting to emerge in the area some 15 to 20 km away from the property. It aims to provide a complete and well-supported analysis as a basis for more objective consideration for each operation, and a comprehensive approach toadequate protection of the property, to avoid ad-hoc assessments. Stated objectives include: • serve as a benchmark for future decisions, • formalize the criteria, support claims, • propose a clear method to provide transparency and credibility for stakeholders • propose a method that is replicable in other cases *'The objective of the study was not to draw a 60-kilometer exclusion zone around Vézelay, but to try to find the right balance between the protection of the asset in terms of what it essentially contains, particularly in the light of its Outstanding Universal Value, and the development of the territory. Therefore, beyond this area, there is an area of lesser influence that could allow the development of wind power.' (Marechal, in:* Association of French World Heritage Sites *(2017): 22)*

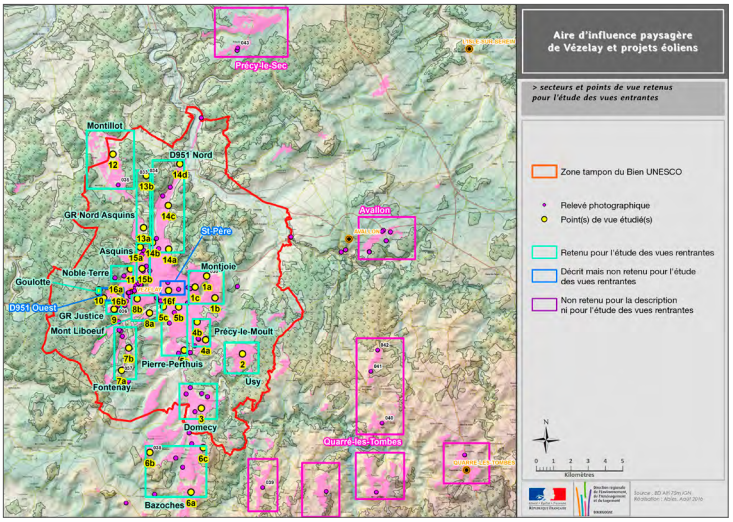
OUV 'translation'	 Landscape Vézelay. © Ministère de la transition écologique The authors translate the OUV into material assets and support choices with literary and historical evidence: Justification: Literary and poetic descriptions of the site and the views justify the identification of attributes, e.g. the visibility of the church or the hill (entering views), and the views away from the church, as well as spiritual aspects. Evidence of artists known to have worked or lived in the area support the sources. The site's significance also stems from being a part of the *Camino de Santiago*, which links it culturally and historically to other places in the area; places with visual links to the basilica are used as viewpoints in the study. Spatial translation of OUV criteria into visual assets: Criterion (i) covers the characteristic placement of the basilica on a hill. Therefore, the 'eternal hill' must remain intact. Criterion (ii) focuses on spirituality, mirrored in the heightened setting and in expressions of Catholic belief, i.e. places linked to the *Camino de Santiago*, and places for contemplation and meditation must be preserved. Priority views identified based on these criteria: • Incoming views: the hill's landscape qualities must be maintained. • Outgoing views: the spirituality of the site is conveyed by the majestic view over landscape from terraces, ramparts and cemetery. • Northern axis conveys the pilgrimage route.
Area under examination	The study examines a radius of 30 km around Vézelay.
Landscape analysis	Detailed description of physical characteristics of the wider setting highlighting the visual implications and views (hilly landscape and horizons, a valley surrounded by domed ridges, long views, long silhouettes, etc.). Less factual descriptions are quoted from the national landscape Atlas, *'Atlas des paysages de l'Yonne'*, with expressions like 'masterful' placement on the 'eternal hill'. A landscape block diagram shows Vézelay and four other towns to illustrate the description.

Identification of view points

Process in two steps:

A. Incoming views – focus on basilica:

- Calculation of church's visibility based on initial visibility study (viewshed study.)
- Cross-checking of visibility with routes, paths, *Camino de Santiago*, etc.
- Consideration of viewpoints identified in OUV-translation
- Onsite check of calculated/theoretical view points
- Selection of relevant viewpoints and grouping into sectors: out of an initial 100 viewpoints, 15 sectors were selected, each comprising one to three representative or 'priority' viewpoints.
- Sectors are described in terms of their sensitivity (moderate, high, very high) and prioritized and examined, one by one, applying the visual model and the visualizations.



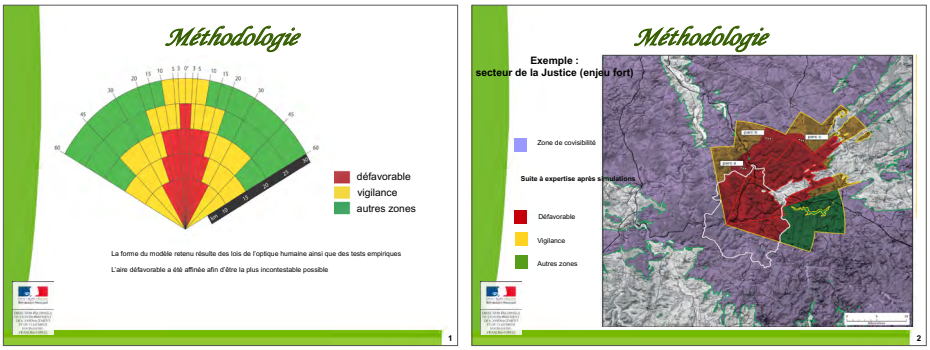
Choice of sectors and view points retained for the study of entering views, prioritized according to criteria concerning landscape characteristics (e.g distance), type of view, contribution to the OUV (cf. DREAL Bourgogne 2017: 16).

B. Outgoing views – focus on panoramic landscape views from the hill:

Three sectors identified based on OUV translation and visitation frequency: terraces, upper cemetery, northwestern ramparts – subsequently used for panoramic view analysis with visual model and visualizations of wind farms

Visibility study

The visibility or viewshed study is based on a digital terrain model. It helps identify relevant viewpoints, which are then also cross-checked against the reality on the ground. The authors describe this step as the 'theoretical calculation of the visibility' of the basilica or the potential turbines, which alludes to the potential areas for co-visibility of turbines. The visibility study also serves as a basic model for the visualizations of wind turbines. Given the relatively rough data of the terrain model, which does not consider any vegetation, the study applies a maximized zone of visibility. Likewise, the church height of 40 m was extended over the entire hill when examining incoming views.



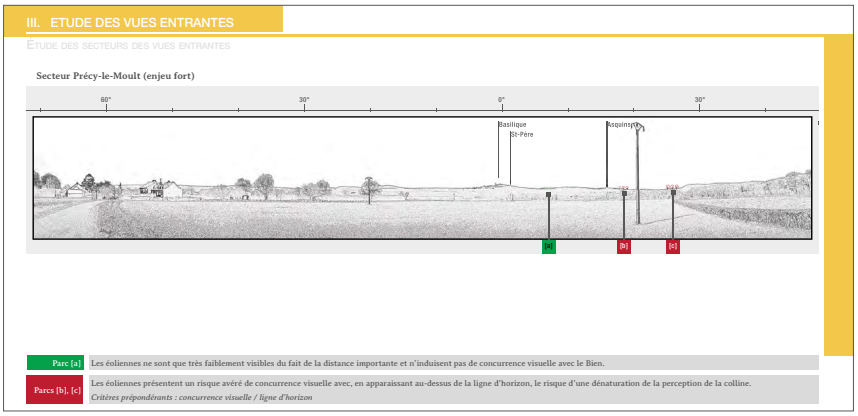
Methodological explanation of viewshed analysis.

Visualizations of wind farms

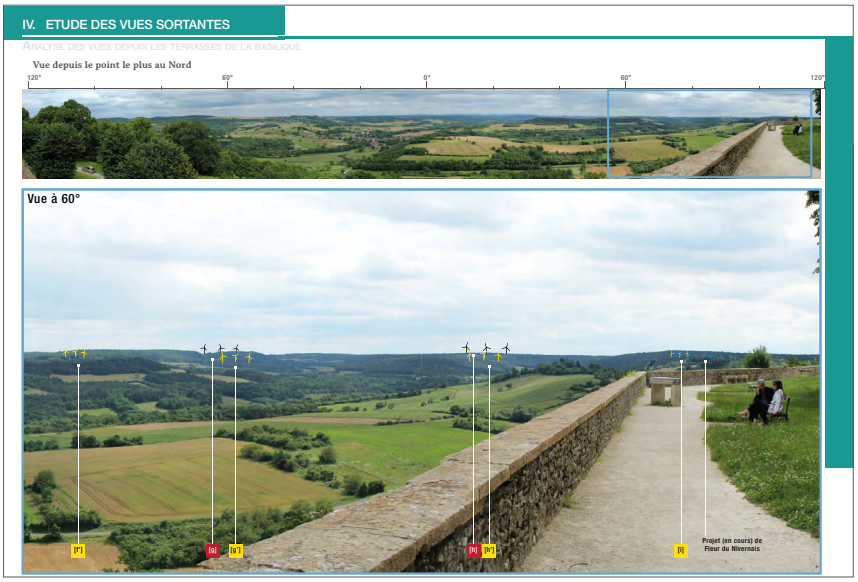
Virtual insertion of 180m-high turbines in the landscapes

The presentation of incoming and outgoing views is graphically distinct:

- Incoming views are shown in panoramic landscape views in computer-generated images that resemble carefully traced pencil drawings. What are known as 'wirelines' are based on a Digital Terrain Model and indicate the three-dimensional shape of a landscape in combination with additional elements (see also SNH 2017: 6, 29 ff). The landscapes in light grey are bordered by a line, which contrasts with the plain white sky. The background does not feature any softening atmospheric effects of a distant landscape.
  The landscape views are referenced according to the human view field model, with a central point at 0° – the position of the basilica – and 60° to both left and right.
  Within the landscapes, small graphic symbols for turbines, i.e. small sticks with a circle on top for towers and rotors, are placed in groups of three in the zoned landscape, outside the buffer zone. The colour of these wind farms (green, yellow, red) indicates the risk zone where they are located. An accompanying map with corresponding references helps the reader understand the visualized positions of the turbines. The groups are further marked by a coloured number referring to a short impact assessment in the table below.
- Outgoing views are rendered in photographic panoramic 'baseline' views, which highlight the view sections under examination and focus in the image below. The images contain graphic references to the assessments, similar to the incoming views. Wind farms are also represented by small groups of three turbines and placed in adjusted size into the landscape. Their position in front and colour in yellow or black contrast with the environment and make them stand out in the image, both below and above the horizon. Support maps help the reader understand the views and their respective geographic contexts.



Example of the depiction of an incoming view in a wireline image with references to the impact assessment stated below the image.



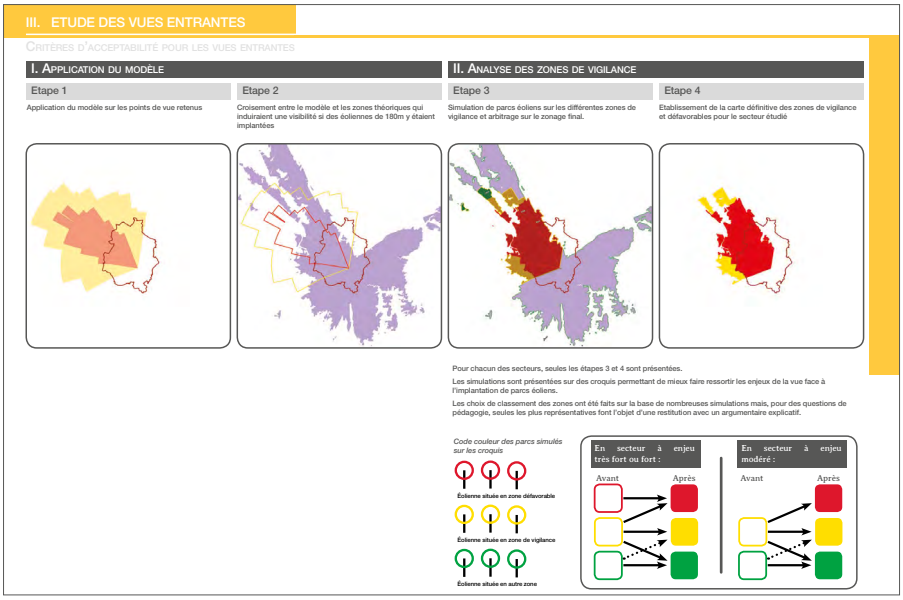
Example of the depiction of an outgoing view with panorama baseline on top and the view section focused on below, with graphic accentuation, colour code and reference to evaluation scheme.

Vèzelay study, DREAL Bourgogne 2017

Details on Visualizations	**Technical devices, hardware, software**	• Digital Terrain Model BD ALTI® 25 IGN: only topographic data were considered for the calculations (maximized visible zones); vegetation was considered in the simulations to check incoming and outgoing views (CORINE Landcover 2012) • WindPro 3.0 for the visibility maps and photomontages/turbine visualizations
	Selection of viewpoints and their presentation (criteria, quantity, etc.)	• Selection based on OUV and visitation frequency • Incoming views: 15 sectors with one to three viewpoints each (39 viewpoints in total) • Outgoing views: three sectors • Photographs with graphic marks, schematic images of landscapes with silhouette line, topographic maps
	Distances identified	For outgoing views, the maximum distances identified vary from 20 to 30 km depending on the importance of the sector to the OUV, i.e.: • From the terrace (high visitation frequency), the unfavourable 'red' zone reaches the optical limit of 20 km. Beyond that distance, turbines cannot be seen properly unless reinforced by accumulation, placement or night activity. • The view from the cemetery includes a historically significant and therefore particularly visually sensitive axis. The red zone reaches a distance of 25 km, followed by a yellow caution zone of 30 km. • The less sensitive sector of the ramparts reaches a maximum distance of 20 km.
	Data on wind turbines (height, capacity, blades, design, etc.)	• Hight limit: 180 m at blade tip • Placement: arbitrary: 'we placed wind turbines kind of everywhere' • Study considers an existing wind farm 20 km away and other wind farms in the planning phase.

Evaluation method and criteria

The analysis examines the incoming and outgoing views separately. From each viewpoint, the potential visual impacts are evaluated basis on acceptability and non-acceptability criteria. The results of both view directions are then combined into a single map showing acceptable and unacceptable placement areas for turbines.



Explanation of the application of the acceptability criteria, i.e. the steps leading to the evaluation.
Vèzelay study, DREAL Bourgogne 2017

Assessment in three steps:

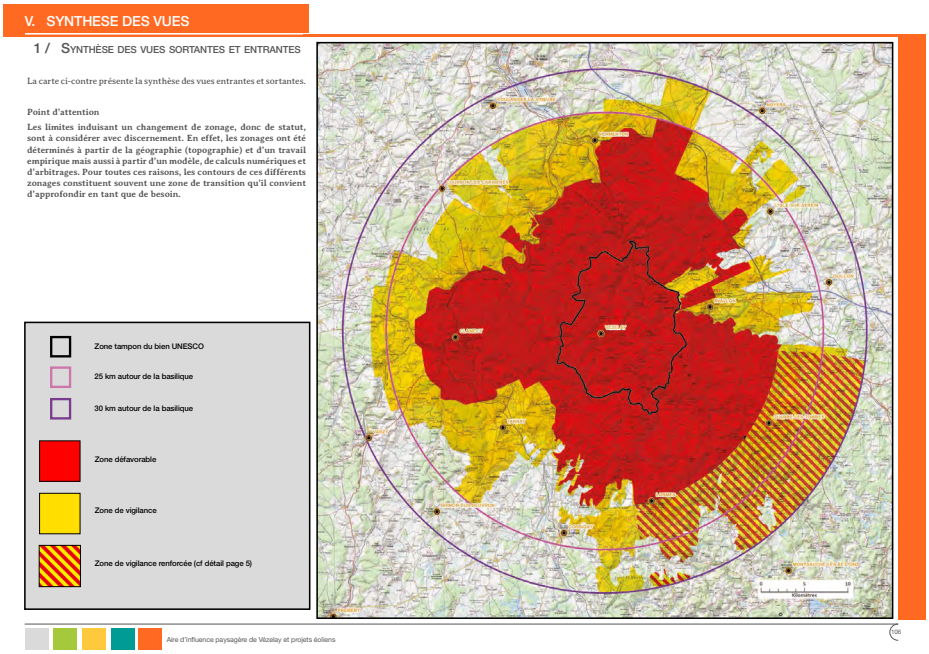
1. The acceptability or unacceptability criteria for incoming views are developed based on influencing factors in relation to the viewpoint, including angle of view, distance, visual competition, horizon and environmental impacts already in place. The impact is evaluated in two steps:

- a first step gives a rough indication of the zoning based on the two main influencing factors: angle of view and distance of the turbines. The results are shown in a graphic model of three coloured zones: 'unfavourable' (red), 'caution' (yellow) and 'other zones' (green)
- a second analytical step serves to refine the rough map. It includes more landscape-oriented criteria to further differentiate the red and yellow zones. The criteria include visual competition, scale, horizon, masking effects or pre-existing elements with environmental impacts.

2. The criteria for the outgoing views involve the broader landscape perception and do not focus on one major object. They include the scale, horizon, distance, changes of perspective or landscape organization. The analysis is conducted in two steps similar to the incoming views.

3. Finally, incoming and outgoing views are overlaid and provide a summary map of the LIA with exclusion or unfavourable, caution and increased caution zones. The rest of the perimeter is considered not to have any specific relevance to protection of the OUV and its attributes. However, a heritage impact assessment may be required to assess any impact on other potential factors not related to World Heritage values.

ICOMOS guidance (2011) is not mentioned as a reference, but the colour code to cross-check and assess impacts indicates some association.

Outcome/analysis	Differentiated map of the LIA with different levels of sensitivity, ranging from unfavourable to caution zones, but without favourable or low-impact zones  Synthesis of entering and outgoing views – AIP Study (2017) Vèzelay study, DREAL Bourgogne 2017 Well supported 'translation' of the assets of the OUV, identification of relevant viewpoints, and detailed photographic documentation of the property
Results	Transparent and clear methodology and criteria for replication and reference for HIAs in the region (project managers and assessment providers) Results feed into management
Feedback (given in the proceedings, see also Association of French World Heritage Sites, 2017: 42 ff)	• Praised for clarity and precision (e.g. ICOMOS) enabling a focused definition of the essential assets of the property • Some see the benefit of an LIA sudy in general as a means for the State to provide a necessary reference framework to support the case-by-case system for specific wind farm planning. It enables tailoring of a caution zone to the specific conditions of a site, as opposed to 30 to 40km zones that preclude any development. Others, however, consider LIA zones that tend to largely exceed a property's buffer zone to be too large and restrictive. • Wind power project manager: involvement of the wind sector would have enabled the use of more appropriate and up-to-date technical standards and equipment (e.g. higher performance versions of WindPro to create zones).
Lessons learned	Positive The methodology is explained in a clear and instructive way – this provides transparency and enables replication. Points for improvement • Visualizations: the technical assumptions about wind turbines and their arbitrary placement, as well as their graphic indications (circles, colours, sharp contrasts and pointers), intended to increase 'readability' rather than to provide 'realistic views' may be the subject of debate on good practices for visualizations. • Wording: strive for neutral wording, and avoid terms that may be read as biaised (e.g. 'parasitize' as a verb to designate visual interference or co-visibility).

Recommendations and lessons learned

The French case presents a variety of recommendations and challenges concerning the development of both heritage impact assessments and policy frameworks. As in the other cases, these points are not necessarily new, but are worth highlighting, and include the points listed below:

POLICY FRAMEWORK

- Create an inter-ministerial working group and cooperation between the sectors at the local level as well.
- Develop a guide for drafting impact assessments for wind farm projects, based on cases such as the French example, including World Heritage considerations in particular.
- Include special consideration for World Heritage in general requirements on all wind farm planning within sight of a World Heritage property.
- Develop a common language to describe landscape types and qualities to facilitate debates on potential impacts.
- Explore ways to seek economic inclusion or solidarity.
- Promote the quality of World Heritage properties as laboratories that foster advances in reproducible thinking and fieldwork that is further replicable.
- Promote HIAs as tools for iterative project development and to improve knowledge on ways to limit the impacts.
- Seek development of tangible and impartial elements for managers and enable examination of requests by government authorities (objective and sharable methodology).

HERITAGE IMPACT ASSESSMENT

- The study intends to be as clear and transparent as possible on the complex methodology. It gives detailed steps and approaches, supported by graphics and images. The instructive approach serves to set standards and pursues three goals: (1) the method serves to structure the process and make it understandable to readers, (2) it also helps formalize the work as much as possible, for the sake of transparency, and (3) it allows it to serve as a model for replication in other cases. (see also DREAL Bourgogne, 2017: 4). In terms of financial, technical and human resources, the production and regular updating of this complex study in other contexts will pose a challenge.
- The 'translation' of the key assets of the OUV is crucial in identifying and documenting the elements that make up the OUV of a landscape. In order to arrive at the most appropriate, balanced and broadly recognized definition, it is advisable to plan a consultation phase with other stakeholders on the composition of the elements.
- Improve cooperation between conservationists and project managers when preparing landscape assessments, to ensure the use of up-to-date technical equipment.
- Cross-check visualization approach with project managers and other stakeholders to align the standards of the technical and methodological framework.

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Archaeological Border Complex of Hedeby and the Danevirke

Germany

Introduction

In 2019, Germany featured 46 World Heritage properties, including 43 cultural and 3 natural sites. It is Europe's leading wind energy producer, with development peaking between 2014 and 2017. With a relatively high population density of 234 inhabitants per km^2, it is increasingly difficult for planning authorities to identify suitable areas for wind energy development due in part, as elsewhere in Europe, to challenges around acceptance. In recent years, developments came into conflict with World Heritage protection at more than 15 World Heritage properties and sites on the national Tentative List. Three of these conflicts were reported to the World Heritage Committee. In Germany, the protection of cultural World Heritage properties is based on an integrated planning system, involving all levels from the federal to the state, regional and municipal levels. Key legal instruments include the Spatial Planning Act (amended in 2017), the Federal Building Code and the various Monument Protection Acts of the 16 states of Germany.

The amendment of 2017 integrated World Heritage into the Spatial Planning Act of 2008, strengthening World Heritage protection at the national level, in addition to the fact that 'the important principles of land planning and the construction code apply in the framework of the protection of heritage in the planning and approval processes' (Davydov, 2017: 27). Cultural properties are often also covered by the Federal Nature Conservation Act ('*Bundesnaturschutzgesetz*'), such as with regard to landscape protection. The Nature Conservation Act is considered more stringent than the state laws and is therefore often applied as a supplemental legal support. As for the Monument Protection Acts, they exhibit many similarities, such as the definition of buildings (see also Davydov, 2017: 27), yet only five of these acts explicitly cite World Heritage as a particular asset for protection. Due to this 'dispersion', in 16 different Monument Protection Acts, some consider the legal protection of cultural heritage relatively weak.

The KNE stakeholder dialogue, described in detail above by the KNE, offered a vital first step for reconciliation between the opposing groups of the wind energy sector and World Heritage conservationists; it is therefore included in the 'Highlights' below.

Among the publicly available examples of heritage impact assessments produced in recent years, the preventive study presented as a case study in the table below focuses on assessment of the visual conditions of the setting of the recently listed Danevirke and Hedeby archaeological complex, located in the northern state of Schleswig-Holstein. At the time of its preparation, the site was still on the Tentative List as a *cultural landscape*. The Schleswig-Holstein Heritage Protection Office commissioned the study to document the visual sensitivities of the area to potential development areas and to inform the revision of the regional plan for wind energy. The study therefore does not go into detail on the analysis of the setting and its assets, and should not be considered a full-fledged HIA.

Energy transition and goals in Germany

The 2050 German Climate Protection Plan (*Klimaschutzplan 2050*), the national long-term strategy for climate protection, aims to transition to 100% renewables by 2050, and to increase the share of renewables to 65% by 2030. Recent statistics however indicate delayed development in 2018 and 2019. Currently in fact, Germany has the lowest development statistics since the adoption of the Renewable Energy Act in 2000. This had boosted the sector and brought development to a peak in the record years from 2014 to 2017. Yet today, the increase in the first half in 2019 is 86% less than in the first half of the previous year. In

2019, the total installed nominal capacity for onshore wind rose to over 53,161 MW, based on the maximum electrical capacity of some 29,250 wind turbines in Germany (see also Deutsche Windguard 2019). Renewable energy accounts for some 40% of electricity production, including 17% from wind power. In the first half of 2019, wind energy produced some 67.2 TWh, and became the leading energy source in the country, followed by brown coal (53.0 TWh), nuclear energy (34.7 TWh), stone coal (26.4 TWh), solar energy (25.1 TWh) and natural gas (24.6 TWh). The current slowdown in development puts the expected national and European climate targets at risk and concerns both politicians and the media– a trend also seen in other European countries. However, in view of these numbers, Germany remains at the forefront of renewable energy production in Europe in 2019.

Energy transition in Schleswig-Holstein

In the German context, the northern state of Schleswig-Holstein boasts the most wind turbines in relation to its size (Lower Saxony having the most in absolute numbers).

In general, the northern states with coastal territories produce over 40%, and together with the central regions of Germany, over 80% of the total power. In contrast, the southern states only make up around 15% of the total output.

Located between two seas, Schleswig-Holstein produces onshore and offshore wind energy and since 2016 has covered approximately 95% of its gross electricity consumption. In 2019, the state features over 3600 wind turbines, producing some 7000 MW (see also Deutsche Windguard 2019).

The state guides the development of wind energy through regional planning, i.e. the identification of concentration areas. It has three planning regions. The current versions of the regional plans for wind energy provide for the definition of priority areas for the development of wind energy. The second round of public consultations ran from August 2018 to January 2019. The input received from the consultation are being assessed and weighed for consideration and incorporation into a third draft plan. The third draft will then be made available online, possibly but not necessarily resulting in another public consultation round (see also website of the state of Schleswig-Holstein).

Policy highlights and support tools

Selected HIAs

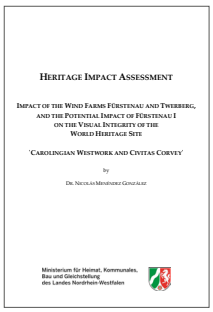
With a thorough and vigorous authorization procedure in place requiring a comprehensive planning process and a variety of assessments and documentation, recent years have seen a number of heritage impact assessments produced in the context of planning and authorization processes near World Heritage properties. The resulting court cases often required additional assessments and visualizations. However, only a few documents are publicly available online. These include site-specific 'preventive' studies, such as the influential view study of the Hanseatic City of Lübeck (2011), included in key aspects in the property management plan, identifying relevant visual relationships for consideration in wind farm planning. Another example here would be the comprehensive assessment instrument of the Upper Middle Rhine Valley of 2013. Commended by ICOMOS as a good practice thanks to its clear methodology (see also Decision 39 COM 7B.78), it became a model for a number of studies conducted after it. It came under criticism however, in particular by project managers, as too restrictive and 'theoretical', so a new integrated cultural landscape impact study is underway as part of the revised management plan. The draft update of the management plan is slated to be ready in the spring of 2020 (see also WHC/19/43.COM/7B.83). A number of Heritage Impact Assessments have been produced for specific wind farm projects near the Carolingian Westwood and Civitas Corvey, the latest in a series of four is available in English (e.g. Menéndez González 2017). They have proven that turbines did not have a negative impact on the OUV, based on a method considering both the Upper Middle Rhine Valley study as well as the ICOMOS Guidance of 2011.

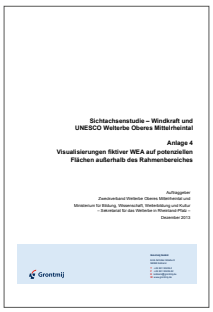
The stakeholder dialogue (KNE, Berlin)

The aim of the KNE stakeholder dialogue is explained in further detail with some of the results in the KNE section above. The dialogue prompted an exchange between the opposing parties and offered a neutral and protected platform for discussions and constructive dialogue. It tackled the points of conflict, identified weaknesses and proposed consensus solutions to improve processes and the compatibility of World Heritage and wind energy development. The joint recommendations aim to contribute to a stronger policy framework. They reflect the complexity of the issues. The potential for conflict may be greater in the German context, where state-level frameworks differ and in addition to

state-specific heritage laws, land use planning is also governed by different state or local regimes. Altogether, the stakeholder dialogue finds the legal and administrative instruments in place to reconcile World Heritage protection and wind energy development to be sufficient, meaning they need to be strengthened, rather than replaced or reinforced by new ones. It is striking that many of the matters raised in the dialogue show similarities with the challenges faced in other European countries, as evidenced, for instance, in the proceedings of the 2017 French seminar on 'Outstanding territories and the energy transition' (see also Association of French World Heritage Sites, 2017). The similarities offer opportunities to exchange experiences, in order to develop more user-friendly guidance for planning considerations. Besides the German publication on the KNE stakeholder dialogue, translations into English and possibly French may follow shortly. Moreover, a short video on the KNE website explains the objectives and outcome of the stakeholder dialogue to the global public, in German.

Heritage Protection Act of Schleswig-Holstein

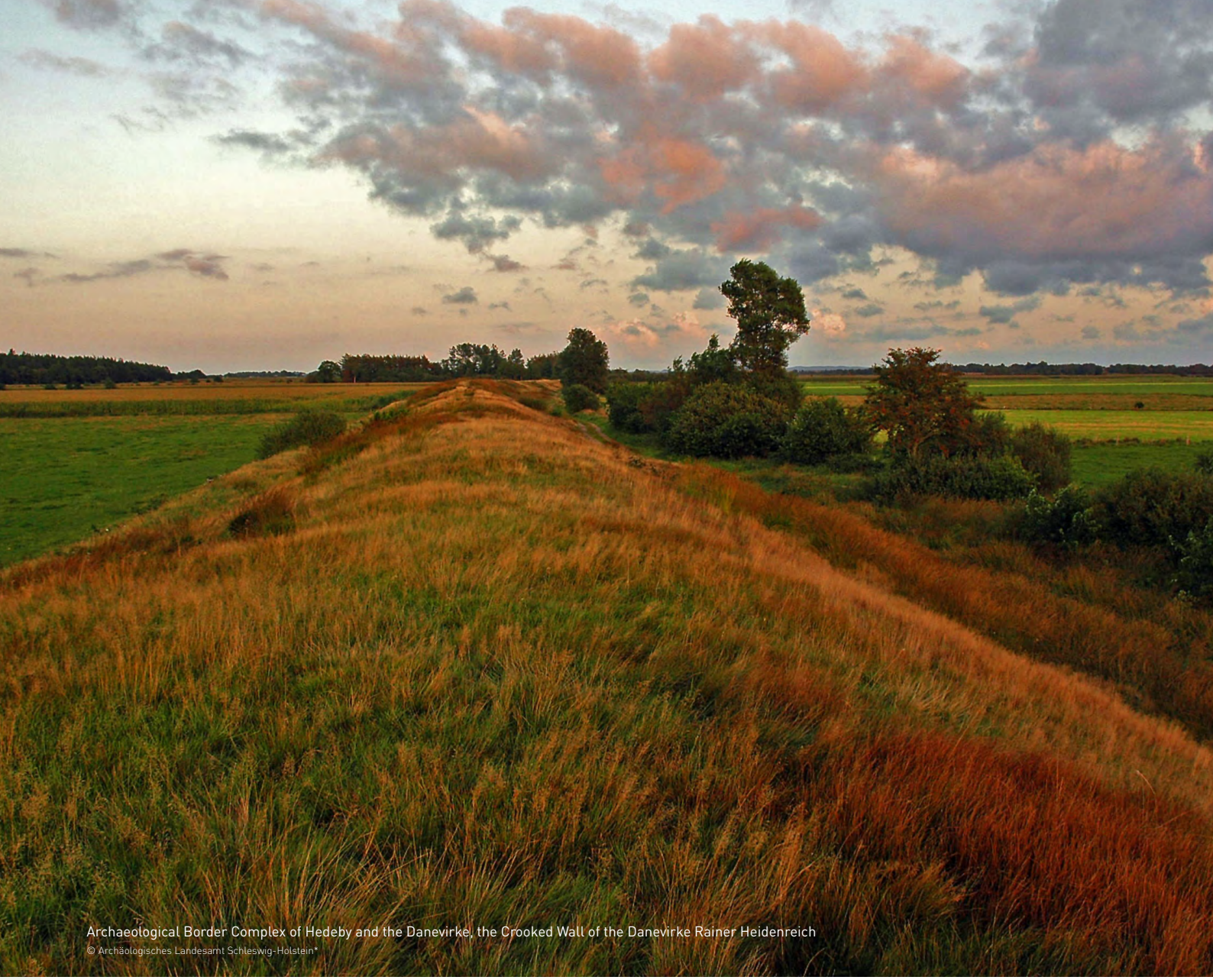




In terms of the level of detail in monument preservation law, Schleswig-Holstein has the most nuanced legal protection for World Heritage in Germany. It is one of the five states that mention World Heritage explicitly, and the only state where the law goes into detail and defines roles and responsibilities, including management and the involvement of parties in planning and authorization procedures. It is the only heritage law stipulating that in the context of public planning and measures, cultural heritage, including buffer zones and sight lines, must receive the same consideration as protection of the OUV (see also Davydov, 2017: 29). It is therefore considered the strongest instrument among the heritage laws of the states of Germany with regard to World Heritage conservation. However, just as with the other laws, it is naturally embedded in the broader federal legal framework.

Management plan and website of the property

Both the management plan and the website of the property are being updated. The 2013-2017 version of the plan provides detailed information on protection structures and responsibilities as well as on the visual importance of the wider setting. With regard to wind energy development, the section on annual protection goals and measures states that the wider setting should be kept 'free of facilities that are visible from afar, such as wind turbines' (ALSH, 2013: 14).



Archaeological Border Complex of Hedeby and the Danevirke, the Crooked Wall of the Danevirke Rainer Heidenreich

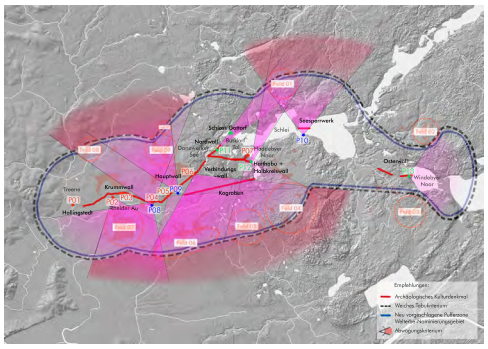
CASE STUDY:
Archaeological Border Complex of Hedeby and the Danevirke

General information on the property

Property name	Archaeological Border Complex of Hedeby and the Danevirke
Year of listing	2018
Criteria	(iii), (iv)
'Type' of site and landscape setting	Archaeological serial site, remains of Viking trading town and defensive structure, spatially linked elements (earthworks, walls, ditches, settlement, cemetery, harbour), 8th to 11th centuries
Area of property	227.55 ha
Area of buffer zone (ha)	2,670 ha
Total area (ha)	2,897.55 ha
Other national zoning applied for the protection of the property	In addition to the buffer zone, the authorities have defined a protection perimeter of 5 km around the property. It is included in the regional plan. The study uses three different terms to refer to the perimeter: 'protection perimeter' (German 'Umgebungsschutz'), 'soft taboo criterion' (a term used in German regional planning) and distance buffer ('Abstandspuffer'). The study develops an alternative buffer zone based on the 5km protection perimeter. The newly proposed perimeter adapts the distance to the actual visual relationships by increasing or decreasing the distance. The proposal merges the buffer and the adjusted 'protection perimeter' into one. Although the maps in the nomination file and in the current version of the regional plan for wind energy development (3rd consultation round in 2019) do not show the newly recommended buffer zone, it may still be considered in the revised regional plan and in the management of the property.
Statement of Outstanding Universal Value (SOUV) - criteria	*Criterion (iii): Hedeby in conjunction with the Danevirke were at the centre of the networks of mainly maritime trade and exchange between Western and Northern Europe as well as at the core of the borderland between the Danish kingdom and the Frankish empire over several centuries. They bear outstanding witness to exchange and trade between people of various cultural traditions in Europe in the 8th to 11th centuries. Because of their rich and extremely well preserved archaeological material they have become key scientific sites for the interpretation of a broad variety of economic, social and historic developments in Viking Age Europe.* *Criterion (iv): Hedeby facilitated exchange between trading networks spanning the European continent, and – in conjunction with the Danevirke – controlled trading routes, the economy and the territory at the crossroads between the emerging Danish kingdom and the kingdoms and peoples of mainland Europe. The archaeological evidence highlights the significance of Hedeby and the Danevirke as an example of an urban trading centre connected with a large-scale defensive system in a borderland at the core of major trading routes over sea and land from the 8th to 11th centuries.*
SOUV - Integrity	Hedeby and the Danevirke encompass archaeological sites and structures of the 6th to 12th centuries, which represent a trading town and an associated defensive wall complex. The area includes all elements that represent the values of the property – the monuments and ramparts, locations of significance, and all the archaeological remains that embody the long history of the Hedeby-Danevirke complex. The components representing the Danevirke reflect the stages of construction and the evolution of the defensive works, as sections were reconstructed and new portions of walls were built. The buffer zone is a protective and managerial entity that preserves important viewsheds and ensures that the core elements of the area will be maintained for the future.

Focus on the HIA- document

Title	 Assessment of the impact of planned wind turbines on the visual integrity ofpotential World Heritage property 'Archaeological Border Complex of Hedeby and the Danevirke' *Original title: Untersuchung der Auswirkungen geplanter Windenergieanlagen auf die visuelle Integrität des potenziellen Welterbes ‚Archäologische Grenzlandschaft von Haithabu und Danewerk'*
Year of study	2017
Commissioned by	Federal Archaeological Office of Schleswig-Holstein (responsible for site management)
Author(s)	Michael Kloos Planning and Heritage Consultancy in cooperation with V-cube GbR
Format (No of pages)	PDF, 43 pages
Availability	https://www.schleswig-holstein.de/DE/Landesregierung/ALSH/Welterbe/pdf/sichtfeldanalyse.pdf?__blob=publicationFile&v=2
Purpose of Study (proposed typology): **Prospective study for development or spatial planning** **Evaluation of status quo** **Related to specific project**	Type (a) prospective study for regional planning purposes • Declared objectives: • Documentation of visual relationships relevant to the OUV • Recommendation for an appropriate buffer zone based on the preliminary 5km protection perimeter • Assessment of the possible impact of potential areas suitable for wind energy on the OUV, to inform the revision of the regional plan for wind energy development • Provision of a 'legally incontestable' and binding basis for appropriate protection of the property's visual integrity The study focuses on visual assessment of the setting. It was not commissioned as a 'full-fledged' HIA according to the ICOMOS Guidance. Parts, such as the landscape asset analysis and the explanation of the evaluation criteria, are given in condensed form. For technical information on approaches and methods, the authors refer to the HIA on the 'Heumarkt Neu' construction project in the *Historic Centre of Vienna* World Heritage site (see also Kloos 2019).
OUV 'translation' into attributes that convey OUV and description of setting	The authors refer to the landscape quality of the property and the interrelations between the elements and the surrounding landscape to justify the need to maintain an undisturbed visual setting and to expand the buffer zone accordingly. Besides the *historic testimony* of the setting, the study found that the visual interrelations between the elements are also important for *contemporary appreciation*.
Area under examination	The Archaeology Office of the state provided the geographic scope of the study, encompassing the protection perimeter as well as the nine nearby search fields for potential suitable areas for wind power development. Search fields sometimes overlap with the protection perimeter. The area spans some 36 km x 20 km (720 km2).
Landscape analysis	The Chapter 'Notes on Danevirke and Hedeby' briefly describes the main elements of the serial archaeological site, their positions, dimensions and historical functions, as well as their remains. The sites are presented individually, rather than as part of and in relation to their common landscape setting. The notes attest to the cultural and historical relevance of the elements as a basis for subsequent classification of the viewpoints. The chapter is illustrated with a selection of maps and photographic material, as well as a historic view from the 19th century.

Identification of viewpoints	 The summary table of results with view points and search fields. The sensitive views are marked in pink and reach beyond the proposed buffer zone. The map also serves to illustrate the recommendations. © Michael Kloos Planning and Heritage Consultancy The Federal Archaeology Office provided a number of viewpoints, which the authors classify into 'relevant' or 'more relevant' views. Initial desktop studies and a site visit along with two experts from the Danevirke Museum and the Federal Archaeology Office helped select 13 relevant viewpoints for the visualizations. These were grouped into three different sight categories: (1) view from Danevirke to the south, (2) view to the north onto the Danevirke, (3) sight from the Danevirke to the north.
Visibility study	The visibility study is the core of the document and is referred to as such, e.g. in the regional plan.
Visualizations of wind farms	 Overview of visual analysis. © Michael Kloos Planning and Heritage Consultancy The authors explain the three steps in the development of the visualizations: 1. Desktop assessment of visualizations in a 3D computer model a. Inclusion/referencing of potential wind turbines and search fields for suitable areas in a computer model b. A visual field analysis gives an initial rough idea of the potential impact of wind farms. In the absence of specific wind farm plans, the authors assumed a 'worst-case scenario', installing the maximum number of wind turbines in the potential suitable areas. 2. Onsite visit for digital documentation of the viewpoints: The expert team took GPS-referenced 360° digital panorama photographs to document the 13 viewpoints, enabling consideration of all potential suitable areas from each viewpoint. 3. Inclusion of photographic data in the virtual 3D computer model: based on the geo-referenced data from the digital photos, the computer produces similar panoramic pictures. This enables overlapping of the virtual images with the photographic images and production of the visualizations of potential turbines. Graphic enhancement: • Turbines are graphically contrasted (darkened or highlighted) to increase their visibility against the background of a misty winter landscape, considered too blurry for visualizations. The authors recommend bright summer skies and a clear view for photomontages. • Individual rotors are surrounded by a light white circle and their positions vary: some are upfront, and some turned to the side in half or full profile. Red circles mark the wind turbines or wind farms, to focuse on in the image; in case they pose a potential risk to the visual integrity of the property, an additional 'potential risk' note ('Gefährdungspotential') is inserted in the photo.

Details on Visualizations	**Technical devices**	The study does not provide any specifications on the technical devices or photographic details used. However, in background exchanges for this document, the authors stated that the digital panoramic photos of the visualizations are made up of multiple individual photos ('stitching'). The core photo has a focal length of 35 to 50 mm, which corresponds to the angle of the human eye. The team did not use WindPro.
	Selection of viewpoints and their presentation (criteria, quantity, etc.)	The 13 viewpoints used for the visualizations are marked on a map of the property along with the potential suitable areas. However, the geographic overview lacks reference and a scale (see also Figures 7.1, 8.1, 9.1). The photomontages, one or two per viewpoint, graphically show the potentially visible turbines in the suitable areas in the background. Below the visualizations are short descriptions of the location, the observed visual effect and its evaluation based on the scale proposed in the ICOMOS guidelines (neutral/low to very high negative impact). Above the photomontages, panoramic views show the specific context and mark the view section.
	Distances identified	Aside from the overall dimensions of the area (36 km x 20 km), only approximate distances are mentioned, e.g. referring to the fact that negative visual impacts could also occur beyond a distance of 5 km.
	Wind turbine data (height, capacity, rotor blades, design, etc.)	• The authors based their visualizations on the technical data provided by the Federal Archaeology Office: hub height: 149 m, rotor diameter: 120 m, total height/blade tip: 200 m. • The study gives other potential technical details for the turbines, including the adjustable triple blades, the coating in matt grey to prevent light reflection, the position and design of the daytime and nighttime markers in terms of colour (grey, red, orange-red) and (flashing) lights. However, since these specifics were not definitive at the time of the study, and due to the inability to include them in a printed report, the authors noted, for the impact assessment, that optical effects would be greater in reality.
Evaluation method and criteria		The authors identify two main factors for the assessment: 1. Quality of the viewpoint: within the relevant viewpoints provided, the authors classify their quality as 'high' and 'very high' according to their cultural-historical significance, visitation frequency and the quality of the landscape experience. 2. Visibility of the turbines from a viewpoint in terms of extent, scope and distance: the impact may vary depending on how much of the turbine is visible, the number of visible turbines, and the distance from the property. The study mentions three 'assessment criteria', but no baseline or measurement to evaluate an effect. The names of the criteria ('technical dominance of the landscape image', 'visual dominance' and 'distortion of the landscape scale') describe negative impacts rather than neutral evaluation criteria. The authors apply the ICOMOS assessment scale to weigh the factors for the evaluation. Accordingly, the scale includes five levels to indicate the significance of an effect or overall impact: neutral, slight, moderate/high, high/very high, very high.
Outcome/ analysis		Seven of the nine potential suitable areas are considered problematic, and plans for the development of a specific wind farm project in these areas will require an impact assessment. The potential risk of a negative impact exceeds the 5km protection perimeter in most cases. The authors list four recommendations in a summary map: (a) adjustment of the existing '5km protection perimeter', increasing and decreasing the area where applicable for its definition, (b) transformation of the perimeter into the buffer zone, (c) integration of sight corridors into the new regional plan, (d) consideration of visual relationships in management.
Results		The visual study feeds into the current revision of the regional plan for wind energy in Schleswig-Holstein. The second draft plan gives a detailed exclusion zone for the development of wind energy at a distance of 3 to 5 kilometres around the World Heritage property, according to the specifications of the 'visual study' (see also General Planning Concept of the second draft of the partial update of the regional development plan and regional plans I to III (topic: wind energy), (2018), point 2.4.2.14 (p. 43f.). The regional plan concluded a second consultation round in January of 2019, and the revision is underway. The visual study will further inform management of the property, particularly in view of the current update to the management plan.

Feedback	not available
Lessons learned & observations	1. Positive lessons Integration of a visual protection area and sensitive sight corridors into regional planning and management is an efficient proactive means to achieve transparency and increase planning reliability. 2. Points for improvement • Be mindful of clear and neutral terminology and wording, to provide a tool for all parties: assessment criteria, etc., should be defined in a neutral way, and a glossary may help clarify terminology. • Visualizations: the authors made a number of decisions, which could be used to develop a good practice for visual representation of wind farms, e.g. considerations related to the graphic indication of turbines, adequate choice of visual conditions (e.g. worst-case scenario?), and appropriate assumptions for technical factors. • Maps and photos should always provide basic information, such as scale, focal length, etc. Observations: The property was listed as an archaeological complex in 2018. The study still considers it to be a cultural landscape. The text of the regional plan states that this change does not affect the results of the study.

Recommendations and lessons learned

The German case yields a variety of lessons learned and recommendations concerning both the development of heritage impact assessments and the policy frameworks, including the points below:

POLICY FRAMEWORK

- Foster stakeholder dialogues as a platform to develop solutions that adequately address to the variety of positions and challenges at play in the development of wind energy in a way that is compatible with World Heritage protection;
- Initiate a process to develop a framework for a good technical practice for visualizations, bringing together experts and practitioners from World Heritage protection, the relevant authorities and the wind energy sector;

HERITAGE IMPACT ASSESSMENTS

- This preventive study focuses on assessment of the visual aspects of the property and the wider setting. As for the management plan, further specification of the property's OUV, attributes and wider setting was not necessary for the recently listed site, and would have required additional resources. Dedicated documentation provides a sound basis for impact assessments and monitoring, including on relevant criteria and the status quo. It provides a key reference that informs planning and project considerations.
- Consider protection of the visual integrity of a property at an early stage, ideally during preparation of a nomination file, when it is still on the Tentative List. This requires proper documentation and justification to adequately inform management, regional planning and authorization processes. This documentation increases transparency around OUV protection needs, as well as planning certainty, and ensures timely attention to relevant planning considerations.

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Heart of Neolithic Orkney, Ring of Brodgar.

United Kingdom of Great Britain and Northern Ireland, focus on Scotland

Introduction

The United Kingdom of Great Britain and Northern Ireland (UK) featured 32 World Heritage properties in 2019, including four natural and one mixed property. Ten sites also appeared on the national tentative list. It is not clear how many of these properties have been affected by the development of wind energy to date, but given that quite a few are located near coasts with favorable conditions for renewable energy, in particular wind energy production, past interferences are likely.

We can highlight two major cases. In 2014, plans for wind turbines near the natural property of Dorset and East Devon Coast in southwest England had to be abandoned due to concerns over their potential negative impact on the visual integrity of the site better known as the Jurassic Coast (see also https://whc.unesco.org/en/news/1365). Another case, near the Heart of Neolithic Orkney property in Scotland, caught the attention of the World Heritage Committee in 2008 (see also Decision 32COM 7B.118). In response to offshore wind farm plans in visible proximity, the authorities commissioned a setting study. It is described in the table below due to its high quality.

Within the UK, heritage conservation falls under the responsibility of the devolved governments and dedicated services of Northern Ireland, Wales, and Scotland. Energy and climate change policies are also mainly or partly devolved, although the UK government retains control over many areas of energy policy areas as well as some other key policy areas, which provide emission reductions (Department for Business, Energy and Industrial Strategy, 2019: 7). To provide background for the setting study described**,** this chapter focuses on the policy and heritage context in Scotland, considering the broader UK scope as a framework.

The energy transition in Scotland stands out not only in the UK context but also internationally, with its ambitious emission targets and record-breaking figures for power generation by renewables in 2019. Within Scotland, Orkney is a centre of progress and is known for abundant power production. Its rapid development over the past 15 years has been guided by a comprehensive and ever evolving policy framework, supported by a wealth of hands-on guidance in all relevant fields, including heritage and landscape protection. A selection of the documents is provided under 'Highlights' below and illustrates their informative and helpful quality, in particular for planners and project managers.

Energy transition and goals in the UK and Scotland

The Climate Change Act commits the UK government by law to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. This includes reducing emissions from the devolved administrations (Scotland, Wales and Northern Ireland), which account for about 20% of the UK's emissions. The original Climate Change Act 2008 was the first legally binding document of its kind in the European context. The policy lays out the UK's approach to tackling and responding to climate change. It requires both reduction of greenhouse gases and preparedness for climate change risks. The Act also established the Committee on Climate Change (CCC), a body of independent experts, to advise on and monitor action and ensure evidence-based and independent emission assessments.

In June of 2019, the UK government increased its emission targets, following the advice of the CCC's 2019 report 'Net Zero – The UK's contribution to stopping global warming'. According to the same report, Scotland had even greater relative emission reduction capacity, so the Scottish target of 100% net zero for all greenhouse gases could be strengthened from 2050 to 2045, i.e. carbon neutrality by 2040. The change was quickly incorporated into Scottish law with amendment of the Bill of May 2018, which replaced the *Climate Change (Scotland) Act* of 2009. Moreover, a 'Just Transition Committee' was created to provide advice on a fair and socially sustainable transition. The government's website refers to world-leading climate change legislation, and states that the Scottish 'contribution to climate change will end, definitively, within one generation' (https://www.gov.scot/policies/climate-change/, last consulted on 17.11.2019).

As a consequence, the Scottish Climate Change Plan of February 2018, with policies and proposals to meet the targets in the period from 2018 to 2032, is in the process of being updated. Along with the vision of the Scottish energy strategy of December 2017, the Climate Change Plan provides the strategic framework for Scotland's transition to a low-carbon economy – reducing greenhouse gas emissions whilst maximizing social and economic opportunities (Department for Business, Energy and Industrial Strategy, 2019: 8).

In the first half of 2019, energy generation reached over 9.8 million MWh, enough to provide over 4.47 million homes with electricity (see also https://www.cnbc.com/2019/07/15/scotland-has-produced-enough-wind-energy-to-power-its-homes-twice-over.html). This is almost double the actual number of homes in Scotland. The surplus power was supplied to homes in northern England. Therefore, the country had exceeded the 2020 target of generating 100% of its electricity demand from renewables. It is on track for the 2030 target, currently under revision, to meet 50% of its heat, transport and electricity consumption from renewable energy and for the 2050 target (to be revised) to completely decarbonize the Scottish energy system. Onshore wind energy remains a dominant source in Scotland, where a diverse range of renewable technologies are under development, including hydro, offshore wind, biomass, solar and tidal energy. Accordingly, Scotland enjoys a leading position in the UK's renewable energy market: it is home to over half of the onshore wind turbines, and generates some 25% of the UK's renewable energy.

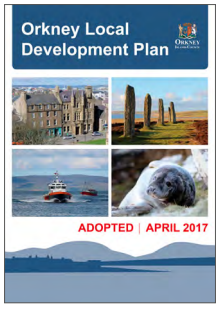
Energy transition in Orkney

Within the Scottish context, the Orkney archipelago, with some 20 populated islands and numerous uninhabited reefs and islets, has become a pioneering region in renewable energy generation and technological development. The media refer to a veritable tech revolution underway in Orkney, spurred by abundant power production from wind, wave and tidal generators. Meanwhile, Orcadians are striving to find ways to transform and store generated electricity with technologies such as hydrogen, and the area is increasingly shifting to a low-carbon energy system, abandoning fossil-powered machinery in favour of electrical devices, to optimize use of the generated energy without loss. This shift is characterized by major wind farms, as well as hundreds of community-owned micro-wind turbines and burgeoning smart grids and electric car networks.

Policy highlights and support tools

As mentioned above, a remarkable and dynamic framework of policies and guidance is supporting a rapid transition towards a CO2-neutral future in Scotland. This is recognized beyond its borders in England and Ireland, and taken as inspiration (see also Harvey and Moloney, 2013). No less remarkable are the authorities tasked with the management of heritage conservation, who contribute a great deal to the quality of the development. The section below describes not only the relevant plans and advice documents, but also three dedicated agencies, and registered charities.

2017-2022 Orkney Local Development Plan



The Orkney Local Development Plan (OLDP) is the main planning document for the Orkney Islands. It is aimed at *'strengthening and supporting Orkney's communities by enabling developments that will have a positive and sustainable socio-economic impact, and utilizing locally-available resources, whilst striving to preserve and enhance the rich natural and cultural heritage assets upon which Orkney's economy and society depend.'* (OLDP, 2017: 1). This presents a leading vision for the next 10 to 20 years, and sets out 15 policies to support implementation, including for Energy (Policy 7) and Historic Environment & Landscapes (Policy 8).

Policy 8 of the OLDP states the main principles of the specific planning considerations for the Heart of Neolithic Orkney, which is based on the findings of the 2008 setting study:

> *Development within the Inner Sensitive Zones will only be permitted where it is demonstrated that the development would not have a significant negative impact on the Outstanding Universal Value of the World Heritage Site or its setting.*
>
> *Development will not be permitted where it breaks the skyline at the sensitive ridgelines of the World Heritage Site when viewed from any of its component parts, or where it will be sited in any location where there is the potential to impact upon the World Heritage Site, unless it is demonstrated that the development will not have a significant negative impact on either the Outstanding Universal Value or the setting of the World Heritage Site.*

The local authority developed the OLDP in a comprehensive consultation process, which also involved the public bodies responsible for cultural heritage (Historic Environment Scotland, HES) and natural heritage (Scottish Natural Heritage, SNH). Both the HES and SNH have, on their own, published complementary guidance and planning considerations for the historic environment and landscapes, to support implementation of the OLDP and its energy goals. The plan is subject to regular revisions and should be updated every five years.

The local authority provides Supplementary Guidance and Planning Policy Advice to further explain the policies and facilitate their interpretation and application. These tools also undergo full public consultations, and once approved, become either a statutory part of the OLDP with the same material weight as the policies (Supplementary Guidance) or a 'material planning consideration' with less weight than the plan, but with a requirement to be taken into consideration (Planning Policy Advice).

Supplementary guidance: historic environment and cultural heritage (2017)

This guidance document contains all key information needed to understand the planning process as it relates to the historic environment and cultural heritage sites in general, including but without focusing on World Heritage. In fact, the previous OLDP contained a separate policy for World Heritage, and this wording has been kept in the new combined OLDP. This is intended to show how the Orkney Islands Council administers Policy 8 and includes information on legal frameworks and specific policies. The main part explains the steps and relevant considerations in the consent process for development plans that may impact the historic environment and cultural heritage. These steps, described in Chapters A to E, parallel those of Heritage Impact Assessments and include identification of heritage assets affected by development, as well as means to mitigate any loss of significance.

The structure, language and illustrations reflect the documents' objective of providing a user-friendly and transparent instrument to the target public, i.e. planners, developers, assessment services and other stakeholders. Additional notes at the end of the document provide details and references for the sub-chapters, e.g. regarding guidance for cultural heritage impact assessments. In sum, the document comprehensively guides the reader through the planning process, offering 'a valuable reference guide as well as a policy document¡ (Orkney Islands Council, 2017: 6).

Planning policy advice: historic environment (topics and themes)

The specific planning considerations for the World Heritage property of the Heart of Neolithic Orkney are described in the Planning policy advice: historic environment (topics and themes) of 2017. This includes maps showing the Inner Sensitive Zones and sensitive ridgelines, as worked out by the 2008 setting study. In fact, the sensitive zone is plotted directly onto the property's buffer zone, despite the different terminology. In line with the key aim of the management plan of the property, the brochure strives to provide developers with clarity at an early stage, to manage the potential impact of development on the wider setting of the World Heritage property optimally and enable adequate quality in development. Aware of the risk, the authors point out that the document is by no means intended to 'stifle change or restrict progress unnecessarily' (Orkney Islands Council, 2017: 13). Considerations should supplement the guidance published one year earlier, in 2016, by Historic

Environment Scotland: 'Managing change in the historic environment: World Heritage' (see below).

Historic Environment Scotland

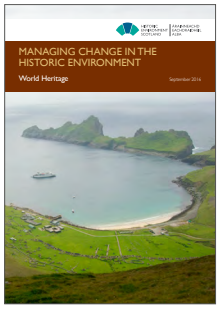
Historic Environment Scotland is the leading public body responsible for investigating, caring for and promoting Scotland's historic environment, including the six World Heritage properties. It helps implement Scotland's strategy for the environment, 'Our place in time' from 2014, seeking to better anchor heritage matters in society and planning. Founded in 2015 as a result of a restructuring in the sector, it provides best-practice advice and has produced important guidance for the local development plan and the development of wind energy in particular. It contributes to the Scottish government's strategy to tackle climate change and reduce C02 emissions.

Historic Environment Policy for Scotland (HEPS) (2019)

The Historic Environment Policy for Scotland (HEPS) explains the underlying principles and sets out how to approach decisions in the planning system affecting the historic environment. This document should be used alongside policies and is meant to support and enable good decision-making around changes to the historic environment.

> *'Good decision-making takes into account all aspects of the historic environment and the different ways people value it. Good decision-making is transparent and open to challenge and recognizes that a wide range of factors can affect the historic environment in different ways. Changes might support its long-term survival, impact on its current management or even give us new information to improve our understanding of it. It sets out a series of principles and policies for the recognition, care and sustainable management of the historic environment. It promotes a way of understanding the value of the historic environment, which is inclusive and recognizes different views. It encourages consistent, integrated management and decision-making to support positive outcomes for the people of Scotland. It also supports everyone's participation in decisions that affect the historic environment.*
>
> *HEPS helps to deliver the vision and aims of 'Our place in time'. It takes into account principles that the UK and Scottish governments have agreed to in international charters and conventions on cultural heritage and landscape.'*

Managing change in the historic environment: World Heritage (2016) and setting (2016)



Managing change is a series of non-statutory guidance notes on managing change in the historic environment in accordance with the Scottish planning policy and the HEPS. This series of over 20 issues dedicated to specific topics includes one on World Heritage and one on the setting. The series gives particular attention to the assessment of change, the considerations and the steps to be taken. The World Heritage issue explains the legal and policy framework, and both provide additional links and references to elaborate on the topics. The advice notes have a practical approach and guide the reader through the process, pointing out matters to be aware of and solutions to adopt depending on the situation, e.g. in case an intervention is likely to impact the setting of a World Heritage property. Each issue is less than 20 pages and is intended to complement documents for the Supplementary guidance.

The short guides on World Heritage in Scotland (2019)

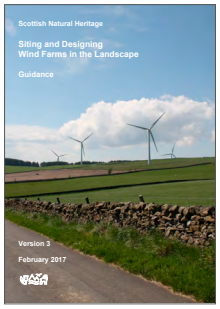
The 'Short guide' series covers all six World Heritage properties in Scotland. It was updated in 2019, and now also includes a general Short guide on World Heritage in Scotland. Each brochure comprises 10 to 14 pages, and clearly and concisely compiles all relevant information on the sites, including the Heart of Neolithic Orkney World Heritage site. In addition to explanations on the Convention, the OUV, the buffer zone, etc., it also provides full details on management structures and responsibilities, as well as a list of relevant policy and guidance documents. It concludes with contact details and links to further details on certain aspects (e.g. on the World Heritage Convention). The guides provide vital information in a way that is succinct and easily accessible for all stakeholders. This conveys a spirit of transparency and credibility as key assets for proper conservation of the historic environment.

English Heritage: Wind energy and the historic environment (2006)

English Heritage is a charity in charge of managing England's broader heritage, including the listing system and dealing with planning matters. It published a booklet in 2006 entitled *Wind energy and the historic environment*. Although many facts may be outdated today, e.g. the technical dimensions of wind farms and policy references, this short publication of 12 pages provides a good overview of the planning and policy framework in place at the time. It also closes with a list of best practices for wind energy development in the historic environment. The list is based rather general principles that also apply in contexts outside of England.

- *The implications for the historic environment of wind energy developments should be reflected in regional spatial strategies, local development frameworks, and supplementary planning documents.*
- *The effects of wind energy programmes and projects on the historic environment should be evaluated at all levels of an environmental impact assessment.*
- *Consideration of the historic environment should include World Heritage sites; marine, coastal and terrestrial archaeology; historic buildings and areas; designed landscapes; and the historic character of the wider landscape.*
- *The significance of internationally and nationally designated sites should be safeguarded, and physical damage to historic sites should be avoided.*
- *The impact of wind energy developments on the setting and visual amenity of historic places should also be considered.*
- *Where wind energy developments affect historic sites, national planning policies on the historic environment should be taken into account.*
- *Consideration should always be given to the reversibility of wind energy projects.*

Scottish Natural Heritage



Scottish Natural Heritage (SNH), rebranded as NatureScot in May of 2020, is the public body responsible for Scotland's natural heritage, especially its natural, genetic and scenic diversity. With the aim 'to get the right development in the right place', the SNH has developed a wide array of guidance notes to support the government's goals, particularly in terms of reducing the country's carbon footprint by maintaining the quality of the landscapes as a core part of the Scottish identity. The advice provided to planners and developers on the website (https://www.nature.scot/professional-advice/planning-and-development/advice-planners-and-developers/planning-and-development-renewable-energy) is updated regularly. Tools include a webinar series and provide ample material to serve as inspiration in the development of instruments in other countries. The website expresses a clear commitment to optimal accommodation of both renewable energy and natural heritage by means of a strong strategic planning framework. The guidance does not concern World Heritage in particular, but includes valuable aspects and considerations regarding landscapes, as in *Spatial planning for onshore wind turbines – natural heritage considerations* (SNH 2015) and in *Siting and designing wind farms in the landscape* (SNH, version 3a, August 2017).

The visual representation of wind farms, version 2.2 of 2017

This guidance of some 53 pages provides a standardization framework for developers to help produce clear and verifiable visualizations. The standards set out in the guide should be met by the environmental impact assessment for an application process. The document highlights the advantages of visualizations, as 'images speak louder than words', as well as its limitations and inability to perfectly reflect reality. The chapters explore all key factors and attest to the continuous development of the guide since its first version was published in 2006. Aspects covered include the 'Zone of theoretical visibility maps', i.e. visibility studies based on Digital Terrain Models (DTM), as an initial inquiry on landscape conditions. Moreover, it looks into the choice of 'viewpoints', including their number, depiction and the importance of site visits. Another chapter is dedicated to the delicate question of enhancing images to visualize wind farm projects. In many ways, the explanations respond to the questions and needs found elsewhere, as seen in chapter titles such as 'Standard requirements that all visualizations should meet', 'Summary of visualization requirements' and 'Earth curvature and refraction of light'). However, the text, however, tempers expectations around its applicability in other countries: 'different landscapes, types of wind farms and conditions in other countries may require different approaches. SNH cannot offer advice on applications outside Scotland' (SNH, 2017b: 3). The document may nevertheless serve as an inspiration and model for adaptation in other contexts.

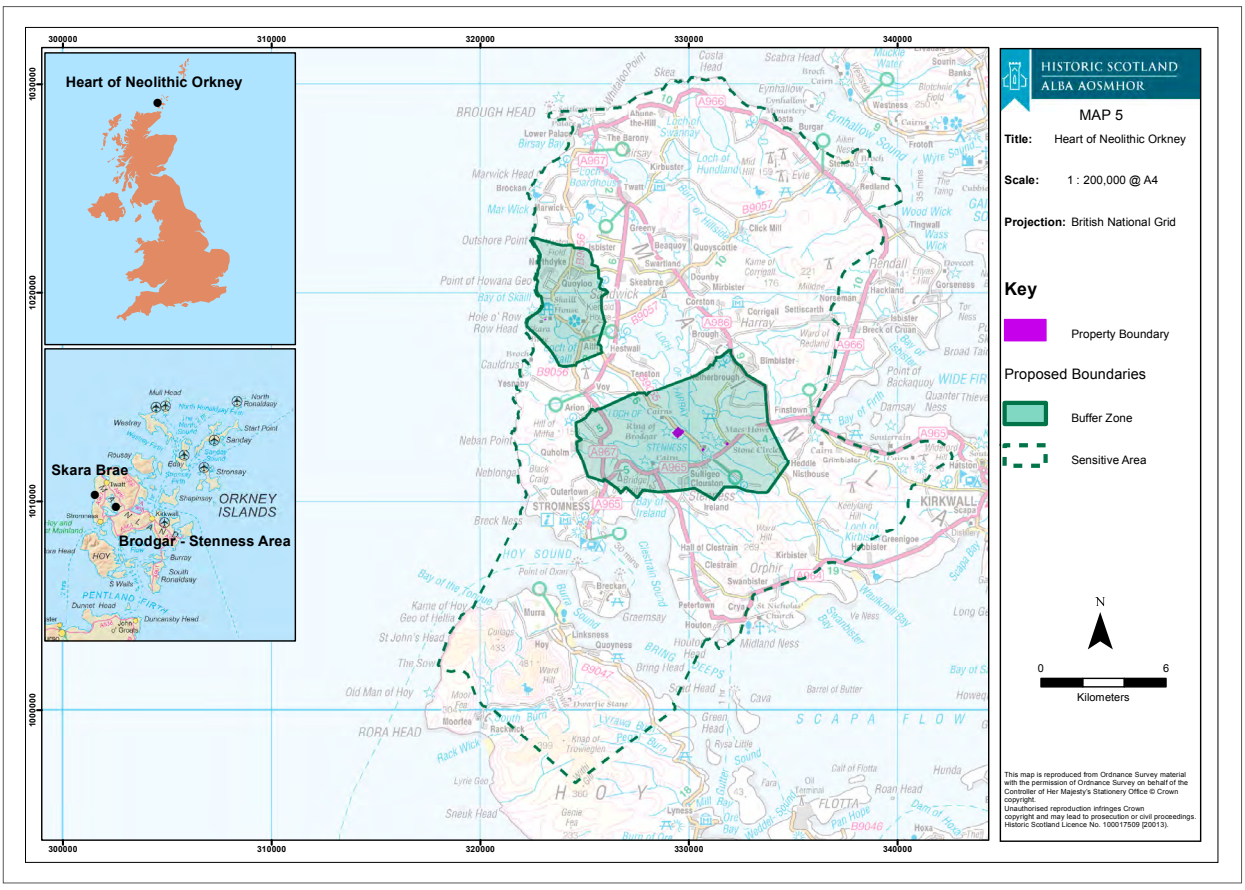
Heart of Neolithic Orkney, Skara Brae

© Laurence Winram*

CASE STUDY
Heart of Neolithic Orkney

General information on the property

Property name	Heart of Neolithic Orkney
Year of listing	1999 Minor boundary modification in 2015
Criteria	(i), (ii), (iii), (iv)
'Type' of site and landscape setting	Prehistoric domestic and ceremonial sites
Area of property	15 ha
Area of buffer zone (ha)	6,258 ha
Total area (ha)	6,273 ha
Other zoning applied for the protection of the property	Sensitive area for onshore wind energy developments prescribed in the local development plan – the area corresponds to the property's buffer zone: i. Heart of Neolithic Orkney World Heritage site Development will only be permitted within the inner sensitive zones if it is demonstrated that the development would not have a significant negative impact on the Outstanding Universal Value of the World Heritage site or its setting. Development will not be permitted where it breaks the skyline at the sensitive ridgelines of the World Heritage site when viewed from any of its component parts, or where it will be sited in any location with a potential impact on the World Heritage site, unless it is demonstrated that the development will not have a significant negative impact on either the Outstanding Universal Value or the setting of the World Heritage site.'



Map reflecting minor boundary modification (WHC-15/39.COM/8B.Add).

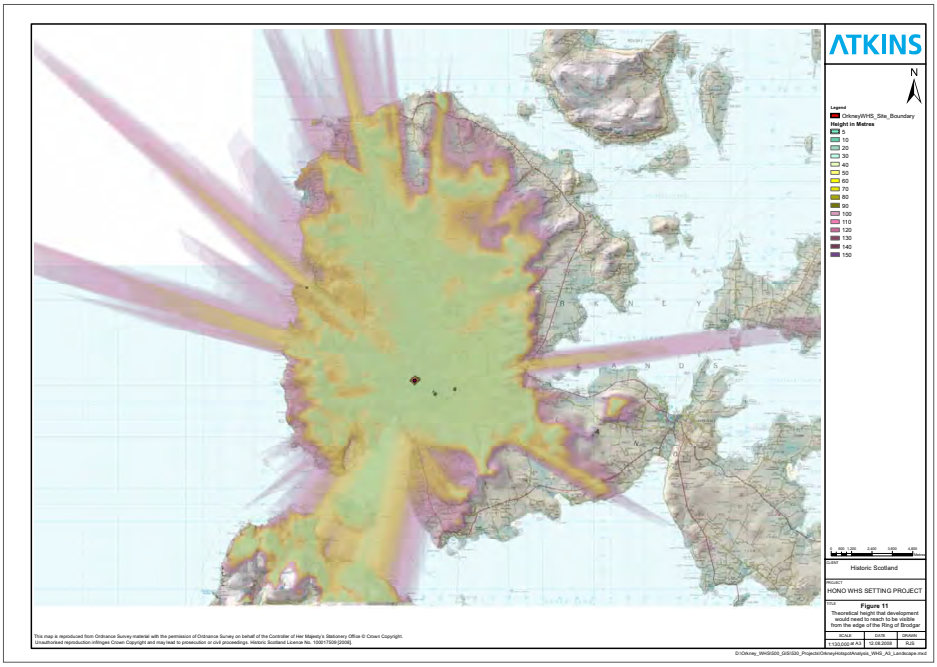
Statement of Outstanding Universal Value (SOUV) - criteria	*Criterion (i): The major monuments of the Stones of Stenness, the Ring of Brodgar, the chambered tomb of Maeshowe, and the settlement of Skara Brae display the highest sophistication in architectural accomplishment; they are technologically ingenious and monumental masterpieces.* *Criterion (ii): The Heart of Neolithic Orkney exhibits an important interchange of human values during the development of the architecture of major ceremonial complexes in the British Isles, Ireland and northwest Europe.* *Criterion (iii): Through the combination of ceremonial, funerary and domestic sites, the Heart of Neolithic Orkney bears a unique testimony to a cultural tradition that flourished between about 3000 BC and 2000 BC. The state of preservation of Skara Brae is unparalleled amongst Neolithic settlement sites in northern Europe.* *Criterion (iv): The Heart of Neolithic Orkney is an outstanding example of an architectural ensemble and archaeological landscape that illustrate a significant stage of human history when the first large ceremonial monuments were built.*
Statement of OUV - Integrity	All the monuments lie within the designated boundaries of the property. However, the boundaries are tightly drawn and do not encompass the wider landscape setting of the monuments that provides their essential context, nor other monuments that can be seen to support the Outstanding Universal Value of the property. Part of the landscape is covered by a two part buffer zone, centred on Skara Brae in the west and on the Mainland monuments in the central west. This fragile landscape is vulnerable to incremental change. Physical threats to the monuments include visitor footfall and coastal erosion.

Focus on the HIA document

Title	 The Heart of Neolithic Orkney World Heritage site setting project, final version, August 2008
Year of study	2008
Commissioned by	Historic Scotland
Author	Prepared by Atkins Heritage with significant input from ADAS Consulting
Format (No of pages)	112 pages (including 38 pages of annexes)
Availability (online or contact)	https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=d74f27d1-ee18-456a-bc6a-a59a00a2987d (consulted last on 27.11.2019)
Purpose of study **Proposed type:** **(a) Prospective study for development/spatial planning** **(b) Evaluation of status quo** **(c) Related to specific project**	Type (a) Purpose: • Provide an objective description of the setting of the property. • Offer recommendations for the definition of an improved buffer zone and the nature of related policies. • The study was commissioned in the context of increasing wind farm developments in the area as indicated in Decision 32COM 7B.118.

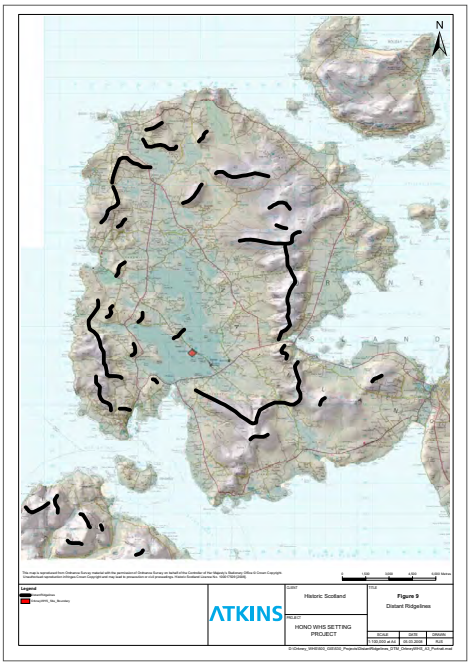
OUV 'translation'	• The study highlights the significance of the surrounding landscape for the OUV, as the *'basin-like location formed by the ring of visually distinct hills and the lochs' was the reason why men constructed monuments there in the first place (see also Atkins Heritage, 2008, 3.1.2: 4)* • The evaluation of visual relationships draws on scientific research, i.e. 'well-established and now standard approaches to landscape archaeology and archaeological interpretation.' (idem, 3.5.1: 11) • Based on indications from the management plan and field work, a number of 'factors for consideration' serve to frame the definition and description of the setting (see also idem, 4.3: 16)
Area under examination	Proposed sensitive area under examination: 45.267 ha, estimated maximum distance from the property: 25 km.
Landscape analysis	• The landscape is described as intrinsically linked to the OUV, where 'values' intermingle with merely topographic conditions, e.g. when speaking of 'topographical, archaeological, perceptual and experiential relationships with the surrounding physical and archaeological landscapes' (Atkins Heritage, 2008, 3.1.1: 4). The current archaeological approach is based on 'the premise that the physical topographic landscape and cultural landscape were closely interlinked, with less distinction than applied today.' (idem, 3.2.2: 5) • Annex B, Landscape character, describes the topography of West Mainland Orkney & Hoy. The World Heritage property lies entirely in West Mainland Orkney. Out of twelve landscape types identified in this area, four are considered relevant to the World Heritage property.
Identification of viewpoints	• The authors consider historical and seemingly 'intentional' views, and aspects related to the current experience of a visitor (including general and specific views, visual relationships between monuments, as well as people's physical sensory experience, e.g. sound and smell) and define nine criteria to justify their choice. • Regarding the presentation of views, the authors recommend producing a series of high-quality photographs from the selected viewpoints, preferably taken in summer, to establish the baseline situation and help determine the impact of future development proposals on the setting of the site. Photographs should be of suitable quality for publication, to serve as basis for future accurate visual representation of development proposals, and should be updated regularly, e.g. once every five years, for monitoring purposes. These steps are in line with the guidance on *Visual representation of wind farms – good practice guidance* (SNH 2006).  Plate 1 Examples of Panoramic views from the Ring of Brodgar and Stones of Stenness Copyright Historic Scotland. Prepared by Envision High quality photos for monitoring purposes. Plate 1 of the setting study with examples of panoramic views from the Ring of Brodgar and Stones of Stenness. *Source:* Atkins Heritage, 2008

Visibility study		A DTM-based analysis of the viewshed, in conjunction with an analysis of the views and relationships mapped, i.e. General views in and around the World Heritage Property (Figure 7), and the visual links between the monuments (Figure 8), helped develop the extent of the recommended 'sensitive area for onshore wind energy developments'.
Visualizations of wind farms		The study does not visualize any wind farms. It does however show how high a building would need to be, theoretically, to be seen from certain viewpoints (Ring of Brodgar). The terrain data are rather rough, as they do not factor in any vegetation or buildings below 5 m in height. The resulting map should therefore be read as a general indication of areas where wind turbines or other high-rise developments may have a potential negative impact on the setting.
Details on visualizations	**Technical devices, hardware and software**	• Digital Terrain Map: Ordnance Survey contour data • High-quality photographs and high-accuracy GPS equipment for optimal reference documentation
	Selection of viewpoints and their presentation (criteria, number, etc.)	• Selection of 23 viewpoints for the two distinct parts of the property, including viewpoints with panoramic views, simple one-way views and long stretched views from roads (Figure 7) • Identification of over 15 visual links between monuments (Figure 8) • Photographs, maps and geographical reference Recommended technical procedure to document viewpoints: Positions of viewpoints must be accurately mapped and geo-referenced in each photograph to facilitate monitoring and allow applicants and other parties to take the same photographs. 'These grid points can then be physically marked on the ground (e.g. using survey nails) and/or described with a combination of text, measurements and photographs.' The authors recommend London View Management as a model framework (see also Atkins Heritage, 2008, 7.4.20: 41f; the 2012 version of the framework is available at https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/planning-guidance/london-view-management).
	Distances identified	The study does not mention any specific distances, but the detailed maps indicated application of an estimated maximum distance of 25 km.
	Data on wind turbines (height, capacity, blades, etc.)	Not applicable



Viewshed analysis of the Heart of Neolithic Orkney

Source: Atkins Heritage, 2008 : figure 11

Evaluation method and criteria	• The study identifies key features of the setting, which should not be affected by any developments, including undeveloped ridgelines and key views of and from the monuments, e.g. sightline and its backdrop from the entrance to the Maeshowe. • Study was prepared prior to the ICOMOS guidelines.
Outcome/analysis	The descriptions of the setting and identification of key features provide a solid foundation for future planning, monitoring and management: viewpoints, viewshed analysis, photographs, methods and reference documents.
Results	 The results served as a basis for the minor modification of the buffer zone (see also 39 COM 8B.50) and inform decisions up to the present day. Moreover, the sensitive zone is considered in all relevant planning tools, including the Orkney Development Plan and related guidance. Map of distant ridgelines of the Heart of Neolithic Orkney *Source:* Atkins Heritage, 2008 : figure 9
Feedback	Management confirmed that the study remains a key reference for decision-making up to the present day.
Lessons learned & recommendations	Positive lessons • Proper documentation and description of setting as reference for planning, monitoring and management • Rich documentation material in terms of high-quality photos of viewpoints (regularly updated for monitoring and impact assessments) and high-quality maps (definitions, viewshed studies) • No technical assumptions about wind turbines and their location – maintains the 'neutral' tone of documentation • Recommendations for future guidance and policies show awareness of potential conflicts with wind development and express an accommodating attitude; the study is not intended to be 'overly prohibitive', but seeks to 'support the continued economic use of the land' (Atkins Heritage, 2008, 7.4.10: 38).It should by no means give the impression 'that all forms of development on the whole of Orkney are constrained by the WHS' (idem, 7.4.11: 39) • Recommendations for the development of 'supplementary guidance' show the concern for practical application and the need 'to develop streamlined and concise development plans and [...] provide developers and householders with robust and detailed guidance [...] to help reduce ambiguity and [...] enable OIC and its partners to robustly assess applications and defend their decisions' (idem, 7.4.14f: 40) • Inspiring considerations and references on topics related to the 'setting' and the preparation of photo documentation and visualizations. Point for improvement • The authors mention that consultations were held, but without detailing how and with whom.

Recommendations and lessons learned

The case of Scotland (UK) offers a variety of lessons learned and recommendations concerning both the development of heritage impact assessments and the policy frameworks, including the points below.

POLICY FRAMEWORK

- Develop dedicated guidance with key information and explanations on strategies and processes for planners, developers, decision-makers, etc., and make it easily accessible online.
- Seek out consultation processes, particularly when developing practical guidance.
- Develop a 'short guide' for a World Heritage property, comprising all relevant information on the site and its setting to inform and raise awareness among stakeholders and the interested public around the specifics and conservation requirements.
- Encourage visible involvement of specialized organizations, through consultations, and in particular the publication of supporting guidance, reports and online resources, or public events. This increases visibility and credibility.

HERITAGE IMPACT ASSESSMENTS

- Identify the OUV, attributes and wider setting in a dedicated study to determine protection and management needs. The information offers a sound basis for impact assessments, monitoring and management. These studies should strive for maximum neutrality, and therefore should avoid anticipating potential future wind farm plans unless developed in consultation with experts from the wind sector or in cases of specific plans and data.
- Provide information on protection of the visual integrity of a property to inform management, regional planning, and authorization processes, in order to increase transparency and enable early awareness and maximum planning certainty.
- Strive to produce high-quality documentation, including photographs and geo-referenced maps, to keep as records and reference

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4

Lessons and practices to retain for informed and sensitive planning of wind farms near World Heritage properties

Heart of Neolithic Orkney, Ring of Brodgar

The four country cases give stimulating insights into how to deal with wind energy development in terms of protection of the visual integrity of different World Heritage properties. Looking at the cases, we can identify a number of common principles and approaches applied for efficient and appropriate development of the energy transition, and particularly wind energy. In general, the main goal is to achieve an informed and balanced planning process at an early stage, to increase planning certainty for all stakeholders and avoid conflicts. Common approaches include:

1. Promote dialogue and participatory processes

All four countries have shown a great deal of concern around the need to base decisions and developments on broadly coordinated processes. These are considered key to finding the best-informed and most suitable solutions to reconcile the various points of views and interests of different stakeholders and balance their considerations. Solutions must be based on sound foundations to be sustainable, and participatory processes must foster the required transparency and credibility. Mechanisms may:

- be anchored at the national level, as demonstrated in the inter-sectoral working group fostering cooperation between the Ministries in France, which is continued at the regional and local levels;
- focus on regional planning as a tool for consensus, as promoted in Austria;
- involve other activities, such as the stakeholder dialogue, as a platform developed and organized by Berlin-based KNE in Germany; or
- pursue other means to promote dialogue and exchange at the local, regional or national levels, as described on the website of Scottish Historic Environment.
- Finally, a State Party may invite an Advisory Mission of the World Heritage Advisory Bodies to bridge the gap with the international level and receive case-specific advice from an international perspective (see also UNESCO, 2019, *Operational Guidelines*, paragraph 28 f, footnote 2). These missions are informal in nature and involve desktop studies as well as site visits for assessments and exchanges with both stakeholders and authorities. These missions should however remain an exception, and should only be requested, by the State Party via the World Heritage Centre, if national capacities have been exhausted, as the international level is not able to follow up on many individual cases among the 1121 properties (as at December 2019).

2. Prepare a study on the setting of a World Heritage property

Any Heritage Impact Assessment on a World Heritage property is based on a description of the property and its Outstanding Universal Value. Awareness of the attributes and the material or visual carriers of the value is a key starting point for proper planning, including a survey of alternative solutions. This document should clarify the visual attributes and spatial implications of a (wider) setting. It is multifunctional, as it also informs all other questions around the management, improvement or protection of a World Heritage property. The second cycle of the periodic report pointed out the need to better develop and share definitions of OUV attributes as a means to improve protection and management. Indeed, the results hinted at a weak understanding of how OUV is conveyed in the property (cf. UNESCO, 2016: 75).

Although advisable in principle for any World Heritage property, only a few sites actually have a study of this kind and make it publicly available. In the absence of guidance for the development of this document, a case-based approach may be appropriate for the time being. The setting study for the Heart of Neolithic Orkney (2008) and the analysis in the impact assessment for Vézelay (2016) may serve as models. Over the longer term, an expert exchange on best practices for preparation of these studies would be wise. As indicated in the examples described, these studies should include the development of a common language for landscape analysis, as well as the production of high-quality photographic documents with precise geo-referencing and other relevant information.

3. Consider introducing a 'visual zone' to support a buffer zone

It is striking that all four cases presented in this publication include a visual protection or sensitive zone in addition to the buffer zone. Managers and authorities have referred to this tool in recognition of the practical limits of a buffer zone and to support the buffer zone and protection of the property. These were developed using different stocks of information and documentation, yet have found legal recognition or consideration in regional planning. Some have led or may still lead to a revision of the buffer zone.

4. Provide guidance on HIAs

France and Scotland have published valuable guidance for the development of Heritage Impact Assessments with particular consideration for World Heritage, and the stakeholder dialogue recommended preparation of a guidance document of this kind for the German stakeholders as well. These translate the principles of the general guidance documents published in 2011 and 2013 by ICOMOS and IUCN, respectively, into requirements at the local or national levels. In particular, the Scottish document adopts simple language and has a less technical appearance than the French one. Both documents give the underlying principles and explain the reasoning behind each requirement, to enable an optimal understanding of the processes and responsibilities. The aim here is to increase the quality of the planning and facilitate the process with objective and shareable methods. In addition to explaining each step, the documents provide contacts for focal points for individual questions and discussions. Guidance should also refer to the schedule, and provide advice on how to reach out for international expertise, where needed. French and German experts highlighted the quality of Heritage Impact Assessments as a tool for iterative planning and suggested that with appropriate planning, World Heritage properties have the potential to serve as laboratories for innovative and sensitive planning. The French working group, made up of ICOMOS France and IUCN, further suggest renaming heritage impact assessments 'project-related heritage expertise' ('*expertise patrimoniale de projet*') to highlight the positive vision and usefulness of the tool and correct the notion that it is a penalty. In the spirit of supporting the process, the group also proposed the creation of a panel of various stakeholders to enable collective and community-based decision-making (see also UNESCO, 2017: 4).

5. Provide guidance for planners and developers on World Heritage properties

Easily accessible communication on the property and its specific in terms of values and planning considerations supports management and conservation. Naturally, each property should have a management plan, often comprised in a single document and ideally accessible online. Yet these complex strategy documents often exceed the scope of readers with more specific interests, and with a period of validity of five to ten years, information is not necessarily in line with current developments.

The 'short guides' of the Scottish World Heritage properties may serve as good examples to raise awareness and share key data on protection requirements and improvement with the public in a comprehensive and concise way. Whereas these small brochures, available online as PDFs, address a rather general public, from developers to tourists, the Austrian 'criteria for constructions within World Heritage sites' address a more targeted public concerned with urban planning and buildings, i.e. communities, decision-makers, government bodies, developers, planners, experts and councillors. The booklet with background information on the construction criteria, including the property's nomination history, reference to the management plan and the definitions with height regulations, is intended to enable new and compatible development and quality structures in the World Heritage cultural landscape.

These examples may inspire the development of similar materials for other World Heritage properties to clarify requirements – for wind energy planning in particular –– and ensure transparency from the outset.

6. Provide guidance or a framework of best practices for the development of wind farms visualizations

All four country cases refer to the importance of visualizations in different ways. Since 2006,Scottish Natural Heritage has developed a guidance for 'Visual representation of wind farms'. The French guide also includes guidance on the preparation of wind farms, settling a number of questions that remain open in other regions, such as in Germany, where no one prescribes the best weather conditions to use when visualizing wind farms. The Austrian example also allows multiple methods, in principle. The KNE stakeholder dialogue has clearly formulated the need to establish a 'good technical practices for the visualization of wind farms' as a means to facilitate planning processes near World Heritage properties. The dialogue indicated that the diverse and even divergent methods of producing and reading visualizations regularly lead to conflicts. This defeats their actual purpose of clarifying and supporting discussions or assessments in planning or authorization processes, and in fact often creates its own conflicts. In full recognition of the value of the visual tool in participatory, planning and authorization processes, the development of framework criteria for visualizations should help improve quality and facilitate their development and use by practitioners, developers and assessors. Experienced experts, users and contracting authorities should be involved in the process

of developing these kinds of frameworks to achieve full credibility and validity. In addition, the World Heritage Centre and the advisory bodies should examine the draft framework.

7. Improve communication and outreach as a means to increase acceptance of the energy transition, and wind energy development in particular

In addition to site-specific information and awareness materials and activities, the statements and visible involvement of specialized organizations can support sensitive development of wind energy planning and other renewable energy sources. The publication by WWF Austria is an example of this kind of public support, as are the numerous media articles and other coverage. Proactive and positive approaches from parties other than care-taking authorities or management entities may help increase credibility and win over critics, given the widely known acceptance challenges of wind energy. Different points of views and arguments can help pay tribute to the complexity of the facts by pointing the way to finding consensus and striking the right balance. This may contribute to aligning opinions and joining forces for appropriate changes in the environment that the energy transition will bring.

8. Looking ahead – next steps towards a guidance tool

The findings of the country cases examined in this document offer valuable insights into where the conservation of the World Heritage properties stands in terms of the energy transition. Without going into too much detail, the study showcases a number of tools and approaches that can be applied to achieve sensitive planning for wind farms and seeks to translate these into lessons learned and recommendations applicable in different contexts. Indeed, the countries have ammased considerable experience and expertise related to heritage impact assessments, visualization and participation processes. Following collection of this information, these may be further streamlined and shared to clarify and improve processes, approaches and methods in different contexts.

The UNESCO project financed by the government of the Netherlands may be the ideal continuation of these efforts (cf. https://whc.unesco.org/en/renewable-energy/). It aims to develop a guidance tool on how World Heritage conservation should deal with the energy transition. The initiative intends to bring together State Parties, experts and stakeholders from the relevant sectors to develop the instruments. The group may benefit from the information compiled in this document and, for instance, use the rather technical French guidance for Heritage Impact Assessments for onshore wind farms, combined with a selection of the Scottish examples, as a basis for a critical analysis and further development. Individual countries may also benefit from these documents for adaptation and application in their own countries or region. These development processes should strive to bring together and involve experts from all stakeholder groups, including World Heritage conservation and landscape and wind farm planning, as well as from relevant national, regional and local authorities and bodies. May these endeavors meet with success!

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World Heritage and wind energy planning

Protecting visual integrity in the context of the energy transition

Inspiring practices from four European countries

UNESCO aims to fight climate change and to protect our natural and cultural World Heritage. UNESCO recognizes the need to develop renewable energies to reduce carbon emissions. This publication presents examples from four countries in Europe that seek to reconcile the development of renewable energies and World Heritage conservation. Approaches include policies, communication and Heritage Impact Assessments. Further contributions develop on key factors at play, challenges, opportunities and the international policy framework.

This document compiles information as a basis for further exchanges and debate, rather than offering a final list of best practices, recommendations, and must-dos. It aims to share ways to facilitate processes and enhance cooperation between the numerous stakeholders, across borders, for high-quality development of wind energy and the energy transition with respect to World Heritage and the cultural, historical and natural environment.

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Contact: info@whc.unesco.org
https://whc.unesco.org
https://www.ecologique-solidaire.gouv.fr/