

The Impacts of Electricity Lines on Tourism – Literature Search

Effeithiau Llinellau Trydan ar Dwristiaeth – Chwiliad Llenyddiaeth

This literature search presents a selection of published research exploring the potential impacts of electricity transmission lines on tourism. It has been compiled to support discussions within the Independent Advisory Group (IAG) on Electricity Networks and to offer external stakeholders an overview of the types of evidence currently available.

The search identified a modest but relevant body of literature from the UK and internationally, including studies examining tourists' and residents' perceptions of overhead lines, landscape impacts, and related influences on visitor experience. These include work undertaken in Wales, as well as research from countries such as Iceland, Spain, Austria, Switzerland, Korea and Ireland. Broader studies on social acceptance of energy infrastructure, landscape valuation, and willingness to pay for undergrounding infrastructure are also included where relevant.

This is an exploratory search and does not represent a comprehensive review of all available evidence. Stakeholders are encouraged to consult the original documents for full context and to verify findings where required, particularly as corrections or retractions can occur within academic publishing.

Mae'r chwiliad llenyddiaeth hwn yn cyflwyno detholiad o ymchwil a gyhoeddwyd sy'n archwilio effeithiau posibl llinellau trosglwyddo trydan ar dwristiaeth. Fe'i lluniwyd i gefnogi trafodaethau o fewn y Grŵp Cynghori Annibynnol (IAG) ar Rwydweithiau Trydan ac i gynnig trosolwg i randdeiliaid allanol o'r mathau o dystiolaeth sydd ar gael ar hyn o bryd.

Nododd y chwiliad gorff cymedrol ond perthnasol o lenyddiaeth ryngwladol ac o'r DU, gan gynnwys astudiaethau sy'n archwilio canfyddiadau twristiaid a thrigolion o linellau trydan uwchben, effeithiau ar y dirwedd, ac elfennau cysylltiedig sy'n effeithio ar brofiad ymwelwyr. Mae'r rhain yn cynnwys gwaith a wnaed yng Nghymru, yn ogystal ag ymchwil o wledydd fel Gwlad yr Iâ, Sbaen, Awstria, y Swistir, Korea ac Iwerddon. Mae astudiaethau ehangach ar dderbyniad cymdeithasol seilwaith ynni, asesu gwerth tirwedd, a pharodrwydd i dalu am seilwaith tanddaearol hefyd wedi'u cynnwys lle bo hynny'n berthnasol.

Chwiliad cychwynnol yw hwn, nid adolygiad cynhwysfawr o'r holl dystiolaeth sydd ar gael. Anogir rhanddeiliaid i ymgynghori â'r dogfennau gwreiddiol am gyd-destun llawn ac i wirio canfyddiadau lle bo angen, yn enwedig gan fod cyhoeddiadau academaidd weithiau'n cael eu cywiro neu eu tynnu yn ôl.

It should be noted that this literature search was returned to members of the Independent Advisory Group in the second half of March 2025. The group stopped considering new submissions at the end of March 2025 to work on the report and recommendations, and therefore members would have had very limited opportunity to consider any of the specific papers referenced in these results in their findings.

Dylid nodi bod y chwiliad llenyddiaeth hwn wedi'i ddychwelyd i aelodau'r Grŵp Cynghori Annibynnol yn ystod ail hanner mis Mawrth 2025. Rhoddodd y grŵp y gorau i ystyried darnau newydd ddiwedd mis Mawrth 2025 i weithio ar yr adroddiad a'r argymhellion, ac felly ychydig iawn o gyfle y byddai'r aelodau wedi eu cael i ystyried unrhyw un o'r papurau penodol y cyfeirir atynt yn y canlyniadau hyn yn eu canfyddiadau.

Results / Canlyniadau

Title	Citation	Year of publication	Link to abstract/full text (if available)
When tourists meet transmission lines: The effects of electric transmission lines on tourism in Iceland	Stefánsson, Þ., Sæþórsdóttir, A.D. and Hall, C.M. (2017) 'When tourists meet transmission lines: The effects of electric transmission lines on tourism in Iceland', <i>Energy Research & Social Science</i> , 34, pp. 82–92. Available at: https://doi.org/10.1016/j.erss.2017.06.032 .	2017	Abstract "Results demonstrate that tourists are generally negative towards transmission lines, especially in the Highlands and consider them one of the least desirable infrastructures. Nevertheless, there is considerable variance between different markets, with opposition highest among domestic tourists."
Analysis of the impact of high voltage power lines on the value of properties in environments of high ecological value and rural tourism: the case of the Lecrín Valley (Granada - Spain)	Aranda, D.A., Sánchez, A.L. and Gustavo, F. (2021) 'Analysis of the impact of high voltage power lines on the value of properties in environments of high ecological value and rural tourism: the case of the Lecrín Valley (Granada - Spain)', <i>International Journal of Business Environment</i> , 12(1), pp. 64–64. Available at: https://doi.org/10.1504/ijbe.2021.112112 .	2021	Abstract "The conclusions point out that the infrastructure would rupture of the regional balance while generating precariousness, loss of wealth in economic and patrimonial terms for the region as a whole."
Your grid, your views, your tomorrow: responding to tourism concerns [Eire]	EIRGRID (2015). 'Your grid, your views, your tomorrow: responding to tourism concerns'	2015	Full Text [See Section 5 which reviews international literature].
Study into the potential economic impact of wind farms and associated grid infrastructure on the Welsh tourism sector	Regeneris Consulting Ltd for Welsh Government (2014). 'Study into the potential economic impact of wind farms and associated grid infrastructure on the Welsh tourism sector'. Welsh Government , February 2014.	2014	Open Access "Devine Wright's research relating to the proposed grid extension in mid-Wales (2012) presented impacts as being driven by the contrast between the perceived naturalness of some landscapes and the addition of industrial features (in this case power lines)." (5.57) "This trend appears to hold for other types of development. For example based on a study in Finland, Soini et al (2011) found that younger respondents tend to react more positively to power lines than older people. The authors point to an important limitation of this finding however – it is not clear to what extent these views can be expected to change as this cohort gets older" (5.74) etc.
Not in my hiking trail? Acceptance of wind farms in the Austrian Alps	Brudermann, T., Zaman, R. & Posch, A. (2019) 'Not in my hiking trail? Acceptance of wind farms in the Austrian Alps' <i>Clean Techn Environ Policy</i> 21, 1603–1616 (2019). https://doi.org/10.1007/s10098-019-01734-9	2019	Open Access "In general, it can be said that there is little evidence of wind farm constructions negatively affecting tourism, and occasionally positive effects have been reported as well (Westerberg et al. 2013). Nonetheless, the necessary transmission lines might very well disturb tourists (Stefánsson et al. 2017) as well as locals."
The dark sides of low-carbon innovations for net-zero transitions: a literature review and priorities for future research	Ertelt, S.-M. and Carlborg, P. (2024) 'The dark sides of low-carbon innovations for net-zero transitions: a literature review and priorities for future research', <i>Sustainability: Science, Practice and Policy</i> , 20(1). doi: 10.1080/15487733.2024.2335731.	2024	Open Access "The visual impacts of such infrastructure projects were not necessarily perceived as unfavorable by all tourists (Nordman and Mutinda Citation2016), and viewpoints across the surveyed population samples were diverse (Smythe et al. Citation2020). Nevertheless, especially in areas where tourists expected wilderness and unspoiled nature, the presence of renewable energy infrastructure negatively affected their interest in traveling around the regions and their motivation to visit the areas in

			<i>the first place (Stefánsson, Sæþórsdóttir, and Hall, 2017)."</i>
Contested Development Paths and Rural communities: Sustainable Energy or Sustainable Tourism in Iceland?	Sæþórsdóttir, A. D., & Hall, C. M. (2019). 'Contested Development Paths and Rural communities: Sustainable Energy or Sustainable Tourism in Iceland?' <i>Sustainability</i> , 11(13), 3642. https://doi.org/10.3390/su11133642	2019	Open Access <i>"Power plants are also accompanied by transmission lines and their visual impact is massive, especially in wilderness areas, as the landscape is very barren and there are usually no trees to otherwise conceal the pylons. [...] Research among travelers in the Highlands has shown that the majority of tourist are negative towards power plants in the destination where they are travelling and they are considered to have a negative effect on the wilderness experience [19,53,54]."</i>
Disamenity externalities from utility networks [UK]	Willis, K.G. and Garrod, G.D. (1997) 'Disamenity externalities from utility networks', <i>Utilities Policy</i> , 6(1), pp. 35–41. Available at: https://doi.org/10.1016/s0957-1787(96)00013-6 .	1997	Abstract <i>"Canals are used as a case example; and 1000 visitors were interviewed at a series of canal sites across England. Willingness-to-pay to avoid encountering pylons, other cable, and pipeline crossings amounted to £0.09, £0.10 and £0.05, respectively, for a 1% reduction in each of these utility service crossings over canals. Aggregating these values over the 3 million households that visit canals each year suggests a substantial welfare loss that forms the basis of a compensation claim by British Waterways against utility companies."</i>
How close is too close? Mapping the impact area of renewable energy infrastructure on tourism [Iceland]	Tverijonaite, E. et al. (2022) 'How close is too close? Mapping the impact area of renewable energy infrastructure on tourism', <i>Energy Research & Social Science</i> , 90, p. 102574. Available at: https://doi.org/10.1016/j.erss.2022.102574 .	2022	Abstract <i>"Participants pointed to the high visibility of the proposed wind turbines, which would be visible in the Icelandic landscape from tens of kilometers. In some cases, participants took into consideration the visibility of the power lines, thus, such estimated impact areas were larger in size."</i>
Impact on the perceived landscape quality through renewable energy infrastructure. A discrete choice experiment in the context of the Swiss energy transition	Salak, B. et al. (2022) 'Impact on the perceived landscape quality through renewable energy infrastructure. A discrete choice experiment in the context of the Swiss energy transition', <i>Renewable Energy</i> , 193, pp. 299–308. Available at: https://doi.org/10.1016/j.renene.2022.04.154 .	2022	Open Access <i>"People's preferences of REI follow a gradient: highest in urban / agricultural landscapes, lowest in near-natural landscapes. Near-natural mid-/high-elevation landscapes trigger place-protective behavior. Renewable energy developments are preferred in locations with existing infra-structure."</i>
Observance–Influence Analysis: A Case Study in a Forest Recreation Area [Korea]	Shin, W. S., Hammitt, W. E. and Song, H. S. (2003) 'Observance–Influence Analysis: A Case Study in a Forest Recreation Area', <i>Scandinavian Journal of Forest Research</i> , 18(5), pp. 449–456. doi: 10.1080/02827580310005478.	2003	Abstract <i>"Impacts shown to be of most concern related to utility poles and power lines, poor maintenance of buildings, dead and dying trees, and discourteous behaviour. The O-I grid analysis model has considerable utility for park managers in analysing visitors' perceptions of park impacts."</i>
Renewable Energy in Wilderness Landscapes: Visitors' Perspectives. [Iceland]	Tverijonaite, E., Sæþórsdóttir, A. D., Ólafsdóttir, R., & Hall, C. M. (2019). 'Renewable Energy in Wilderness Landscapes: Visitors' Perspectives.' <i>Sustainability</i> , 11(20), 5812. https://doi.org/10.3390/su11205812	2019	Open Access <i>"The majority of tourists stated that the proposed Hverfisfljót hydropower plant would strongly reduce their interest in visiting the area. With regard to specific power plant infrastructure elements, the visitors' attitudes were the most negative toward dams and power lines. Furthermore, the Icelandic lowlands, which are more developed, were perceived by the study participants as more suitable for renewable energy development."</i>

<p>Floating Away: The Impact of Hydroelectric Power Stations on Tourists' Experience in Iceland</p>	<p>Sæþórsdóttir, A. D., & Hall, C. M. (2018). 'Floating Away: The Impact of Hydroelectric Power Stations on Tourists' Experience in Iceland.' Sustainability, 10(7), 2315. https://doi.org/10.3390/su10072315</p>	<p>2018</p>	<p>Open Access <i>"The results show that the power plant infrastructure at Blanda, with the exception of transmission lines, does not seem to disturb the experience of the majority of tourists. Tourists at Blanda are also more positive towards power plants than at locations where there are no power plants but where they have been proposed."</i></p>
<p>From wire evil to power line poetics: The ethics and aesthetics of renewable transmission [USA, Nebraska]</p>	<p>Wuebben, D. (2017) 'From wire evil to power line poetics: The ethics and aesthetics of renewable transmission', Energy Research & Social Science, 30, pp. 53–60. Available at: https://doi.org/10.1016/j.erss.2017.05.040.</p>	<p>2017</p>	<p>Abstract Repository Copy This may differ in content and layout to the final published version. <i>"Poeticizing pylons and power lines will not completely dissolve claims of wire blight, but it may better show the power of their aesthetic impact and strengthen their association with smart appliances, electric cars, solar panels, wind turbines, and other tools of our sustainable future. As social scientists and humanities scholars shed light on how, where, and why the lines make meaning, we can find ways to better leverage ethics and aesthetics and balance visible electric infrastructures with less-visible environmental impacts."</i></p>
<p>My neighbourhood, my country or my planet? The influence of multiple place attachments and climate change concern on social acceptance of energy infrastructure [UK]</p>	<p>Devine-Wright, P. and Batel, S. (2017) 'My neighbourhood, my country or my planet? The influence of multiple place attachments and climate change concern on social acceptance of energy infrastructure', Global Environmental Change, 47, pp. 110–120. Available at: https://doi.org/10.1016/j.gloenvcha.2017.08.003.</p>	<p>2017</p>	<p>Abstract Repository Copy This may differ in content and layout to the final published version. <i>"For the first time, this study revealed the role of local and non-local attachments in explaining public beliefs and attitudes towards energy infrastructures, including high voltage power lines and systemic changes to energy systems. These results are important, since they reveal the importance of people-place relations that have been overlooked in previous studies, particular those dubbed 'Glocal' and 'Nocal' here. Future research is required to extend these findings in other cultural and political contexts, and in relation to other forms of low carbon energy infrastructure, thus providing policy makers with a more substantial explanation for public responses than the NIMBY concept."</i></p>
<p>The Origin and Role of Trust in Local Policy Elites' Perceptions of High-Voltage Power Line Installations in the State of Arkansas. [USA]</p>	<p>Tumlison, C., Moyer, R.M. and Song, G. (2017), 'The Origin and Role of Trust in Local Policy Elites' Perceptions of High-Voltage Power Line Installations in the State of Arkansas.' Risk Analysis, 37: 1018-1036. https://doi.org/10.1111/risa.12662 Possibly, see also: Moyer, R.M. and Song, G. (2016), Understanding Local Policy Elites' Perceptions on the Benefits and Risks Associated with High-Voltage Power Line Installations in the State of Arkansas. Risk Analysis, 36: 1983-1999. https://doi.org/10.1111/risa.12548 [Abstract only]</p>	<p>2017</p>	<p>Abstract <i>"The debate over an installation of high-voltage power lines (HVPLs) has been intense, particularly in northwest Arkansas. Detractors claim that the installation will negatively affect both the natural environment and the local economy, which contains a large tourism component. By contrast, those in favor of installing HVPLs claim that the installation is necessary in order to reliably support the increasing demand for electric power. Using original data collected from a recent statewide Internet survey of 420 local policy elites in Arkansas, this article focuses on two key aspects."</i></p>
<p>[Power installations in natural areas – Effects on tourism, outdoor recreation and use of holiday homes. A literature review] (Machine translation)</p>	<p>Tangeland, T. & Aas, Ø. 2010. 'Kraftinstallasjoner i naturområder – Effekter på turisme, friluftsliv og bruk av fritidsboliger. En litteraturstudie' – NINA Rapport 625. 27 s. [</p>	<p>2010</p>	<p>Abstract in Norwegian <i>"This resulted in few findings of studies that had examined the effects of power installations on recreational use of affected natural areas. Power lines stand out in particular in that research on the effects of the</i></p>

Norway			<i>installations on other societal interests is almost absent.” [Machine translation]</i>
Preserving and Presenting Heritage through Sustainable Energy Tourism: The Case of Kobarid in Slovenia	Potočnik Topler, J. (2022). ‘Preserving and Presenting Heritage through Sustainable Energy Tourism: The Case of Kobarid in Slovenia.’ <i>Sustainability</i> , 14(2), 659. https://doi.org/10.3390/su14020659	2022	Open Access [Provides a perspective that energy infrastructure, although not specifically power transmission lines, can be used for “energy tourism”, and can therefore be seen in a different, positive light?]
Public preferences for the Swiss electricity system after the nuclear phase-out: A choice experiment	Plum, C., Olschewski, R., Jobin, M., Vliet, O van (2019) ‘Public preferences for the Swiss electricity system after the nuclear phase-out: A choice experiment’. <i>Energy Policy</i> , 130, July 2019, 181-196	2019	Open Access ““ Further, the item referring to the impact of electricity production facilities on the landscape loads on this factor. This might be due to the fact that the Swiss landscape is seen as an important resource for tourism.”
Underground cables vs. overhead lines: Quasi-experimental evidence for the effects on public risk expectations, attitudes, and protest behavior [Germany]	Mueller, C.E., Keil, S.I. and Bauer, C. (2019) ‘Underground cables vs. overhead lines: Quasi-experimental evidence for the effects on public risk expectations, attitudes, and protest behavior’, <i>Energy Policy</i> , 125, pp. 456–466. Available at: https://doi.org/10.1016/j.enpol.2018.10.053 .	2019	Abstract “we obtained results revealing that there are no differences in the risk expectations, attitudes, and protest behavior of residents interviewed at the two project sites, or only marginal ones. Hence, our findings do not support the assumption that building underground cables necessarily improves the situation with regard to risk expectations, attitudes, and protest behavior.”
The role of (de-)essentialisation within siting conflicts: An interdisciplinary approach [UK, Norway]	Batel, S. et al. (2015) ‘The role of (de-)essentialisation within siting conflicts: An interdisciplinary approach’, <i>Journal of Environmental Psychology</i> , 44, pp. 149–159. Available at: https://doi.org/10.1016/j.jenvp.2015.10.004 .	2015	Abstract Repository Copy This may differ in content and layout to the final published version. “The countryside generally is presented as having a different essence to power lines. The countryside nearby is presented as distinct from the countryside generally. Analyses illustrate how place meanings are ideologically constructed.”
Local residents’ perceptions of energy landscape: the case of transmission lines [Finland]	Soini, K. et al. (2011) ‘Local residents’ perceptions of energy landscape: the case of transmission lines’, <i>Land Use Policy</i> , 28(1), pp. 294–305. Available at: https://doi.org/10.1016/j.landusepol.2010.06.009 .	2011	Abstract “The results confirmed the presupposition that transmission lines are generally perceived as negative landscape elements, both when long-established and when new. However, the perceptions among the residents were heterogeneous. This heterogeneity was explained with environmental attitudes and leisure activities as well as knowledge and land ownership.”
Re-presenting the rural in the UK press: An exploration of the construction, contestation and negotiation of media discourses on the rural within post-carbon energy transitions	Batel, S. (2020) ‘Re-presenting the rural in the UK press: An exploration of the construction, contestation and negotiation of media discourses on the rural within post-carbon energy transitions’, <i>Energy Policy</i> , 138, p. 111286. Available at: https://doi.org/10.1016/j.enpol.2020.111286 .	2020	Abstract
Realizing energy infrastructure projects – A qualitative empirical analysis of local practices to address social acceptance [Austria]	Friedl, C. and Reichl, J. (2016) ‘Realizing energy infrastructure projects – A qualitative empirical analysis of local practices to address social acceptance’, <i>Energy Policy</i> , 89, pp. 184–193. Available at: https://doi.org/10.1016/j.enpol.2015.11.027 .	2016	Abstract “Although basically the need for new transmission lines is recognized, objections and concerns due to possible negative impacts on the affected environment, such as health (e.g. through electromagnetic fields) and protected natural as well as touristic areas, are raised (see Soini et al., 2011; Devine-Wright and Batel, 2013; Devine-Wright, 2012). The perceived visual impact of new pylons, transmissions lines or wind farms on the landscape plays a key role, and is one of the most important predictor of the public's

			<i>opposition or support (see Devine-Wright and Batel, 2013; Wolsink, 2000)."</i>
Valuation of landscape amenities: A hedonic pricing analysis of housing rents in urban, suburban and periurban Switzerland	Schläpfer, F. et al. (2015) 'Valuation of landscape amenities: A hedonic pricing analysis of housing rents in urban, suburban and periurban Switzerland', <i>Landscape and Urban Planning</i> , 141, pp. 24–40. Available at: https://doi.org/10.1016/j.landurbplan.2015.04.007 .	2015	Abstract <i>"Positive effects on rental prices are identified for views, various types of recreational infrastructure and vicinity of lakes, wetlands, undisturbed areas, nationally significant landscapes and cultural sites. Negative effects are found for several disamenities including road noise, railway noise, industries and power lines."</i>
The landscape benefits of the burial of high voltage power lines: A study in rural areas of Italy	Tempesta, T., Vecchiato, D. and Girardi, P. (2014) 'The landscape benefits of the burial of high voltage power lines: A study in rural areas of Italy', <i>Landscape and Urban Planning</i> , 126, pp. 53–64. Available at: https://doi.org/10.1016/j.landurbplan.2014.03.003 .	2014	Abstract <i>"The results obtained have demonstrated that the willingness to pay per kilometre of power line eliminated is higher in the mountain and hill natural parks than in the other areas considered. Using a simulation with a two costs hypothesis, the research shows that the social benefit from burying high voltage power lines would exceed the costs only in limited areas of the country."</i>
The perception of dimensions of space and levels of infrastructure and its application in landscape planning [USA, Netherlands]	Vroom, M.J. (1986) 'The perception of dimensions of space and levels of infrastructure and its application in landscape planning', <i>Landscape Planning</i> , 12(4), pp. 337–352. Available at: https://doi.org/10.1016/0304-3924(86)90002-x .	1986	Abstract