

Impact case study (REF3)

Institution: University of East London (UEL)		
Unit of Assessment: 13 Architecture, Built Environment and Planning		
Title of case study: Assessing peatland status, condition, management and policy for carbon and other ecosystem benefits.		
Period when the underpinning research was undertaken: 2000 – 2020 (ongoing)		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Mr Richard Lindsay Mr Jack Clough	Principal Lecturer Research Assistant	1997 - present 2012 - present
Period when the claimed impact occurred: 2004 – 2020 (ongoing)		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

Peatlands cover 3% of the Earth's land surface yet store more carbon than all the world's plant biomass combined. Damaged peatlands emit more than 5% of all anthropogenic greenhouse gases. The work of Mr Richard Lindsay has been "instrumental" in stimulating improved commitment to sustainable management and restoration of peatlands within **decision-making at the global scale** by shaping inter-governmental treaties and **UN policy development, changes in international law**, as well as **national policy development** within government departments and national bodies together with local initiatives supporting **award-winning individual businesses** and communities actively involved in the sustainable management of peatlands.

2. Underpinning research (indicative maximum 500 words)

As a result of many land-use pressures, peatlands globally are in a poor state, emitting carbon rather than storing it on millennial timescales as they would do in the natural state. Peatlands represent the UK's most extensive semi-natural habitat and largest soil-carbon store but 80% of UK peatlands are damaged. Peatlands subject to arable agriculture alone emit more carbon than any other form of land use. Lindsay's research provides detailed insights into the repercussions resulting from these pressures and offers solutions in a number of cases, influencing inter-governmental decision-making about peatland 'wise-use' at regional and global scales.

Lindsay has collaborated with the UN Food and Agriculture Organisation (**R2, S7a**), the EU European Topic Centre (**R1, 2**) and with researchers in the Congo and Amazonia, to highlight the urgent need for better mapping of the world's peatlands. He is currently working with the UN Environment Programme to develop a Peatland Pavilion for Climate Cop26, having produced a global assessment of peatlands for the UN-led Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Assessment of Land Degradation and Restoration (**R1**).



Figure 1 Render of Peatland Pavilion

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Lindsay's 2004 report on the Derrybrien peatslide caused by windfarm development continues to be widely cited, including by the Scottish Government guidance on assessing peatslide risk and continues to inform rulings of the European Court of Justice (**S4**).

Collaboration between the Griefswald Mire Centre and peatland researchers across Europe has resulted in Lindsay providing the first comprehensive review of UK peatlands within the context of European peatlands as a whole (**R4**). Working jointly with University of Edinburgh researchers, Lindsay published a critical assessment of methods windfarm companies use to evaluate potential impacts on peatlands (**R5**), while collaboration with the University of Queensland has resulted in a re-assessment of peatlands in the Great Sandy Strait, and collaboration with Nottingham Trent University and Spanish authorities has resulted in new understanding of peatlands in the Cantabrian Mountains. Ongoing collaboration with RSPB and the IUCN UK Peatland Programme (**S5a**) has generated a range of published work based on the original Peat Bogs and Carbon report (**S5b**).

This has led to commissioned research from both Natural England (**S8**) and Scottish Natural Heritage (SNH) (**R4**), the former requiring detailed analysis for a successful Lands Tribunal case, plus a critical assessment of the UK's longest-running peatland experimental plots, while SNH required a critical assessment of the science behind recent planning guidance.



Figure 2 'Paludiculture' in action

Most recently, Lindsay is a lead researcher in the first experimental UK field trials for the concept of 'paludiculture' (farming wetland species on re-wetted soils), working with the SME Micropropagation Services (**S1**) and the Great Fen Project with funding from Innovate UK and the People's Postcode Lottery. He is now a member of Defra's Lowland Peat Task Force developing sustainable agriculture for peat soils (**S3**).

3. References to the research (indicative maximum of six references)

R1. Lindsay, R. 2018. Section 4.2.3.3 – Peatlands, in L. Montanarella, R. Scholes and A. Brainich (eds) *The IPBES assessment report on land degradation and restoration*. Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. <https://www.ipbes.net/assessment-reports/ldr>

R2. Lindsay, R., Ifo, A., Cole, L., Montanarella, L. and Nuutinen, M. 2019. Peatlands: the challenge of mapping the world's invisible stores of carbon and water. *Unasylva: An international journal of forestry and forest industries*. 70, 46-57. <http://www.fao.org/3/ca6842en/ca6842en.pdf>

R3. Lindsay, R. and Clough, J. 2017. United Kingdom, in H. Joosten, F. Tanneberger and A. Moen (eds) *Mires and peatlands of Europe – Status, distribution and conservation*. Schweitzerbart Science Publishers, 705-720.

R4. Lindsay, R. and Clough, J. 2016. *A review of the influence of ombrotrophic peat depth on the successful restoration of bog habitat*. Scottish Natural Heritage Commissioned Report No. 925. Scottish Natural Heritage. <https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20925%20-%20A%20review%20of%20the%20influence%20of%20ombrotrophic%20peat%20depth%20on%20the%20successful%20restoration%20of%20bog%20habitat.pdf>

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R5. Wawrzyczek, J., Lindsay, R., Metzger, M.J. and Quétier, F. 2018. The ecosystem approach in ecological impact assessment: Lessons learned from windfarm developments on peatlands in Scotland, *Environmental Impact Assessment Review*, 72, 157-165. <https://doi.org/10.1016/j.eiar.2018.05.011>.

R6. Clutterbuck, B., Lindsay, R., Chico, G. and Clough, J. 2020. *Hard Hill experimental plots on Moor House – Upper Teesdale National Nature Reserve - A review of the experimental set up (NECR321)*. Natural England. <http://publications.naturalengland.org.uk/publication/5710501441175552>.

4. Details of the impact (indicative maximum 750 words)

Preserving peatlands

- “[UEL’s] work has contributed greatly to global action to mitigate climate change through improving peatland management...influencing the national and global processes, such as the IPBES and the Global Peatland Initiative”. Testimonial from Maria Nuutinen, Food and Agriculture Organisation of the United Nations (**S7a**).

At the global scale, Lindsay’s expertise has been instrumental in bringing about a **wider appreciation and preservation of peatlands** and thus **stimulated change** within areas as diverse as the use of peat in gardening, the managed burning of blanket bog moorlands, the impact of conventional agriculture on peat soils, and the recognition by authorities both at home and abroad of formerly-overlooked peatland habitats. At a national scale, Lindsay has **provided expert evidence** for both Natural England and Scottish Natural Heritage in relation to specific peatland sites resulting in improved environmental conditions and/or improved understanding of land-use impacts on these sites, **achieving major government savings (S8, R4)**.

Setting legal precedence and influencing policy making

- “Richard’s work and expertise on soil stability in upland peatland areas provided crucial insights and was very important in the outcome of the case, viz. a ruling by the European Court of Justice in 2008” Testimonial from the European Commission Legal Department establishing precedence (**S4a**).
- “The methodology adopted by [UEL]...resulted in a change in the law in respect of the measurement of damages in such cases.” Testimonial from Solicitor acting for Derrybrien village, Co. Galway (**S4b**).

Lindsay’s research **continues to influence recent decisions** in the European Court of Justice over the 2003 peat-slide case in Co. Galway (**S4**), but has also brought about **changes in policy thinking** about the importance of shallow peat in both the UK and internationally (**S7a**). Publication of the UN-led IPBES Assessment Report on Land Degradation and Restoration (**R1**), and the drafting of Resolution 43 adopted at the 2016 IUCN World Conservation Congress (**S6**) has stimulated global governmental recognition of the need for action to halt ongoing degradation and urgently initiate restoration of peatlands. This work continues at an international level through Lindsay’s active membership of both the UN FAO Restoration Monitoring Task Force and the Ramsar Convention Restoration Task Force, and at a domestic level through Lindsay’s membership of Defra’s Lowland Peat Task Force (**S3**).

Commerce and industry collaboration

There is increasing acknowledgement that conventional farming on peat soils is unsustainable while management practices on upland blanket mires have led to widespread degradation. Lindsay works with a number of partners, including the SME Micropropagation Services, ADAS and Defra, to develop sustainable ways forward for both upland and lowland

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practices. This work has enabled Micropropagation Services (**S1**) to expand and improve business opportunities in both upland restoration and lowland agriculture sectors. Lindsey provides advice about the benefits of such initiatives to policy-making bodies such as Defra (**S3**) and the UK Committee for Climate Change e.g. In the forum of the Defra-funded Peat Pilots Projects Steering Committee. Lindsay has supported other commercial ventures by severing as the scientific advisor for the film production company Top of the Tree, producer of a multi award-winning film about carbon farming (**S2**).

Improving access to peatland education resources

- “[UEL] has produced a series of briefing notes that have been invaluable to Natural England staff...” Testimonial from Chief Scientist, Natural England (**S8**).
- “..clear and inspiring presentation of research results are a rarity... both the recent IPBES report as well as the IUCN UK Peatland Programme...have benefitted from Mr Lindsay’s contributions...” Testimonial from Maria Nuutinen, Food & Agriculture Organisation of the United Nations (**S7a**).
- “Richard’s work on communicating through animation how peatlands are formed, how they function and how they are damaged is an excellent example. I only wish that such excellent material was available for other complex topics!” Testimonial from Liam Cashman, European Commission (**S4a**).

Building on the impact of Lindsay’s 2010 report about *Peat Bogs and Carbon*, key topics from that report have subsequently been addressed in an accessible way through a series of Briefing Notes which are hosted as **an open-access “invaluable” resource** on the IUCN UK Peatland Programme website (**S5b**). Briefings and Fact Sheets about peatlands have also been drafted or co-drafted by Lindsay for the Ramsar Convention, the Convention on Biological Diversity and the IUCN. Lindsay produced animations to explain key peatland topics, available as open-access resources on the IUCN UK Peatland Programme website (**S5b**), while a Q&A session held with Olivia Blake MP, available on her YouTube Channel, looks at a range of peatland concerns including the managed burning of blanket bog moorlands (**S9**).

5. Sources to corroborate the impact (indicative maximum of 10 references)

Impacts on commerce and industry:

S1a. <https://gtr.ukri.org/projects?ref=BB%2FR021686%2F1>

S1b. <http://www.beadamoss.co.uk/page8.html>

S2. Award winning film *The Carbon Farmer*: <https://www.thetopofthetree.uk/the-carbon-farmer>

Impacts on public policy, law and services:

S3. Member of the Defra task force on the sustainable farming of peatlands: <https://www.gov.uk/government/news/new-chair-to-lead-task-force-on-sustainable-farming-of-peatlands>

S4a. Testimonial email from European Commission Legal Department.

S4b. Testimonial letter from solicitor representing the Derrybrien Village Cooperative.

S4c. <https://www.agriland.ie/farming-news/derrybrien-wind-farm-how-it-all-went-wrong/>

S5a. Named as Senior Research Advisor: <https://www.iucn-uk-peatlandprogramme.org/about-us/our-partnership/our-team>

S5b. See Resources on the website: <https://www.iucn-uk-peatlandprogramme.org/peatland-resources>

S6. Text of IUCN World Conservation Congress Resolution 043 – ‘Securing the future for global peatlands’: <https://portals.iucn.org/library/node/46460>

Impacts on the environment:

S7a. Testimonial letter from the Food & Agriculture Organization of the United Nations.

S7b. IPBES Assessment of Land Degradation Report – YouTube: <https://www.youtube.com/watch?v=V-2E6UqtE3g>

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S8. Testimonial letter from Natural England Chief Scientist.

Impacts on understanding, learning and participation:

S9a. Testimonial email from the European Commission Legal Department.

S9b. Q&A session with Olivia Blake MP:

<https://www.oliviablake.org.uk/2020/12/09/olivia-questions-peatland-expert-about-the-effect-of-moorland-burning-on-the-climate-and-ecological-emergency/>