Perfectly imperfect and muddling through for sustainable futures

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Abstract

Purpose – To combat climate change, protect biodiversity, maintain water quality, facilitate a just transition for workers and engage citizens and communities, a diversity of stakeholders across multiple levels work together and collaborate to co-create mutually beneficial solutions. This paper aims to illustrate how a 7.5-year collaboration between local communities, researchers, academics, companies, state agencies and policymakers is contributing to the reframing of industrial harvested peatlands to regenerative ecosystems and carbon sinks with impacts on ecological, economic, social and cultural systems.

Design/methodology/approach – The European Union LIFE Integrated Project, Peatlands and People, responding to Ireland's Climate Action Plan, represents Europe's largest rehabilitation of industrially harvested peatlands. It makes extensive use of marketing research for reframing strategies and actions by partners, collaborators and communities in the evolving context of a just transition to a carbon-neutral future.

Findings – The results highlight the ecological, economic, social and cultural reframing of peatlands from fossil fuel and waste lands to regenerative ecosystems bursting with biodiversity and climate solution opportunities. Reframing impacts requires muddling through the ebbs and flows of planned, possible and unanticipated change that can deliver benefits for peatlands and people over time.

Research limitations/implications – At 3 of 7.5 years into a project, the authors are muddling through how ecological reframing impacts economic and social/cultural reframing. Further impacts, planned and unplanned, can be expected.

Practical implications – This paper shows how an impact planning canvas tool and impact taxonomy can be applied for social and systems change. The tools can be used throughout a project to understand, respond to and manage for unplanned events. There is constant learning, constantly going back to the impact planning canvas and checking where we are, what is needed. There is action and reaction to each other and to the diversity of stakeholders affected and being affected by the reframing work.

Originality/value – This paper considers how systemic change through ecological, economic, social and cultural reframing is a perfectly imperfect process of muddling through which holds the promise of environmental,

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economic, technological, political, social and educational impacts to benefit nature, individuals, communities, organisations and society.

Keywords Stakeholders, Social change, Social systems, Sustainable development goals, Reframing, Regenerative peatlands

Paper type Research paper

Background

Worldwide, near natural peatlands and wetland ecosystems, sequester 370Mt CO_2eq. a year, more than all other vegetation types combined. Despite their millennia-long existence, recent decades illustrate how peatlands have been excessively exploited by humans for fuel, agriculture and horticulture to the point where they release up to "5% of global greenhouse gas emissions – more than all our aeroplanes put together" (Hastings and Domegan, 2023, p. vi). Wetlands, so intimately tied to the climate crisis, are now the focus of global initiatives in the Congo basin, Northern Canada, Indonesia, the Tibetan plateau and across Europe, including Ireland, which has a high proportion of Europe's remaining peatlands. Comprising 20.6% of Ireland's national land area (just under 1.5 million hectares [ha]), peatlands include a unique and complex variety of raised and blanket bogs, fens and wet and dry heath.

Problem generation and the impact to be achieved

Historically, Ireland's peatlands were harvested predominantly for fuel. Industrial peat extraction [1] and traditional and mechanical turf cutting have resulted in the loss of 47% of the original area of peatlands in Ireland – over half a million hectares of land. It has been predicted that these detrimental environmental actions will contribute to the overspend of Ireland's carbon budget 2021–2030 by 52 to 67Mt CO_2eq., leading to potentially hundreds of millions of euros in fines by the European Union (EU) by 2030. In peatlands, year-round waterlogged conditions slow the process of plant decomposition to such an extent that dead plants accumulate to form peat. Carbon is retained in the soil as layers of peat build up. When disturbed or drained, peatlands can become significant sources of greenhouse gas (GHG) emissions. Conversely, if disturbed, peatlands are rehabilitated or restored, GHG emissions can be averted. Carbon sequestration may, over time, begin again, protecting biodiversity and water quality.

A further problem lies in peatlands being embedded in Ireland's culture and heritage. EU and government-led climate mitigation and adaptation, Just Transition, habitats, peatland and farming policies and directives demands the cessation of peat extraction and more diversification of local economies. Bord na Móna (BnM), a state agency set up in 1946 owning 80,000 hectares of peatlands, was the largest industrial peat extractor in Ireland, supporting jobs in some of the most economically underdeveloped regions. BnM had to transition away from industrial peat extraction to new and sustainable businesses, e.g. renewable energy on its cutaway bog land bank and amenities via tracks and trails. In underdeveloped regions heavily dependent on peat extraction, some perceive this brown-to-green change in BnM's strategy to threaten current jobs and a community way of life that has existed for over 70 years.

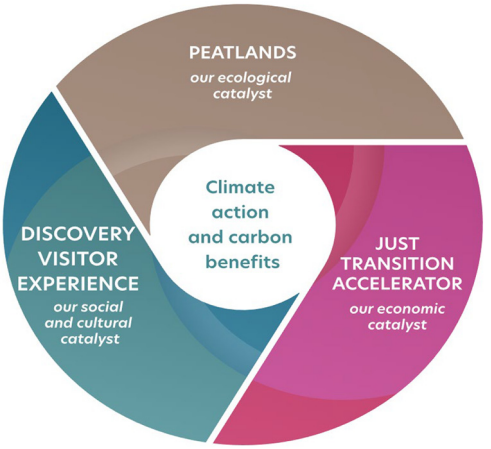
Not only is the BnM's move away from peat extraction a problem, but the speed of the transition (harvesting was suspended in 2019 based on High Court judgement and the formal cessation was announced in January 2020) continues to be contentious, disruptive and exacerbating dependent communities. National newspaper headlines capture the situation "Employment blow for Midlands as Bord na Móna announces 430 job losses" [2] against the context where "People came from different parts of the country to work for Bord na Móna. They knitted together, and became stand-alone communities, and friends for life" [3]. The involvement of multiple stakeholders, including communities, private landowners, farmers

and public bodies adds to the complicated task of restoring and protecting peatlands for their carbon storage, environmental and biodiversity potential, while quickly delivering new employment options in an unemployment hotspot. At the same time, policymakers, scientists and communities are learning that peatlands are of immense value to us in other ways. Sustainable tourism, regenerative farming, carbon sinks, biodiversity, renewable energy and other ecological benefits can accrue to many stakeholders.

Ireland's EU LIFE IP *Peatlands and People* (P&P) is an example of large-scale peatlands "enhanced" rehabilitation project connecting peatlands, policies and people to support the realization of a carbon neutral, low-emission, climate-resilient and environmentally sustainable society and economy by 2050 (Figure 1). P&P is listed as a key action in Ireland's Climate Action Plan (2021/2023) (CAP) issued by the Department of Environment, Climate and Communication (DECC), and over 7.5 years (October 2020–March 2027), it aims to engage and address the concerns of all stakeholders to accelerate and change perceptions of peat as solely a fuel source to instead viewing it as an important natural asset that can provide employment in new ways.

To understand the nature of the change to be identified and achieved, an impact planning canvas tool was used (Figure 2) by a project team led by BnM (BnM state agency with 80,000 hectares of former industrially extracted peatlands), together with the National Parks and Wildlife Service (NPWS; of the Department of Housing, Local Government and Heritage), the Environmental Protection Agency (EPA; the national environmental regulating stakeholder), University of Galway (scientific stakeholder), ERINN Innovation (an SME stakeholder) and the Department of Agriculture, Food and the Marine. This tool facilitates the scoping out, identifying, defining, agreeing and writing up of problems, challenges, changes and impacts across the ecological, economic, cultural and social domains for P&P. The impact planning canvas has nine elements and a series of questions to work through.

This internal exercise at project conception and development stage highlights to all consortium stakeholders that the reframing change of peatlands is at the individual, community, social, economic and environmental level. The reframing of peatlands must be of benefit to BnM, the BnM workers, their families and communities, but also to the Midlands region, local businesses and local policy makers, as well as to CAP and to the EU climate mitigation policies and policymakers. Importantly, the impact planning canvas communicates that a long-term



Source: Authors' own work

Figure 1.
Three pillars of EU LIFE IP peatlands and people

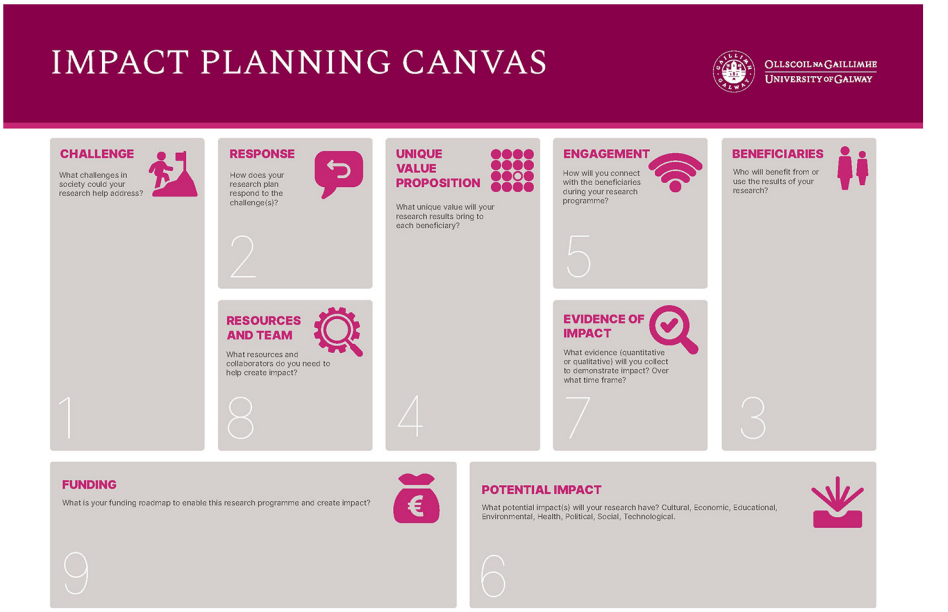


Figure 2.
Impact planning canvas

Source: University of Galway

systemic reframing (the mental structures or cognitive devices that enable us to understand our world) of how peatlands are perceived, used and valued by multiple groups at multiple levels is essential and is the critical task at hand. There are several reasons for choosing peatlands as a model for systemic reframing:

Ecological reframing

A restored bog can actively sequester carbon and once restored becomes a carbon store. This promotes the adoption of carbon-positive postproduction management options on industrial peat extraction sites and the rehabilitation/restoration of impacted wetlands. It also preserves any residual carbon sinks and related habitats important to national land use and biodiversity ambitions:

> The accelerated exit from peat will mean that at least 1.25 million tonnes of carbon will be saved *each year* and emissions will reduce by up to 9 million tonnes up to 2027. (DCCAE, 2019 [4])

Basic rehabilitation, in essence rewetting bogs, stops carbon emissions over time. However, this passive rehabilitation takes centuries. Enhanced rehabilitation, sphagnum moss inoculation accelerates carbon sinks. Active revegetation (i.e. sphagnum moss inoculation) sees carbon sequestration occurring after 14–16 years (Internal partners newsletter Oct 2023). In P&P, enhanced rehabilitation has been activated: approximately 3,800,000 sphagnum moss plugs, planted over 8,000 hectares, in selected plots at a density of 5,000 plugs per hectare. Without sphagnum moss inoculation, a fully enhanced, rehabilitated peatland can take up to 30 years to become a fully functioning peatland with sphagnum-rich vegetation cover. With sphagnum moss inoculation, this timeline is substantially reduced. With an inoculation rate of 5,000 plugs per hectare, this should lead to Sphagnum-rich cover over three to five years. This is one of the

largest sphagnum moss inoculations ever attempted in Europe (Grant agreement amendment *No. LIFE19 IPC/IE/000007, LIFE IP Peatlands and People*).

This enhanced ecological reframing as defined by CAP, implemented by BnM and NPWS ecologists and measured and monitored by the EPA is a fundamental shift away from fossil fuels to accelerated regenerative ecosystems. In effect, former drain diggers become drain blockers used all year round while vast expanses of bare peatlands become a vibrant home once more to rich biodiversity and rare wildlife.

Economic reframing

This recognises the need for a "Just Transition" [see (European Commission, 2023) to support workers, families, communities and companies affected by the transition from a reliance on fossil fuels or energy-intensive industries (peat harvesting) towards a more sustainable future (rehabilitation and restoration of peatlands)]. The development of an accelerator programme for systemic innovation focuses on low-carbon and circular economies, provides a range of supports and services to SMEs and develops good ideas into new products, services and enterprises. It provides an incubator infrastructure in the region to help businesses to test and adopt climate solution ideas and technologies. This reframing by businesses, SME's supply chains, production and packaging, investors and banks along with state agents and regional authorities responsible for innovation and enterprise (e.g. EU Just Transition Fund: Local and Regional Economic Strategies Support Scheme implemented by DECC 2023) is a fundamental shift for commercial stakeholders to carbon solutions and a circular economy.

Social/cultural reframing

A strong focus on public engagement through community leadership, education and interventions contributes to a more climate- and sustainability-literate society and helps to bring about behaviour change to zero emissions for citizens, from transport and food to water, waste and energy (Government of Ireland, 2023). Fresh perspectives and sustainable tourism could emerge as these precious landscapes show visitors moments of awe and wonder at the world around them, instilling a sense of stewardship. As summarised by Paddy Mathews, Head of Irelands Hidden Heartlands, Faile Ireland (state agency for Tourism), "this project could be a centrepiece and catalyst for tourism in the centre of Ireland" and Paddy Malone, Liaison Officer, Irish Rural Link:

> There are lots of small strings (projects & people) pulling in the same direction but pulling separately, if they could be combined it would create a strong, unified rope that they (the community) would all benefit from.

Challenges of working and communicating with a diverse set of stakeholders

Such extensive reframing is in effect a complex social movement about the rehabilitation peatland sites located across a shared landscape. A key part of igniting any movement towards large-scale reframing and widespread change is about co-creating iterative exchanges and engagements with a diversity of communities and stakeholders. P&P collaborates with a vast number of stakeholders through its three pillars, individually and together: enterprise; agriculture, forestry and land use; waste and the circular economy; the public sector leading by example; and citizen engagement and community leadership. For example, Pillar 2, the Just Transition Accelerator, now runs an annual Accelerate Green conference with over 300+ participants in the Midlands attended by industry, enterprise and innovation investors together with local and national policymakers, whereas Pillar 3, the Discovery Visitor Experience, is working with renewable energy providers from geothermal to solar panel providers as well as biophilic architects and sustainable tourism operators to benchmark its offering.

The diversity of co-ordinating stakeholders translates into a multidisciplinary project team of ecologists, engineers, data/GIS, hydrologists, social scientists, PhD students, health and safety, land management, public liaison, community, communication, finance and project management officers, who in turn, as individual pillars and as a consortium, reach out, connect and exchange with a multiplicity of stakeholders in diverse sectors. To manage the challenges of numerous interactions, potential and possible relationships, the one constant is the ecological, economic and social/cultural reframing of peatlands and people as the near and far star guiding light. A reframing database and vocabulary are emerging from the consortium's interactions with diverse micro, meso and macro stakeholders connected in various ways to peatlands and its people. This simplifies the science and interprets policies, e.g. "rewetting" and "regeneration" of peatlands are used instead of flooding, which is historically associated with stress and worry for farmers and communities.

A clear and ongoing challenge is to find solutions that capture the stakeholder voices to generate transformative agency and stewardship whilst avoiding getting locked into historical problems. As a way forward, ten masterplan guiding principles were crafted as part of the impact canvas planning work. We interpret and apply these principles by working "with" not "on" or "for" stakeholders through ongoing co-creation workshops. For example, two communications and co-operation workshops were held at the outset for the consortium to exchange knowledge and insights on collaborating and working with different stakeholders across multi-levels. Barriers identified by the consortium ahead of workshops highlight the challenges of having so many partners involved with different priorities and conflicting views, perceptions, experiences and needs "project may not be as important to some consortium members as to others, therefore uneven commitment to all aspects of the project" and:

> Inadequate communication between some consortium partners – there is sometimes a lack of communication between some partners on progress/delays associated with their work; this can cause frustration among other partners.

Other barriers are the "Changing project environment - The transition in BnM has not settled yet. There are gaps in understanding about the needs of the project at senior management level" and "Self-interest - Consortia members taking decisions that impact on others (and the project) without regard for their needs dependencies." The workshops and associated marketing research focused on how to implement the participatory and engagement principles to begin the process of generating a shared understanding clearly, concisely, correctly, coherently, completely and courteously, given the diverse backgrounds of all involved (See Plate 1).

The challenges of working with a wide, far-reaching and diverse set of multi-level stakeholders means reframing change can only be achieved if solutions are co-created for mutual benefits. This sentiment was iterated by one stakeholder (in-depth interview with tourism expert) who suggested that "if this project is curated with the community, it will bring a 'village hall feel' – and the locals can become custodians of this" while another (town hall setting – community consultation research) highlighted that the project needs to "encourage community-led stewardship of the peatland-scape via restoration, conversion and amenity". On the ground, this means actively bringing real people into the design and futures processes including policymakers. For example, as well as using new terminology such as "regeneration" for farmers who fear flooding, buffer zones and one to one, face-to-face farmer consultations follow the principle of working *with* farmers. Reflecting these activities, P&P has had significant impact in terms of communication and engagement in its first 3 of 7.5 years (see Figure 3).

However, the historical issues, community perceptions and sheer speed of change highlight the tensions on the ground. For example, community members (town hall setting – community consultation research) spoke about the challenge of rebuilding trust in the area "(previously)

Plate 1.
Working with the community – listening to those directly impacted

Source: Authors' own work

community engagement was not a priority, there was a lack of engagement and dictatorship over the rate of projects/developments [. . .] relationship with the community needs to be rebuilt". Other tensions that emerged included – "Lack of connection between existing projects and also between communities, state agencies etc" and the "Lack of understanding of green agenda – Tick box exercise with Bord na Mona – Midlands communities not being empowered" as well as "Bord na Mona see this project as tick the box on peatlands and offer limited support to present barriers to partnering with communities on peatland conservation" and "Just transition focused on climate – rewetting and green energy which provide few long term jobs - need balance on biodiversity and social impacts - local economies".

Co-creating mutually beneficial value

BnM, pivoting away from industrial peat harvesting to climate solutions in four years is a reframing metaphor for P&P, who has already achieved significant collaboration and co-creation with micro, meso and macro level stakeholders resulting in noteworthy impact. Accelerate Green, (economic catalyst to further a just transition in Ireland's Midlands), kicked off its first programme in February 2022. Eight companies participated in the climate-positive scaling accelerator designed to boost green innovation in Ireland. The second cohort launched in August 2022 where nine companies were chosen to participate. Eight sustainable start-ups have been selected to participate in this year's 2023 programme (Figure 4). Together, the companies across the three cycles use more than 70 people and have a combined turnover of over €5m.

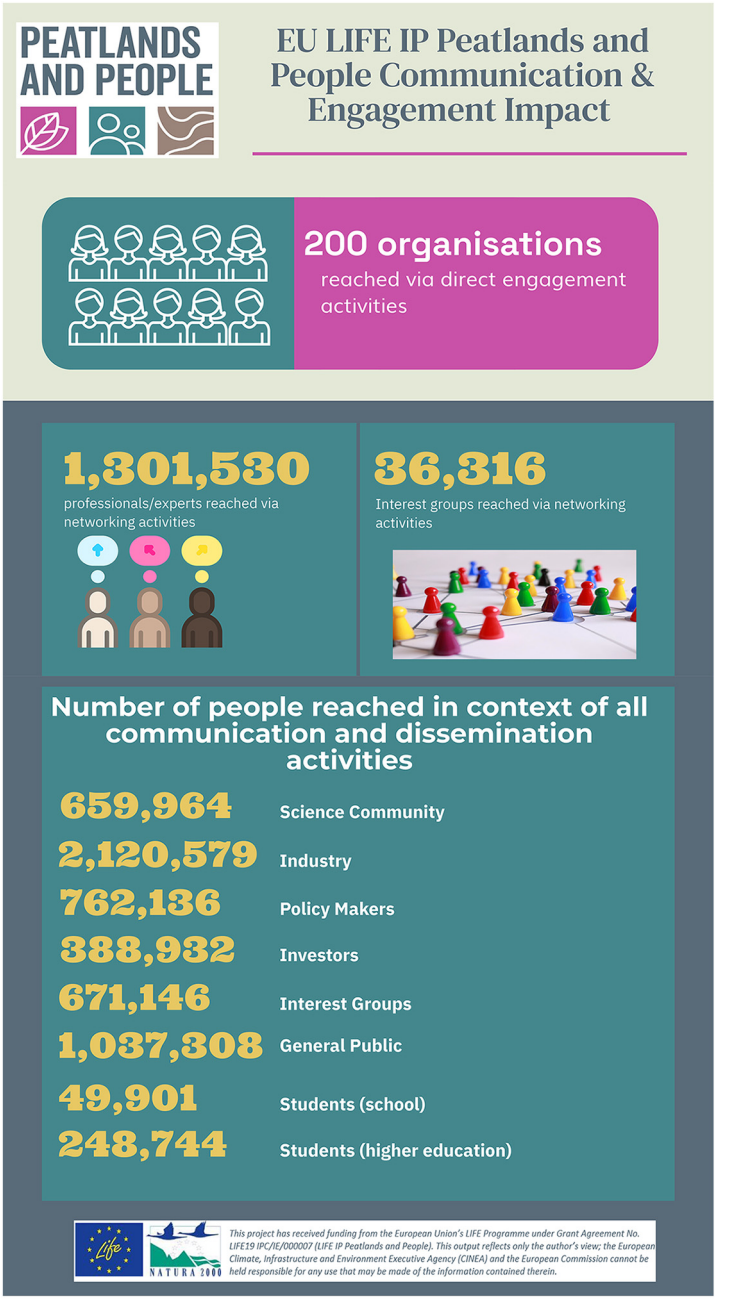


Figure 3.
Communications and engagement impact

Source: Authors' own work

Source: Authors' own work

Figure 4.
Accelerate Green 2023 companies

In addition, Accelerate Green host a programme of annual events open to all firms, not just participants, that are designed to inform, challenge and deliver meaningful impact, such as an Open night at Guinness Enterprise Centre and webinar series Accelerating Green Ambition with speakers John Reilly, Head of Renewable Energy at BnM and Mike Stenson, Project Director for Building Materials Technology Campus, Kingspan, world leaders sharing their knowledge on sustainability investment and scaling up businesses and an in-person webinar with data experts, business leaders and business supports designed to help companies measure effectively and innovate strategically. As Adrian Costigan, Commercial Director, NEG8 Carbon Accelerate Green participant says:

> The general networking from all aspects of the program is one of the highlights. The interesting non-speaker folks invited to come along to the social events is also good and creates interesting conversations and view points. The casual networking dinner with investors was excellent. Even if they are not an investor for us, it's good to get into that circle in a casual way.

Accelerate Green (4th cohort) is open for 2024 (acceleategreen.ie), specifically targeting Midland firms.

Marketing research	Sample size	Key findings	Reframing impact
Literature review	Sample of key words searched: sustainability; sustainable tourism; climate change; consumer changes; tourism trends; digital advancements; impact of COVID-19 (tourism and consumer trends)	Nine global-to-local sustainable tourism mega trend – growing consumer awareness of climate change urgency; increasing interest in sustainability in tourism; evolving consumer demand; slow tourism; landscape and nature; transport infrastructure and innovation; digitisation; COVID-19; and healthy world, healthy Ireland	*Economic, cultural, social impact* Business case development around regenerative tourism, slow/eco-tourism, sustainable tourism, sustainability, biodiversity, wildlife, wild animal framing, landscapes of hope. Regional regeneration
Literature review	Sample of key words searched: just transition initiatives, scaling, innovation, green business, low-carbon technologies	Emergence of carbon positive incubators and accelerators; governance models	*Economic impact* Accelerate Green
Feasibility study	Areas assessed: -Market segment analysis -Market size -Competitive analysis -Pricing -USP	Confirmed the viability of People's Discovery Attraction; uncovered the emergence of Climate Houses; identified potential for 250,000 visitors from five key segments; USP – future focus, regeneration	*Economic, social, cultural, ecological, technology, educational impact* USP future focus, regeneration, catchment, 4 million, 45 permanent employees; €8m revenue; €12m regional economy multiplier effect. Purpose-led social enterprise
Concept testing Survey-administered online to test two concepts Global gold standard metrics Key metric – The intention to consider index (ICI)	$N = 950$ tourists across six markets (Republic of Ireland, Northern Ireland, Great Britain, USA, Germany, France)	Future-oriented, encountering wonder, awe, beauty and power of nature. Concepts performed strongly regarding relevance, appeal, excitement and surprising	*Ecological, cultural/social, educational impact* Positive impact with tourism board on demonstrating a concept that can make these remote landscapes of the area appealing, which had failed before
Social listening	50,000 social media posting across platforms such as TikTok, Instagram, Facebook, etc	Socialisation trends and patterns of domestic and international visitors identified	*Cultural/social impact* Topic awareness and sentiment towards sustainable visitor attractions among domestic and international visitors scoped out

(*continued*)

Table 1.
Examples of marketing research for reframing impact

Marketing research	Sample size	Key findings	Reframing impact
In-depth stakeholder interviews	$N = 319$ relevant experts from sustainable tourism, renewable energy, food production, planning, landscaping and local government, other attractions funders, local and national politicians and state agencies	Appetite and opportunity for a year-round nature-based indoor large-scale experience	*Economic, ecological, technology impact* Contributed to the development of concept and business case; potential funders identified; climate action and sustainability discussion initiated and continuing; networking/ support relationships established (co-creation)
Town hall collective intelligence community workshops	$n = 45$ (20 local community groups)	101 barriers, 100 drivers and 132 priorities identified	*Economic, cultural, technology impact* Focus on climate solutions in energy, food, transport, waste management Do not focus on culture/ heritage – over serviced
Site assessment	22 initial sites >200 hectares	Short list of three final site candidates; Deep peat for Spag moss central	*Ecological, educational impact* Enhanced rehabilitation activated; best practice site selection criteria implemented; site profiling helped with spag inoculation decisions
Focus group project staff	$N = 26$	25 barriers, 22 enablers and 23 solutions, 104 priorities	*Economic, ecological impact* Contributed to the development of concept and business case
Value network analysis	$N = 14$ (consortium organisations)	Tangible and intangible exchanges and networking	*Partnership impact* Emergence of new shared values

Source: Authors' own work

Table 1.

Extensive ongoing market research, secondary and primary, qualitative and quantitative (Table 1), shows the need and justification to expand the scope and ambition of P&P, including the People's Discovery Attraction (social and cultural catalyst) to be Ireland's Climate House where visitors will "encounter" not just regenerating nature and a vast regenerating ecosystem, but also sustainable lifestyles and climate literacy in a fun, hands-on way, e.g. IrelandNetZero is a digital emissions game with easy-to-use user interface using dynamic modelling algorithms that makes the CAP targets and insights available for visitors to the attraction in a translatable format to help navigate the sustainability complexity. In essence, insights from the highly scientific and complex national models used by the Climate Action Unit, Taoiseach's Office, together with CAP targets, are incorporated into a simpler IrelandNetZero model, thereby enhancing visitors' ability to bring analysis and scenario testing into decision-making in real time.

Impact is difficult to define and track, P&P's impact is no exception (Keeling and Marshall, 2022). Metrics for ecological impact include restoration, drain management,

vegetation, hydrological and GHG emissions monitoring for 33,000 hectares over 82 separate sites [5]. Within 56 of these sites, there are over 8,000 hectares of deep peat suitable for "enhanced" rehabilitation, i.e. sphagnum moss inoculation – 14,000 hectares of peatlands have already been rehabilitated (EU LIFE monitoring visit 2023; Allan *et al.*, 2023). This level of overall coverage and density of inoculation provides the best balance for an *accelerated* transition to fully functioning peatland. Metrics wise, these calculations are being evaluated annually to provide a better understanding of how the inoculation process is influenced, over time, by indigenous, local effects such as location, rain fall, drought and peat depth. These metrics for impact are captured in 81 milestones and 56 deliverables due to the EU over the course of the project, including finalised restoration plans, partnership agreements, planning permission granted, restoration, drain management, vegetation, hydrological and GHG emissions monitoring.

From a qualitative marketing research perspective, 364 people were met on a face-to-face in-depth interview basis (January 2021 to October 2023). These include technical experts/other attractions and influencers, $n = 105$; community group representatives, $n = 42$; community group representatives group settings, $n = 145$; and funders/politicians and agencies, $n = 72$. Relevant soft metrics for these in-depth stakeholder interviews include, namely, organisation, address, phone, email, purpose of meeting, area of expertise (economic, ecological, technology, etc.) role and function, meeting date, summary and actions.

P&P actions are mapped against CAP, as a formal requirement by the EU LIFE. After each CAP iteration is announced, the project team and beneficiaries review the CAP and confirm that the project is aligned to the goals and actions of that CAP. However, this process is difficult as each CAP iteration is substantially different from the previous iterations – the themes change, and the individual action items can move, change or disappear. To overcome this, the project team has looked to improve this situation and now has:

- reactive: process is in place to make this review more streamlined;
- reporting: a work output that indicates the breadth and depth of the projects linkage with each the CAP iteration; and
- proactive: working with DECC to have an input in the development of the next CAP iteration.

One metric used is the number of times P&P is mentioned in CAP. The monitoring framework being developed is:

> To establish the linkages between CAP themes which the project is contributing to directly, through the core project activities, together with complementary activities to the meaningful themes of CAP, e.g., the project targets 16 of 19 themes of CAP23. The framework will identify the relevant corresponding IP KPI/targets in a meaningful, coherent way. (EU LIFE IP first Interim report, 2023)

While the project manager works on developing this CAP model, another useful framework used by P&P is the European Science Foundation impact taxonomy (Figure 5).

The impact taxonomy is valuable as it offers a mechanism to capture the effects of planned and importantly unanticipated developments. Unexpected and unintended impacts are predicted on a 7.5-year period, and the EU LIFE IP structure facilitates this through its monitoring and amendment processes. However, the scale and pace of change since writing the original impact planning plan have been staggering. The consortium has had to redesign ecological, economic and social aspects of the work. Although frustrating for the project team, stakeholders and communities, it has also been rewarding as the impacts are already

Source: Authors' own work

Figure 5.
EU LIFE IP peatlands and people impact

greater than expected – a total of 40,000+ hectares of peatlands will be re-wetted over seven years with year-round employment.

Dealing with the unexpected and unintended

The first significant developments took place following the submission of the P&P proposal, which resulted in the EU and Irish Government funding of the Peatlands Climate Action Scheme (PCAS), also known as Enhanced Decommissioning Restoration and Rehabilitation Scheme (EDRRS). In summary, PCAS/EDRRS delivers enhanced rehabilitation measures on former industrial peatlands extending across an area of approximately 33,000 Ha over five to seven years. This far exceeds what was planned in P&P in 2019, and even surpasses the additional aspirational complementary actions that were expected after the project over the next 10–15 years. As such, the original ecological KPI targets set for P&P have already been achieved through the PCAS/EDRRS and will be far exceeded. Furthermore, there is no further BnM land available for rehabilitation within the timeframe of P&P. This unexpected initiative has resulted in a revisit of planned actions and budget lines with the overall ambition to maximise impact by optimising the integrated benefits of cooperation between the respective initiatives. P&P actions now focus on "enhanced" rehabilitation, that is accelerating the transition of re-wetted peatland to fully functioning peatland through sphagnum moss inoculation and other associated measures. This is not a linear process. Each year, the regenerating peatlands are re-assessed to determine whether further plots of re-wetted deep peat are candidates for sphagnum moss inoculation:

> Restoring and rehabilitating the peatlands ensures that the bogs can reduce the release of GHG into the atmosphere and in the long-term, act as carbon stores. In turn, this will support multiple ecosystem service benefits – providing new habitats for species of conservation interest and biodiversity. Mark McCorry

Mark McCorry, senior BnM ecologist, now has a team of ecologists including three designated carbon monitoring experts liaising with workers out in the bogs blocking drains and logistical support crews who install the solar panels to power the carbon flux measuring tower and move the heavy-duty machinery from one bog to another.

The second unexpected development concerns the economic catalyst, the Accelerator. At the time between submission and commencement of the project, BnM had a major rapid shift in their innovation strategy moving from internal innovation to enabling and supporting external innovation. As the Accelerator aligned with a lot of the BnM ideas, this was an opportunity for BnM to implement their strategy and have the pilots work with their business development team. These pilots whilst fulfilling the original objectives of P&P were at a larger scale (in terms of cohorts and financing), and in a much shorter timeframe than the original plan. The result is an early success story for impact and sustained accelerator activities.

Ethics of impact

P&P are learning that the ethics of reframing are people whose lives are directly and indirectly affected. For almost 70 years of industrial peat harvesting, there was stability of land use and employment and community life was comfortable, predictable with little change. The phenomenal amount and sheer speed of change have been difficult for all – BnM, NPWS, EPA, employees, local communities and local policymakers alike. The ethics of reframing peatlands for consortium members, wider stakeholders and communities' points to reframing being a win for some and a loss for others. While some BnM workers talk about greater job satisfaction and being witness to growing

biodiversity while having year-round employment versus four-/five-month harvesting work, others are unemployed:

> In many cases, local communities feel abandoned when contractors from outside of the area are drafted into complete works in local areas. Many local businesses and trades cannot tender for these works. Local land is being used without local employment being used to further created, it would be more beneficial if local people could have involvement in these projects. Michael Fitzmaurice, Chair, Turf Cutters Association

Other community groups and local councillors vocally disagree with BnM's innovation strategy "Accelerate Green isn't targeting local firms" (local politician, in-depth stakeholder interview). In response, Accelerate Green is targeting local firms in round 4. However, it is a challenge as the region has a low enterprise base. All the while, environmental groups want higher targets. "The peatlands target as proposed are not in line with climate targets," says Jörg-Andreas Krüger, President of Naturschutzbund Deutschland, Germany's largest nature conservation NGO with a significant history in wetlands preservation. "By 2030, 30 per cent of EU peatlands should be rewetted. The targets must be in line with net-zero emissions from peatlands by 2050" [6].

A second substantive ethical challenge is balancing top-down carbon reduction emissions in a manner that includes the bottom-up way local people want their area to develop, including no displacement of existing amenities. Midland communities were connected to peat as a fuel and source of income. These same communities, like the consortium, are connecting to these expansive peatlands' landscapes and wilderness in ways that prioritises caring for the wondrous, beautiful surroundings while also facilitating a closer, more direct immersion in the environment and providing employment. Each community has its own unique character that needs to be respected. For example, one local bog community want to preserve the social industrial history of former bog workers while another community wants to add to its sculpture park. Dr Liam Lysaght, Director of the National Biodiversity Center says, "A physical fabric (project) isn't needed, but a network and experience for the community to slot into is sorely missed", while Ian Lumley, An Taisce, is of the view that the Peoples Discovery Attraction is "tapping into unchartered network [. . .] which makes the project more exciting". The Discovery Attraction, aka Ireland's Climate House, is navigating its way forward with all stakeholders so as not to cannibalise existing tourism offerings in the region. Instead, the expressed community needs are to direct interested visitors to existing venues for more peatland experiences, such as Sculpture Park or industrial heritage. This aligns with the social listening research, which indicates a cultural and social reframing opportunity for a "futures looking Climate House" with a truly new sustainability focus. To increase the chances of success, the mantra is to tread lightly using ongoing marketing research while travelling this journey.

Conclusion

As the world strives to reduce carbon emissions, peatlands have been dubbed the new "black gold," storing over three times the carbon of all the forests in the world. Governments who once issued policies to extract resources from these landscapes, now set polices for rehabilitation and restoration to lower GHG emissions. And as with top-down policies, everyday community life is experiencing upheaval and turmoil. The speed of change demanded by climate policies is generating significant disruption to daily life. Against this context, for the P&P project, people who once dug out drains to dry up bogs for peat harvesting are now blocking those very drains as part of a large-scale rehabilitation process. New workers, such as ecologists (ten between BnM and NPWS) and climate monitors (eight

between BnM, NPWS and EPA) are working in this soggy land. Regenerative peatlands represent a local story and a national ecosystem as a symbol for planetary health. We humans, as individuals, community members, project staff, local policymakers, government and EU officials are muddling through (Lindblom, 1959; Allen, 2020) how to reframe how we live and work with nature and with each other for sustainable futures. The faster we rehabilitate the better for peatlands, biodiversity, emissions and Planet Earth. The faster we rehabilitate exploited peatlands, the more we are muddling through the complex reframing challenges and tensions for numerous people and their daily lives.

Notes

1. www.irishtimes.com/business/energy-and-resources/bord-na-mona-ends-all-peat-harvesting-1.4459179
2. Employment blow for Midlands as Bord na Móna announces 430 job losses | Independent.ie
3. Bog villages after peat production ended: "What grew afterwards was amazing: the wildlife, the biodiversity" – *The Irish Times*.
4. www.dccae.gov.ie/en-ie/news-and-media/press-releases/Pages/-Accelerated-Exit-from-Peat-will-be-accompanied-by-Just-Transition-for-Workers-and-the-Midlands-%E2%80%93-Minister-Bruton-Accelerat.aspx
5. For a detailed metrics example, see Ballaghurt & Glebe Bogs Cutaway Bog Decommissioning and Rehabilitation Plan 2023 at www.bnmpcas.ie/wp-content/uploads/sites/18/2023/05/Ballaghurt-and-Glebe-Bogs-Draft-Rehab-Plan-V8.pdf
6. A new dawn for Irish peatlands? Proper management could have big impact on carbon emissions – *The Irish Times*.

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