



The James Hutton International Land Use Study Centre (ILUSC)

Identifying International Priority Research Challenges and Opportunities Workshop 1

25th November Workshop Summary

The International Land Use Study Centre (ILUSC) is a flagship initiative of the James Hutton Institute, supported by the Macaulay Development Trust. ILUSC will establish and lead an international land-based research agenda focusing on the priority science challenges identified in this workshop.

Some 18 Hutton scientific staff and 20 external specialists gathered on-line to identify strategic research priorities for ILUSC to pursue over the next 5 to 10 years. Participants were invited to:

- Envision ILUSC impacts by 2031
- Identify the external trends and changes - post Covid - which we need to factor into our thinking
- Describe international land use issues and opportunities, both at present and those coming 'over the horizon'
- Assess which of these issues and opportunities the James Hutton Institute is best placed to address

The workshop yielded a set of high-level research priorities:

- Enabling transformational change in land use
- Evaluating and supporting green finance initiatives with independent science
- Identifying the right scale and place for land-based intervention measures
- Supporting environmental and social justice in land relations
- Developing practical measures to support wetland and peatland restoration
- Bridging the science – policy - stakeholder interface with integrated data and translational research

Further detail on these priorities are presented on page 3.

What happens next?

Teams are being brought together to develop position papers on the strategic priorities identified at the first workshop. These teams will develop 'position papers', which draw on the notes made from the first workshop, and flesh these out with further reflection, evidence review and analysis. These teams will include Hutton staff, participants in the first workshop and further external experts. Draft

position papers will be circulated to participants in the first workshop, and all those who participated in writing one or more position papers.

You are very welcome to join in the development of position papers, and we hope that you will join us at our next workshop. If you are interested in working on one or more of the position papers, please contact the ILUSC administrator: Vivienne.King@hutton.ac.uk

Workshop Participants

Alessandro Gimona - The James Hutton Institute
Ali Karley - The James Hutton Institute
Bill Slee - The Macaulay Development Trust
Cathy Hawes - The James Hutton Institute
Clive Mitchell - NatureScot
Dan McGonigle – Defra
Dave Burslem - University of Aberdeen
David Miller -The James Hutton Institute
Emily Taylor - Crichton Carbon Centre
Fiona Harrison – Scottish Government
Jane Craigie – The Rural Youth Project
Katrina Brown - The James Hutton Institute
Keith Matthews - The James Hutton Institute
Kirsty Blackstock The James Hutton Institute
Kit Macleod - The James Hutton Institute
Kevin Chika Urama – The African Development Bank
Leland Glenna – Penn State University
Lee-Ann Sutherland – The James Hutton Institute
Mags Currie - The James Hutton Institute
Mairi Mackenzie - Scottish Crofting Commission
Maria Nijnik - The James Hutton Institute
Mario Giampietro – Autonomous University of Barcelona
Martin Phillips – Leicester University
Matthew Kelly - Administrative Data Research Unit – Wales
Michael Woods - Aberystwyth University
Miriam Glendell The James Hutton Institute
Nav Bakhsh - Boots and Beards, Scotland
Nick Schurch - The James Hutton Institute
Nicola Melville - SEPA
Nina Clancy - RSABI
Peter Reichert - Swiss Federal Institute of Technology
Petra Boevink - The James Hutton Institute
Robin Pakeman The James Hutton Institute
Rosalaura Romeo - FAO Mountain Partnership Secretariat
Rowan Ellis - The James Hutton Institute
Scott Newey - The James Hutton Institute
Stephen Young - Scottish Land and Estates
Zisis Gagkas - The James Hutton Institute

ILUSC Strategic Priorities

Workshop participants identified six high priority research priorities for further development. These areas encompass broad areas of study, which will require narrowing in. There may be particular potential for focusing at the intersection of these priorities (e.g. intersection of green finance and peatland restoration). The priority challenges are elaborated here individually for ease of communication.

Transformational change in land use

This strategic priority recognises the transformational changes to land use which will need to occur in order to address pressing global issues of climate change, biodiversity loss, soil degradation and food security. State supported targets for net zero and green recovery are increasing pressure on land use, but without clear support mechanisms or visions for facilitating these transitions. Globalisation and post Brexit adjustments, in addition to major weather events, changing diets and commodity price fluctuations, create uncertainty for the land sector. Post-covid migration into rural areas is further increasing pressure for land to be used for housing and public benefit, suggesting a shift in how rural land is valued. In contrast, the land sector has traditionally thrived on stability. Farming in particular has strong socio-economic path dependencies. Farmers are struggling with decreasing margins and profitability, leaving limited room to manoeuvre. Democratisation of land use decision-making is likely to be resisted by long-term landowners who depend on land for their livelihoods.

Pursuing this strategic priority builds on Hutton's strong practical links to land managers and research into land management decision-making and land governance. Hutton has also worked extensively in the uplands areas which are most vulnerable to land transitions, but also has strong links to arable farming communities and forestry research. Developing new techniques for crop production, regenerative agricultural approaches and new commodities suited to evolving land capability are also within Hutton's skillset.

Links to other priorities: This strategic priority intersects with green finance, which has the potential to drive transformative change in land use. Co-constructing transformative solutions and robust governance approaches will involve bridging the science, policy and stakeholder interface with integrated data the translational science. These interventions will need to be targeted at the right scale and place, and are likely to involve peatland and wetland restoration. Transforming land use must occur within a framework of social and environmental justice. As an independent research organisation, Hutton has the opportunity facilitate the co-development of robust and achievable visions for transformative change.



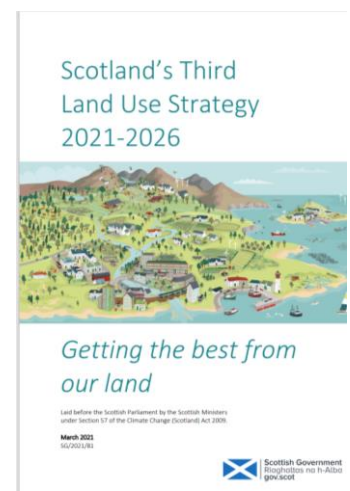
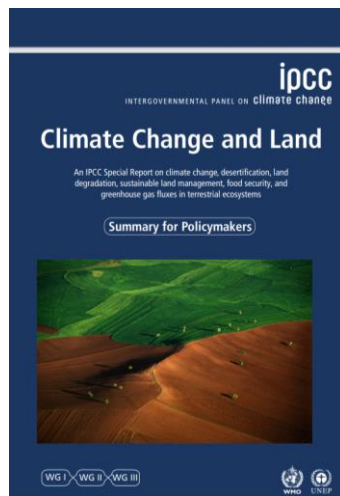
Transformative changes to Scotland's land use are needed within the next 10 to 15 years.

Green Finance

This strategic priority recognises the urgent need to underpin the growth of private green finance schemes with robust scientific data. There is a rapid increase in private investors buying land and investing in carbon markets, biodiversity offsets and tradeable tokens, but there is no recognised standard for measuring the impact of these schemes, and the governance of these initiatives is in its infancy. The UK's Green Finance Strategy sets out an agenda for positioning the UK at the forefront of green financial innovation. Financial institutions are expressing interest in how they can engage with environmental data and research findings, and how these relate to financial markets, traditional insurance, and derivatives.

Hutton's track record in soil science, plant pathologies, land capability evaluation and catchment modelling offers an opportunity to provide 'decision-grade data' to underpin and evaluate these initiatives. There is also a need for accurate accounting for biodiversity, natural capital and the impact of 'nature-based solutions'. The carbon measurement arena appears saturated, but there may be a role for Hutton in independent scientific review and certification of these programmes. The potential for collaborations with Leeds and Oxford, and Nature Finance Pioneers were identified by workshop participants. Hutton's position as an independent research institution can enable us to ask uncomfortable questions, and act as an independent evaluator and certifier of green finance initiatives.

Links to other priorities: This strategic priority has the potential to transform land use in Scotland. Accurate measurement of potential impacts will be critical for situating interventions at the right place and scale. Wetland and peatland restoration projects are amongst those being developed through green finance initiatives. The lack of transparency of these schemes, coupled with public and scientific concern about greenwashing make this an environmental and social justice issue.



Targeting Interventions at the Right Scale and Place

The challenge of designing interventions at the right scale and place reflects the increasing pressures (net zero, food security, environmental degradation, climate change) on land to produce multiple benefits. Post-covid recovery is also seeing migration into rural spaces and new demands for greenspace and environmental amenities. Where to locate the range of (potentially competing) interventions will be a critical and sensitive topic, requiring robust decision-support tools. This topic encompasses rural community development, renewable energy production, biodiversity protection, water management and carbon sequestration. Associated interventions are most effective at different scales but are inevitably located in specific locales. These locales have distinctive habitats, local cultures, land uses and land capabilities, as well as a range of landholders and land users with competing interests. Translating high-level national objectives into local realities in ways which are socially just, will require primary science into effective interventions, and substantial data integration, translation and governance work. Addressing this challenge will involve new collaborative research across systems and linking systems approaches

This topic will benefit from Hutton's existing strengths in land capability and ecological modelling, governance and collaborative working with a range of stakeholder groups.

Links to other priorities: Peatlands and wetland restoration will need to be lodged in particular places at varying scales; green finance initiatives need to be established at the right place and space and be underpinned by data; and there will be a need for considerable bridging of science, policy and practice to identify social and environmental justice solutions. Major, successful interventions will be needed to underpin transformative land use change in the coming decades.



Interest in peatland research has increased dramatically in the past 2 years; Hutton expertise in this area is already in high demand.

Environmental and Social Justice

This strategic priority recognises the need for scientific underpinning of ‘just transitions’, which was made particularly prominent by COP 26. The difficult land use transitions ahead need to recognise the needs of the many, despite land being held by relatively few. In Scotland, those few are overwhelmingly white and male, posing important social justice issues, particularly in relation to state remittances and incentives for change. There are also international disparities, with the consumption patterns of the north impacting on southern countries, and risks to southern ecologies and equalities from northern efforts to meet net zero objectives. Post Covid recovery is seeing gentrification of some rural communities, while rural depopulation continues in others. Technological advances – particularly digital technologies – offer both opportunities for new businesses and quality of life, but risk creating further division.

Farmers have long believed themselves to perform a crucial role in society, meeting the challenges of food security. They feel their achievements in food production are being undermined by dietary changes and concerns about environmental degradation. The need for major change is evident but there is no roadmap for success in their changing context. They struggle to operate viable farm businesses, and face competition from investors who assetize agricultural land. Other challenges include enabling access to the health benefits of greenspace, creating a more culturally diverse countryside, addressing irresponsible land access, enabling generational renewal and retention of young people, and visioning for a socially and environmentally just food system. Climate justice and spatial justice issues were also raised by workshop participants.

This priority will build on Hutton’s expertise in generational renewal, land reform, greenspace and outdoor access, women in agriculture, and international development work. As an independent research organisation, Hutton has the opportunity to mediate conflicts and assist movement towards collective visions but these are inevitably contentious and lodged in specific spaces – there is no single ‘right’ vision for a given rural space. Hutton can establish itself as the ‘go-to’ place for land tenure, land use policy analysis. Research into the health benefits of greenspace might be saturated but there is scope for research into who can and cannot access those benefits.

Links to other priorities: Green finance and associated greenwashing practices are social and environmental justice issues. Environmental and social justice principles underpin the bridging of the policy, stakeholder and researcher interfaces, and are facilitated by data integration and translational research. Ownership of data and who has the right to use it are also social and environmental justice issues.

Wetland and Peatland Restoration

The proposed strategic priority on wetland and peatland restoration reflects a vision and need for practical, evidence-based solutions. Flood management, mitigation of extreme weather events, biodiversity restoration and carbon sequestration all benefit from research in this area. Workshop participants recognised that policies and best practices in this area are changing fast – there is an urgent need to collect data on how restoration activities can work effectively; identify robust, measurable indicators of change; and enable marine, land and freshwater systems to be analysed as a whole system.

Hutton are already working at the cutting edge of peatland research, with internationally recognised expertise in catchment modelling and hydrology. Addressing this challenge will involve developing a community of practice for data-driven solutions.

Links to ILUSC strategic priorities: Wetland and peatland restoration is nested within broader priorities of identifying the right place and scale for interventions, green finance initiatives which can fund interventions and support robust indicator development, and bridging the science/policy/stakeholder interface with integrated data.

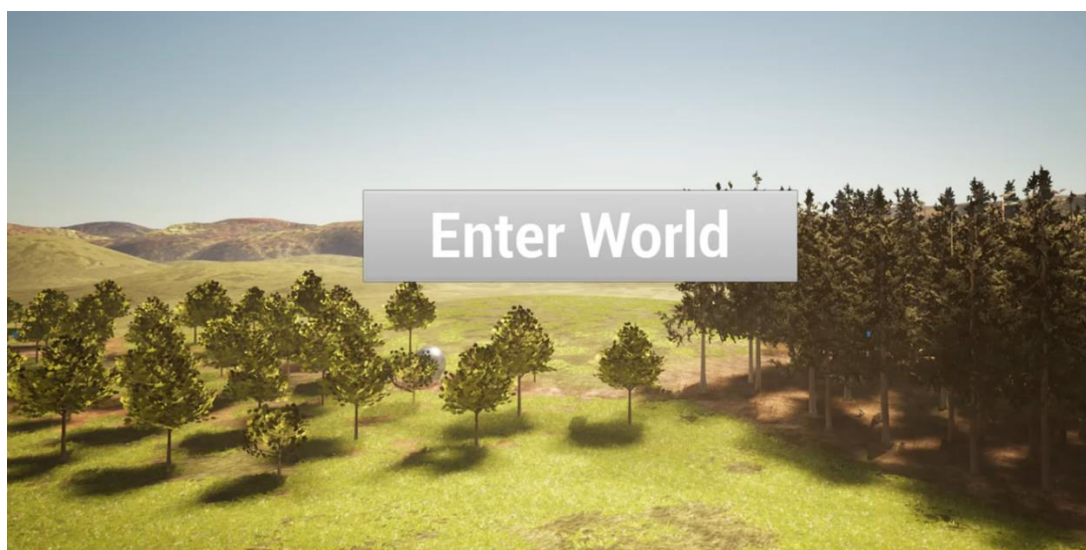
Bridging the Science - Policy - Stakeholder Interface with Integrated Data and Translational Research

This strategic priority addresses the need for data integration to underpin land use transitions, and the importance of enabling a range of stakeholders to make use of highly specialised and varied data to inform policy and practical action. The volume and complexity of land-based data is growing exponentially, yielding opportunities and challenges for integrating datasets and informing decision-making. Trends towards open science and transparency in decision-making reflect the demand for public goods from publicly funded science. Data literacy and digital upskilling are important tools; teaching stakeholders to assess how knowledge claims are made and used is an important component of democratising decision-making. Embracing uncertainty, critical appraisal of research methods, data integration and anonymisation techniques and translational work can position Hutton as a centre of excellence in this area.

Workshop participants see an opportunity for Hutton to be a beacon for open land use science, exploring the challenges and boundaries. Hutton can make its substantial datasets and outputs more accessible, by aligning data types. Hutton can become the 'go-to' place for citizen science, engaging stakeholders throughout the research process. There is also a need to bridge research questions – linking net zero objectives with biodiversity and food security issues. Future scenarios of land use and how these can be operationalised will require transdisciplinary research.

This strategic priority builds on Hutton strengths in transdisciplinary research and working directly with policy makers and industry stakeholders. Hutton is actively working to open its science and integrate datasets, which will be field-leading in some disciplines. Hutton's track record of participatory mapping, and new investment in virtual reality, decision support tools and phone apps can help to better communicate science and increase impact with different populations. There is an opportunity to scientifically assess these processes of science communication and translation, and critique them from a social justice perspective. Hutton is uniquely placed to work across disciplines and bridge silos of government policy and stakeholder interests. There is a need to do this in a way which is transparent – warts and all – of the process of data sharing and open science.

Links to other strategic priorities: The production of scientific knowledge is not value neutral – it is linked to societal inequalities. Who owns and can access data influences how it is used and interpreted. Excellence in equipping and working with a variety of stakeholder groups is critical for identifying the right scale and place for interventions, and enabling transformational change in land use.



Further detail on the outputs of the workshop can be found in the [Full Workshop Report compiled by Dialogue Matters](#).