

# Supporting Scotland's Land Use Transformations: Overview



The James  
**Hutton**  
Institute

Keith Matthews, End of Year 4 meeting with Scottish Government  
21 April 2026, Summary Slides for JHI-C3-1

# End of Year 3 Meeting

- For Year 4 there is a ‘marketplace’ format meeting in Saughton House, 21 April 2026 so the slide decks now function as a ‘readout’ for those unable to attend.
- This slide-deck reproduces the Year 4 reporting as an update for those familiar with the projects and has introduction slides and links for new contacts.

# Year 4 progress report

This year has seen an increase in the interactions with policy teams, building on Years 1-3 with three simultaneous instances of Quantitative Story Telling processes. The year also saw the write up of policy coherence analyses and the evaluation of the first two phases of QST drawing on inputs from researchers, analysts and officials.

- The **Land Use Strategy** was supported by four teams within the project. Maps (n=21) looking both at the state-of-play and trade-offs between land-use objectives were generated with RESAS staff for the [LUS Evidence Pack](#). A [storymap](#) allowing the LUS evidence and related materials to be explored was created. Materials from the LUS team also referenced our work on [policy coherence](#) and based on our analysis of responses to ScotGov [consultation responses](#) on land-use topics (n=29). The project lead contributed to the LUS expert group.
- Support for the **Agricultural Reform Program** was led by the governance team with cross-Theme and cross-Institution participation. They conducted a **systems analysis of how the ARP strategic objectives interact**, to capture important but potentially unidentified areas to monitor. This generated individual models and six overarching narratives, providing insights on key reinforcing or balancing cycles that could drive delivery. These outputs were used in a [workshop](#) with ScotGov officials, analysts and science-advisers. **A technical report is available to ScotGov staff on request.** The team also continued to support the deliberations of the ARP on future agricultural payments delivering analysis of [uptake of Greening/Agri-environment measures](#) and enhanced the Future Agriculture Payments [scenario generator](#) (adding alternative LFA/VCS schemes). The team also contributed to deliberations with ARP policy-leads and the ARIOB forum.
- The **muti-objective land-use analysis** was published as a [peer-review article](#) and the LandsFacts modelling framework was enhanced so that it is possible; to explore constraints and objectives simultaneously at holding, regional and national scale assessing feasibility and fairness of burden sharing (the policy-sudoku).

# Year 4 progress report, cont.

- **Peatland-mapping** of extent and condition continues to be improved adding new data sources including new field data from the Responsive Research Fund PeatMapping project. The team also updated and improved the WISE peatland restoration prioritisation tool and published this as a [storymap](#).
- The analysis of **policy-coherence** was updated with a journal paper submitted considering coherence from the perspective of the different roles assigned to government and non-government actors within policy documents, and what that means for coherence in delivery. See also a policy briefing. The team also reported on the effectiveness of the science-policy interactions within the project (the quantitative story telling activities) with a [technical report](#) and [policy briefing](#) describing what has been learnt about how to implement QST in practice, informing contributions to the [ENRA Science, Evidence and Policy conference](#).
- The research on **alternative land-use narratives** from less-heard-voices saw the recruitment of nine participants and completion of their video-based interviews – with analysis to be delivered in 2026-27. The team also extended their earlier analysis of n=90 SG consultations for the LUS team adding a further n=12 consultations from the n=74 that occurred from 2018 to 2022.
- The research on **resilience and adaptation** further developed and integrated spatial data, visualisation and analysis tools to assess climate change impacts on land capability, crop production and water availability to explore projected climate change impacts. The Land Capability for Agriculture analysis anticipates an overall easing of climatic constraints, with more Prime Land but also challenges for managing soils e.g. higher Carbon soils and increased vulnerability to drought for currently productive agricultural land.

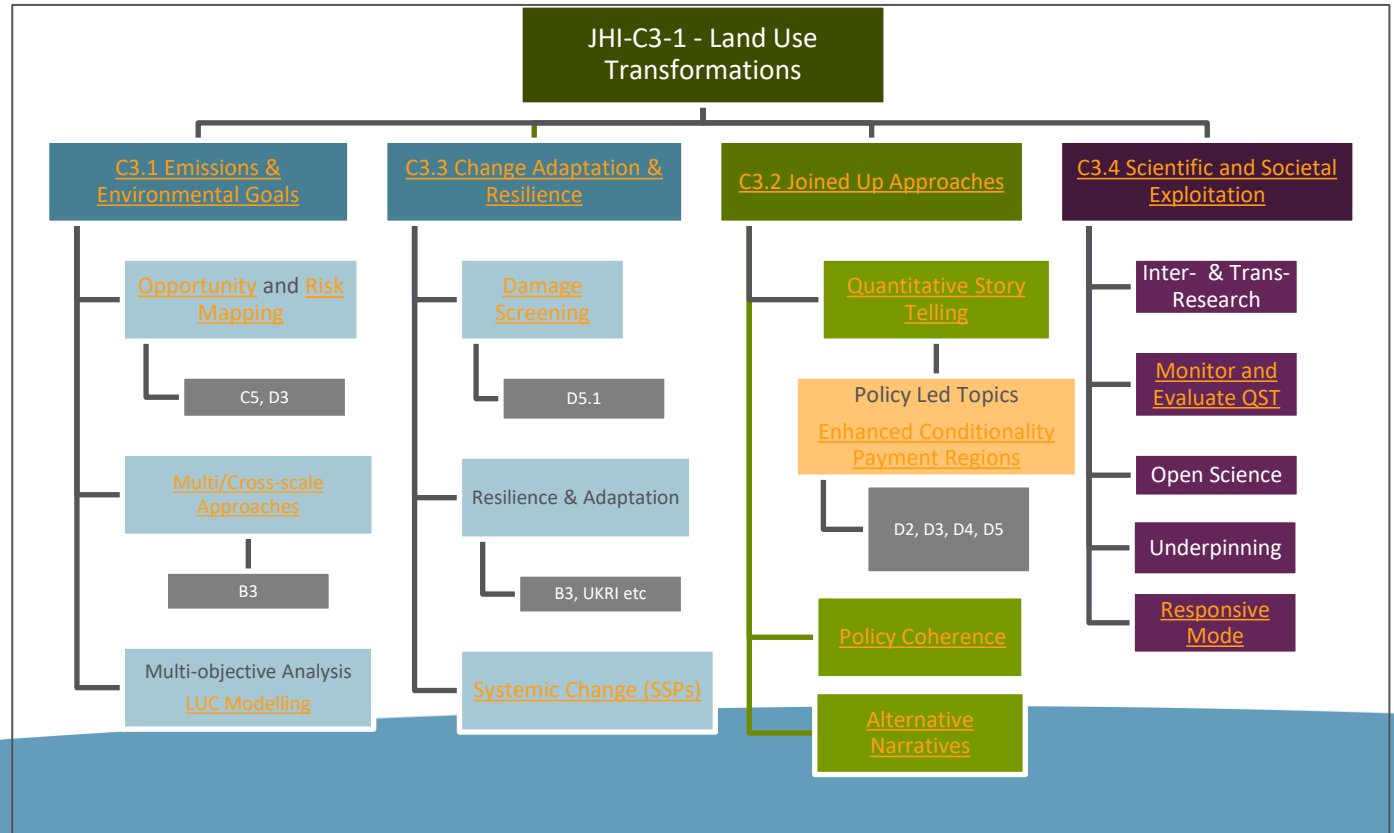
# Project Background

From the Land Use Transformation [project website](#):

- The [purpose of this project](#) is to generate new insights for how land use in Scotland needs to change to meet climate change mitigation, adaptation, and other environmental objectives. The project also considers how approaches to land use can be better joined up
- The project is [interdisciplinary](#) combining natural, social and computational research teams to conduct integrative, spatially explicit, computer-based modelling and social research.
- The research is [policy focused and transdisciplinary](#), with the expectation that the outputs from the research will be co-constructed and used with SG analysts, policy teams and other stakeholders to inform and shape their decision-making processes.
- A common thread across all this project's research questions is generating holistic understanding across systems as wicked problems rather than simplifying or narrowing the analysis to make it more tractable. This is a seriously challenging ambition, since it means grappling with the complexity, uncertainty and trade-offs inherent in large scale, closely coupled, social-ecological systems. Yet policy and land use decisions are often, necessarily, made in such domains.
- Such research must also consider Scotland from multiple non-equivalent perspectives, for example: as a nation; as part of a globalised world; as regions, landscapes and ecosystems; as sectors or businesses and as rural and urban communities. Research that considers these larger focal scales is more likely, despite its limitations, to be informative and impactful, even if only to highlight where policy and other stakeholder decisions are based on partial data, selective analysis, or wishful thinking.

# Projects, WPs and Activities

The four work packages of the project (C3.1) are linked in the figure to descriptions on the project website. With further links to some of the project deliverables and other outputs available via links in each of the activity's boxes.



# Project Team Leads and Topics

Team Lead		Topic	Notes
<a href="#"><u>Keith Matthews</u></a>		Project Overview	All topics
		Policy-led work - Quantitative Story Telling (QST)	Enhanced Conditionality and Regionalisation
<a href="#"><u>Mike Rivington</u></a>		Mitigation and Adaptation	Climate-soil interactions and land capability
<a href="#"><u>Alessandro Gimona</u></a>		Land use Change Analysis	Evaluating LUC scenarios and adding farm structure
<a href="#"><u>Jeff Thompson</u></a>		Peatland Mapping	New peatland extent and condition maps
<a href="#"><u>Kirsty Blackstock</u></a>		Governance Issues	Policy coherence
		Monitoring and Evaluation	Analysing the QST process
<a href="#"><u>Naomi Beingessner</u></a>		Land Use Narratives	SG consultation responses and stakeholder interviews

# Linked projects

The RESAS funding has built capacity and provided evidence that have allowed us to deliver further projects associated with land and water change.

- **Land Reform Futures** is another SRP project with data from Land Use Transformations used to underpin work informing the development of the measures within the Land Reform 2025 Act – see the [story map](#), [@Dave Miller](#)
- Responsive Research Fund (RRF) **Peatland Mapping** – is enhancing the peat mapping using new methods but also undertaking targeted additional fieldwork to improve the representativeness of the peat profiles available. [@Jeff Thompson](#)
- RRF **Resilience** – is a collaboration with NatureScot and ScotGov SNAP colleagues testing new analysis methods combining remote sensed and LiDAR data to generate maps of habitat condition and resilience metrics. [@Jeff Thompson](#)
- UKRI Agri-food for Net Zero Network+ - [Triggering Environmental Transformation on Large Land Holdings](#) - assessing the effectiveness of climate change mapping tools in supporting land managers to make changes, [@Naomi Beingessner](#)
- UKRI – Land Use and Net Zero (LUNZ) – **JustLands** – using C3 and earlier work to generate barley, wheat and grass silage yield maps for whole UK with x4 climate projections. [@Mike Rivington](#).
- UKRI - [Forth2.0](#) (2025-27) – involves projects on climate friendly farming (WWF/RSPB) and on catchment resilience (Forth Rivers Trust/Verture), plus increasing focus on science policy interfaces and storytelling for policy making.
- **Finding Viable Pathways for Forest Carbon Offsetting** – [FOREWAY](#). Scottish case study funded by Spanish Ministry of Science and EU using C3 tree carbon modelling to highlight areas that are environmentally and economically viable for tree planting. [@Alessandro Gimona](#)
- **H2020 MERLIN** (2021-2026) Hutton has also been working closely with Forth Rivers Trust to support their case study in the Allan Water – see Merlin Day (Scotland) [Report](#) and using expertise in data integration and policy coherence to inform EU policy development: see Cross Sectoral [StoryMap](#), CAP [Briefing](#) and Scientific [Publication](#)
  - Also led to supervision of [PhD Student](#) looking at experimental policy instrument to link Water Directives, Nature Directives and CAP in Austria

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Previous related analyses are also available from the Hutton Land Systems Research Team website -  
<https://ics.hutton.ac.uk/research/land-systems-research-team/>

The sets of slides and maps generated in Agriculture Policy analysis from 2010 onwards are available from -  
<https://ics.hutton.ac.uk/research/land-systems-research-team/cap-analysis/>

For woodland expansion analysis see - [online mapping](#) and [paper](#).

[Story Map for Land Use Transformations](#) - land use change modelling.

Further research in the RESAS Strategic Research Programme 2022-27, in the [Land Use Transformations](#) (C3-JHI-1) and [Land Reform](#) (E3-JHI-1) projects.

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