

# Sustainable uplands: Learning to manage future change

A Rural Economy and Land Use Programme research project investigating how we can work together to anticipate, monitor and manage rural change in UK upland environments.



## Policy and Practice Notes

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The Rural Economy and Land Use Programme is a UK-wide research programme carrying out interdisciplinary research on the multiple challenges facing rural areas. It is funded by the Economic and Social Research Council, the Biotechnology and Biological Sciences Research Council and the Natural Environment Research Council, with additional funding from the Scottish Government and the Department for Environment, Food and Rural Affairs.

**UK uplands are nationally and internationally important for biodiversity, as well as being of significant agricultural, landscape, recreational and natural resource value. The ecosystem services provided by upland environments are important to a wide range of people and economic functions. Climate change brings additional pressures for the people managing and farming these landscapes.**



## **How can we understand what the future may hold?**

**Many upland communities are concerned about how they can continue to survive economically and build a sustainable future under these difficult impacts.**

The Sustainable Uplands project has worked with the people who live, work and have an interest in the uplands to find out what the hills mean to them and how they would respond to potential future change. By combining experience and new ideas from local people with cutting-edge natural and social science, the project has come up with a choice of solutions to address future challenges that could never have been developed by either group working alone.

The Sustainable Uplands team has considered how UK uplands might change under future social, economic and environmental conditions.

Using a combination of interviews, surveys and computer modelling, scenarios have been developed that can be used as a starting point to think about our responses to future change. These scenarios provide a basis to discuss both the opportunities and threats that climate change may bring and find viable options for future upland land management and sustainable rural livelihoods.

**Two scenarios have been developed in some detail by the Sustainable Uplands research; one focussing on UK food security and the second exploring the implications of farmers managing the land for environmental functions:**

*“I believe the future of our hill farming communities merits particular attention. There needs to be a stronger recognition that the management of these upland landscapes and environment has a real economic and social value, alongside the production of food and crops. I urge government to consider ... how such areas can be managed in the future to deliver the benefits that society wants to see.”*

**Report of the Rural Advocate 2007,  
Commission for Rural Communities, Feb 2008 (p29)**

## Scenario 1: What would improving UK food security mean for our hills?

Recent rises in food prices have made us all aware how important it is to ensure daily essentials are widely available and affordable in the long term. As a result, governments around the world, including our own in the UK, are increasingly interested in improving food security. This could mean changes in Britain's upland areas.

If we want to become more self-sufficient in food, we will need to use more land, and we will need to manage the land we are already using more intensively.

### This could mean:

- Many more livestock on the hills than we have today, which could change the ecological balance between the wild species of plants and animals in the area
- Suitable high ground may need to be ploughed up to grow crops. This would reduce the amount of vegetation on Britain's hills
- More water would reach our rivers much faster. As a result, this scenario could lead to an increased risk of flooding in towns and cities downstream
- Deterioration in river water quality would increase the costs of drinking water treatment as 70 % of the UK's drinking water comes from the uplands
- Additionally, this scenario could lead to a further exacerbation of climate change. Peat soils are the single largest surface carbon reserve in the UK, storing over 3 billion tonnes of carbon. That is the equivalent of 20 years of the UK's CO<sub>2</sub> emissions. The extra grazing and cultivation under an intensified farming scenario could lead to an increase in the amount of soil carbon being washed down our rivers and an increase in the level of CO<sub>2</sub> released into the atmosphere



## Scenario 2: What if managing carbon and wildlife became the top priority for our hill farmers?

Britain's uplands are man-made environments, where most land owners and managers receive payments to manage the land. However, with changes in agricultural subsidies, many hill farmers are having to make tough decisions about their stock, and climate change could add to these pressures.

As we move to a low-carbon economy, what if the top priority for our hill farmers became tackling climate change and protecting biodiversity, rather than just managing the land for agricultural purposes?

### We could see the following:

- More areas becoming dominated by heather at the expense of grass and sedges
- The least productive, highest and most remote land being left to go wild, which could lead to an invasion of scrubby vegetation and, eventually, forest. This change could threaten the survival of current rare habitats and species such as dunlin and golden plover
- Significantly fewer (but probably larger) hill farms, with those who remain in the hills increasingly having to look for alternative ways to make money

However, there could be some positive consequences of letting some of Britain's hills go wild. We may be able to stop losing carbon from the soil and in areas which are less likely to be abandoned altogether it may even be possible to manage the land to store more carbon. Blocking drainage ditches and gullies, and re-vegetating bare and eroding peat can prevent huge amounts of carbon being lost from the hills and increase the rate that it is taken up from the atmosphere. Restoring damaged moorland has additional advantages, such as:

- Bringing back important wildlife, e.g. bog mosses and ground-nesting birds like dunlin and golden plover
- Reducing the risk of catastrophic wildfires
- Producing cleaner water
- Protecting fish populations downstream
- Potentially reducing the risk of flooding in towns and cities downstream

*“With the right investment, [hill] farms could be rewarded for their important contribution to our wildlife as well as the management of the finite resources such as water and soil, which will benefit us all”*

**Iwan Huws,**  
**National Trust Director for Wales**



## How can we manage future change?

By showing what could happen in the future, we can spark discussion as to what we can do to cope with future change. Resources such as films can support and improve the effectiveness of this process (see Useful resources below for more information).

### For those managing the land:

- Restoration of damaged peatland habitats may be an increasingly attractive option in the future if finance can be accessed from carbon offsetting or payments for clean water and biodiversity.
- Managing increasing recreation e.g. via access points and firebreaks will help to reduce the risks and costs associated with summer wildfires, while providing opportunities for diversification (e.g. marketing local food products).
- Sharing best practice will become increasingly beneficial, as will partnering with researchers to develop new solutions to future challenges.

### For the policy community:

- Using scenarios could help when considering how land use policy can effectively protect ecosystem services provided by UK uplands.
- Linking agricultural payments to the provision of ecosystem services could give land owners and land managers incentives to provide public goods for which they are not currently paid. It could also provide better value for money if funding could be targeted towards the places that can most efficiently and sustainably deliver the services that society needs (see Useful resources for more information).

## Further information

The Sustainable Uplands project is a collaboration between the universities of Leeds, Aberdeen, Durham, Sheffield and Sussex, together with Moors for the Future partnership and Heather Trust. The project has study sites in the Peak District National Park, Yorkshire Dales and Galloway, Scotland.

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### Useful resources:

Relu Policy & Practice Note 14: Sustainable uplands: re-shaping land use policy for our hills.

Two short films have been produced to explain and communicate the future scenarios discussed in this policy and practice note. These films are also being used in schools and colleges to introduce the next generation to upland issues and raise awareness of these valuable environments. The films can be viewed at [www.see.leeds.ac.uk/sustainableuplands/media](http://www.see.leeds.ac.uk/sustainableuplands/media).

Reed MS, Bonn A, Slee W, Beharry-Borg N, Birch J, Brown I, Burt TP, Chapman D, Chapman PJ, Clay G, Cornell SJ, Fraser EDG, Holden J, Hodgson JA, Hubacek K, Irvine B, Jin N, Kirkby MJ, Kunin WE, Moore O, Moseley D, Prell C, Quinn C, Redpath S, Reid C, Stagl S, Stringer LC, Termansen M, Thorp S, Towers W, Worrall F (2010) Future of the uplands. *Land Use Policy* Vol. 2. 26/1: 204-216

Reed MS, Bonn A, Broad K, Burgess P, Fazey IR, Fraser EDG, Hubacek K, Nainggolan D, Roberts P, Quinn CH, Stringer LC, Thorpe S, Walton DD, Ravera F, Redpath S (in press) Participatory scenario development for environmental management: a methodological framework. *Journal of Environmental Management*

**Project website:** [www.see.leeds.ac.uk/sustainableuplands](http://www.see.leeds.ac.uk/sustainableuplands)

