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25 Measuring the Public Benefits of Landscape and Environmental Change: A Case of Upland Grazing Extensification

C. Bullock

Summary
1. The research attempts to quantify the public benefits of landscape and environmental change that may arise from new land-use policies.
2. The case of upland grazing extensification is examined for which the associated vegetation change could be diffuse and complex. These problems will require carefully designed environmental valuation methods to communicate the change anticipated.

25.1 Introduction
The new agri-environmental measures that have accompanied the recent reform of the Common Agricultural Policy (CAP) offer an opportunity to decelerate the intensification of agricultural production, to protect the landscape and to restore habitats for wildlife. The resources available for these policies are likely to be restricted for the time being and to remain dwarfed by payments to farmers that are linked to production. Nevertheless, environmental considerations are certain to have more influence on agricultural policies in the future and the measures should be considered as part of this gradual process.

As resources are limited, it is important that policymakers have adequate information on what types of habitats and countryside the public would like to see and use. Here, environmental economics has a role as it can provide valuation techniques which can be used to quantify preferences for public goods. Some goods, for example, attractive landscapes, do not enter a market process and, as such, are unpriced, but are nevertheless valued by society.

There is a limited choice of suitable valuation techniques where goods such as landscape or countryside are concerned. For these types of goods, many of the benefits people derive arise from simply knowing that such goods exist, irrespective of current or planned use. In this case, contingent valuation (CV) is often the
preferred valuation technique as it can estimate much of the satisfaction (or utility) an individual gains from both use and non-use benefits, such as existence. Aggregated over the population, the valuation of these benefits can be compared with the costs of implementing the policy to supply them.

CV relies upon sample surveys to elicit from people an expressed preference for some change in the quantity or quality of a good. It does this by asking how much utility an individual would be prepared to forfeit, expressed as their maximum willingness to pay, to bring about the equivalent increase in utility supplied by an increase in a desirable good. (They could also be asked for their willingness to pay to prevent a loss of some desirable good. Or their minimum willingness to accept a loss of a desirable good to which they have perceived property rights.) The technique is particularly useful for comparing the value of a current situation with one that would follow from hypothetical future changes.

In this project, the intention is to estimate individuals' willingness to pay to preserve a current situation compared with their willingness to pay for changes that might result from different levels of agri-environmental policy implementation. One agri-environmental measure, upland sheep grazing extensification, is addressed. If an area is subjected to reductions in grazing pressure, environmental changes could affect the whole landscape but would vary from the diffuse, e.g., changes in sward type, to the more overtly visual, e.g., expansion of heather and scrub, depending upon the level of extensification and local conditions. The challenge is how to represent these changes in a public survey, to explain the processes that brought them about and to detach a valuation of their effects from other unrelated environmental attributes.

25.2 The Case of Grazing Extensification
Agri-environmental measures are still being considered by the European Commission, but an indication of the types of extensification policies that might be implemented in the UK is provided by the grazing prescriptions available to farmers in some environmentally sensitive areas such as the new Southern Uplands environmentally sensitive area. Here, payments of up to £45 per hectare are available to farmers who volunteer for reductions in sheep numbers above the hill-dyke. An improvement in the condition and geographical extent of heather is the main objective behind this policy. Although sheep farming in the southern uplands is not particularly intensive, it has had a long history during which grazing has been a factor in reducing the area of native scrub and heather. This process has been hastened in recent years due to less attentive management and muirburn. The countryside retains its attractions, but the uplands themselves are often very open and grassy and, away from the sporting estates, any heather is limited in extent.

25.3 The Method
The survey will concentrate on residents in southern Scotland who will be presented with scenarios that describe the effect of current ESA policy impacts, and the effect of policies which encourage successive stages of natural regeneration:
- An intensively grazed landscape with lide heather or trees/scrub.
- The landscape as it appears now with some remaining heather and trees/scrub.
- A landscape in which heather is dominant and a few gullies have been invaded by more scrub.
- A landscape in which there is some heather but where trees/scrub are dominant.

The first of these represents a landscape that is already familiar in some parts of the uplands and one that could become more common if current sheep numbers and practices are maintained. The second is the type of landscape that current ESA grazing and fencing prescriptions will be seeking to preserve. The third and the fourth are examples of vegetation succession that may follow from, respectively, a radical reduction or elimination of grazing. These last two imply the introduction of some habitat management or habitat creation. Pictorial images similar to those in Plate X(a–d) will help to focus the questions in the survey and to elicit a preferred option.

Landscape scenarios have been used before in environmental valuation surveys (e.g. Willis and Garrod, 1991) and, if well designed, are an effective medium through which to express visual change and stimulate respondent participation. However, landscape and environment are not synonymous. Therefore, the survey will first attempt to elicit preferences for landscape change, but will go on to ask for individuals' willingness to pay for environmental change once the pictorial scenarios have been supplemented by valid environmental information.

However, the vegetation succession depicted in two of the scenarios has all the qualifications of a so-called 'complex good' (Hutchinson and Chilton, unpublished), that is a good which is not easily described. In particular, problems to be overcome include the representation of: time scale, uncertainty, scale and preservation vs. enhancement.

1. Time scale. Time is an important factor. Unaided, heather, and especially scrub and trees, could regenerate only slowly or near to existing seed sources. There may also be less aesthetically appealing stages.

2. Uncertainty. Although vegetation succession is featured rather than extensification per se, respondents may doubt that the changes will ever occur.

3. Scale. While all the Southern Uplands hills could potentially be protected by an ESA, not all this area could be given over to heather or woodland. Indeed, such lack of diversity would not be desirable to most people.

4. Preservation. Psychological studies show the importance people attach to the status-quo (e.g. Samuelson and Zeckhauser, 1988). This survey is asking people to decide between simple preservation and options they may (or may not) regard as 'enhancement'.
Figure 25.1. Scenarios of environmental change due to extensification (1) An intensively grazed landscape (2) A carefully grazed landscape (3) A landscape dominated by heather (4) A landscape with tree regeneration. See final plate
Unless the CV survey is carefully designed so that respondents fully understand what it is they are being asked to value, biases can arise that cause expressed willingness to pay to deviate from its true value. In particular, there is the risk that respondents will be suspicious that the scenarios will never materialise, or of bids motivated less by a rational appraisal of the good in question than by the moral satisfaction of donating to a good cause (Kahneman and Knetch, 1992). This reinforces the fact that 'the principle challenge facing the designer of a CV study is to make the scenario sufficiently understandable, plausible and meaningful to respondents so that they can and will give valid and reliable values despite their lack of experience with one or more of the scenario's dimensions.' (Mitchell and Carson, 1986)

The survey must therefore describe the full context and marketplace such as to ensure that respondents understand as equally and exactly as possible what it is they are being asked to value. A procedure of in-depth trial questioning and discussion groups will be used to select appropriate language and question order while eliminating superfluous information. This will help to reduce the length of the final questionnaire.

If these problems can be overcome, it should be possible to arrive at reliable estimates of the aggregate public benefits associated with some new land use policies. This is not to argue that these estimates can be precise or all inclusive, but they can be used in conjunction with other data in the selection of policy and the formulation of environmental priorities. The new agri-environmental measures being considered in Brussels are a case in point. Without environmental valuation and appraisal, political expediency could triumph at the expense of more worthy projects.

References


