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The use of economic and participatory approaches to assess forest development: a case study in the Ettrick Valley

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Abstract

The forest floodplain restoration project in the Ettrick Valley in the Borders Region of Scotland is a nationally important project which aims to expand and create forest floodplain habitats along the Upper Ettrick. The project aims to enhance existing habitats and wildlife whilst ensuring a partnership approach is maintained with the local community. The paper evaluates the project's success in achieving these aims, using two distinct approaches. The first, an economic approach uses the contingent valuation method to estimate the total economic value of the site. Results show that the mean willingness to contribute to this project on a one-off basis, was £10.39 per household. Aggregated over the Borders population, these results suggest that the project has a minimum value of approximately £450 000, as compared with an estimated cost of £350 000. The second approach uses participatory methodology — a Citizens' Jury. A Citizens' Jury consists of a small group of people, selected to represent the general public, who meet to deliberate upon a policy question. The Jury met to assess the project and to provide qualitative information on its value and importance to the local community. The Citizens' Jury approved of the project, and although they did not place a monetary value upon it, they indicated that they valued the role it played in preserving the natural ecosystem, encouraging wildlife and educating the young. However, they were concerned about visitor access and the future management of the site.

Keywords: Forest restoration; Contingent valuation; Citizens' Jury

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1. Evaluating environmental projects

The forest floodplain restoration project in the Ettrick Valley in the Borders Region of Scotland is a nationally important project which aims to expand and create forest floodplain habitats along the Upper Ettrick. The area is already rich in habitat and wildlife, but the project aims to enhance the existing habitat through a number of measures including the creation of new native woodland; the restoration of forest floodplain habitat, and the conversion of conifer plantation to native broadleaf. The managers of the project are keen to ensure that the project is carried out in partnership with the local community, but at the same time need to prove to sponsors that the project adds value to the area, in terms of biodiversity, recreational opportunities and aesthetics.

Economic valuation methods such as contingent valuation (CV), travel costs and hedonic pricing have been used widely in recent years to evaluate the public benefits of forestry projects such as this, throughout the developed world (Willis and Garrod, 1992; Hanley and Ruffell, 1993; Adamowicz et al., 1996). By far the most popular is the CV method where respondents to a survey are asked their willingness to pay (WTP) for a carefully described environmental improvement, or to prevent some form of environmental degradation (Mitchell and Carson, 1989). The results of such exercises may then feed into environmental policy. In the UK, the Forestry Commission has commissioned research estimating the value of non-timber benefits from forestry including biodiversity, carbon storage and recreation (Entec, 1997; Hanley et al., 1998). This work contributed to the policy that forests should not simply be managed for timber values but also for other public benefits that are provided.

Despite its popularity and the influence CV has on forest policy, debate continues surrounding technical and design aspects of the method. Other fundamental concerns relating to how individuals think about the environment, and the need for a sustainable approach to decision making also suggest that CV may be unable to cope with some of the needs of modern forestry evaluation.

2. Deliberative approaches in environmental decision making

The existence of such problems has led economists and others to seek alternative and complementary methods to enhance the evaluation of environmental policy. One means to respond to some of these issues may be a move towards more deliberative approaches. Sagoff (1998) comments that a constructive, deliberative and discursive approach can go a long way towards resolving technical problems that have complicated methods such as contingent valuation. He suggests that a 'jury-like' research method emphasizing informed discussion, leading toward a consensus based on the public's interest may be particularly useful as an alternative or complement to CV. Tonn et al. (1993) have gone further, highlighting Citizens' Juries specifically as a means to enhance the credibility of existing environmental valuation techniques. A Citizens' Jury (CJ) consists of a small group of people, selected to represent the general public, who meet over a number of days to deliberate upon a policy question (Stewart et al., 1994). To date, Citizens' Juries have only been used in a limited way to evaluate environmental projects (Aldred and Jacobs, 1997; Kenyon, 1999).

This paper evaluates the use of CV and Citizens' Juries in relation to a forest floodplain restoration project in the Upper Ettrick Valley in the Borders Region of Scotland. First we consider the relative merits and flaws of the CV and the CJ methods in Sections 3 and 4, before discussing the details of the case study where both methods were applied, in Section 5. We describe the design of the CV and the CJ in Section 6, and results in Section 7. We conclude with a discussion about the role of CJs relative to CV in environmental planning, policy making and valuation.

3. Concerns relating to CVM and the potential role of Citizens' Juries

3.1. Provision of information to individuals

One of the concerns relating to CV surveys is respondent understanding of the scenario being portrayed. "If CV surveys are to elicit useful information about willingness to pay, respondents must understand exactly what it is they are being asked to value" (Arrow et al., 1993). Brown et al. (1995) and Jacobs (1997) highlight the fact that many respondents do not appear to be well informed about the issues or the good to be valued in CV questionnaires. CJs may be able to tackle this problem by combining information, time, scrutiny and deliberation (Coote and Lenaghan, 1997) in the preference elicitation process. They allow participants to question witnesses, discuss witnesses' evidence with other Jurors, and thereby to gradually learn about and reach a richer understanding of the issue (Sagoff, 1998). The deliberative nature of CJs therefore ensures that the participants not only have full information about the scenario they are to evaluate, but have the time to question and assimilate that information.

3.2. The construction of environmental values by individuals

The notion of value construction presents another debate that remains unresolved in the CV literature. Some economists argue that respondents do not have well-defined preferences for many complex policy options prior to the elicitation process, but that these preferences are constructed during the elicitation process itself (Gregory and Slovic, 1997). The way in which data about environmental preferences are collected is therefore very important. Gregory et al. (1997) suggest that approaches based on behavioural decision theory might be used to gather information about consumer preferences, and at the same time deal explicitly with the value construction argument. Those approaches which encourage participants to construct their preferences and reveal their thinking as part of the information gathering process, yield more detailed information about key attitudes and trade-offs, by which to inform the decision making process.

A CJ consists not just of asking participants to make a decision based on fairly extensive information, but can closely monitor and trace the preference construction process, by asking participants to carry out a variety of tasks which aid value construction throughout the jury process.

3.3. Thinking as consumers or citizens?

Political theorists argue that the principal problem relating to CV is the assumption that it is an appropriate method for the valuation of both private *and* public goods (Jacobs, 1994). They argue that the kinds of choices people make about private and public goods are very different, and that individuals value public goods from a wider perspective, taking into account the interests of the community as a whole (Jacobs, 1997). Sagoff (1988) also suggests that with regard to environmental decisions, individuals act as citizens' rather than consumers and proposes that CV thus asks the wrong question. The question 'how much are you willing to pay?' encourages people into a self-interested stance and to think as a consumer when in fact the environmental decision is a 'citizens' one. The use of CJs as a method of preference revelation allows consumers to be asked what Sagoff and Jacobs might call 'the right question'. A CJ might ask participants to deliberate on the environmental issue in terms of what is best for society rather than what is best for each individual concerned. Indeed, while the question for the jury *can* be framed in the context of individual consumer values and preferences if necessary, the approach of the CJs was developed specifically to determine opinions that represent the general public, rather than any individual interest (Coote and Lenaghan, 1997). However, a CJ does not lead to valuation per se, but rather to recommendations about project scope and implementation.

3.4. Incorporating sustainability

Agenda 21, the outcome of the 1992 United Nations Conference on Environment and Devel-

opment emphasized the importance of community participation in environmental decision making. Greater participation in environmental projects by local communities is important to increase the efficiency and effectiveness of environmental projects, to encourage self reliance among participants, and to increase the numbers of people who can potentially benefit from the decisions made (Oakley, 1991). Oakley suggests that "community participation is an active process by which beneficiary or client groups influence the direction and execution of a project with a view to enhancing their well-being, in terms of values they cherish". Without procedures to encourage participation, people are unlikely to become active, constructive participants in environmental decision making, essential to the local and global process of sustainable development.

In relation to rural development policy and forestry specifically, the integration of bottom-up community involvement with top-down policies has been proposed to ensure that development plans represent local peoples' needs and desires (Slee et al., 1996). This reflects Agenda 21's emphasis on the need to shift from the traditional top-down legislative approach towards environmental protection, to a bottom up approach involving the use of dialogue groups in its implementation (UNCED, 1992). It is accepted, however, that the involvement of such diverse groups in environmental policy requires carefully considered structures. The use of CJs may be an important means by which public participation can be more fully incorporated into the environmental decision making process and may therefore help in complying with international agreements.

4. Concerns relating to the use of Citizens' Juries

4.1. Limited sample size

CJs consist of a relatively small number of participants ranging from approximately 10 to 25. Because of this very small sample size the results of a CJ will not be statistically representative despite measures taken to ensure that those who take part are representative of the relevant population. However, Jacobs (1997) argues, that because the process digs deeper into people's values and beliefs than questionnaire surveys, a smaller group of jurors may exhibit values which are more representative of society than a greater number of questionnaire respondents. Similarly, Gregory et al. (1997) argue that longer deliberation with smaller sample sizes provides a depth and richness of response that cannot be obtained from traditional survey methods using larger sample sizes.

4.2. Potential for jurors to be influenced

Jurors may be open to undue influence from a dominant member of the group, or, by the witnesses providing information to the jurors. Either of these could bias the outcome of a Jury. However, it is the role of the moderator to make sure that individual jurors do not take over the process and use it as a platform to persuade others of the merits of their way of thinking. It is the role of the organizer to make sure the programme of witnesses is such that jurors receive a balanced view of the subject under discussion. A number of steps may also be taken to ensure the validity of the Jury's findings and the process itself. Firstly, input may be sought from an independent advisor during the preparatory stage of a CJ project with an independent observer being present during actual proceedings. Secondly, upon completion of the report of the Jury's findings, a copy is sent to all Jury members for verification and amendment. Finally, Jurors are asked to complete a questionnaire at the end of the process, outlining their attitudes towards the structure, content, independence and efficacy of the process itself. Any concerns about the dominance of an individual, or concerns about bias would be made known and noted in the final report.

4.3. Qualitative nature of results

Results generated from deliberative and interactive methods such as CJs tend to be qualitative. Supporters of CV may argue that the quantification of maximum willingness to pay allows re-

searchers to estimate not only the direction of consumer preferences but also their intensity. Although CJs might provide information on the strength of feeling about a certain issue, this is almost always in a qualitative format, which may have limited further uses.

5. The Ettrick Valley Floodplain Restoration project

In 1995, WWF Scotland responded to concerns about the loss of floodplain forest habitats in Scotland by commissioning a review of their status in Scotland.[1] One of the most ecologically interesting areas of floodplain identified in the review is on the haughland of the Upper Ettrick in the Scottish Borders Region. The site consists of approximately a 4-7km length of the floodplain for the Upper Ettrick and Tima Water at an altitude of 228 m.

The Upper Ettrick area contains a variety of woodland, wetland and grassland habitats of nature conservation interest, including native broad-leaved woodland willow car, sedge swamps, mixed fen vegetation and late cut hay meadows. The different habitats are distributed in a mosaic of small patches which results in a high biodiversity for the area, including species that are recognized as locally and nationally scarce or endangered.

Plants of interest include the North lady's mantle (*Alchemilla glomerulans*), tea-leaved willow (*Salix phylicifolia*) with many other willow species and their hybrids. Mammals recorded in the area include otters, badgers and red squirrels. The area hosts a range of overwintering and breeding birds including buzzard, sparrowhawk, tawny and barn owl; kingfisher, sandmartin and dippers breed along the river; oystercatcher, lapwing, snipe and curlew breed in the grassland. Woodland birds include greater spotted woodpecker and spotted flycatcher; reedbunting, sedge, grasshopper and willow warblers and willow tit are all recorded in the project area. Several rare moths are recorded, (*Apotomis infida, Aphelia unitana, Nepticula ulmaria* and *Lampronia praelatella* amongst others) and further surveys are predicted to find more species of interest.

The Upper Ettrick presents great potential for the expansion of valuable habitat, utilizing areas that are at present of limited conservation interest such as conifer plantation and improved grassland. Increasing the areas of valuable habitat would both protect the species that are already present and encourage others which would have been present in these habitats in the past.

In partnership with Forest Enterprise, WWF, the Millennium Forest for Scotland and the local community and landowners, Borders Forest Trust (BFT) is co-ordinating a habitat restoration project for the site. A community steering group, and a technical steering group including SNH, FA, FE, FWAG, SEPA, SERAD,[2] and the Tweed Foundation, provide the basis for a united approach to the project.

The Upper Ettrick Habitat Restoration Project is the largest floodplain restoration project undertaken in Scotland to date. As a demonstration site, the project will provide educational and research opportunities for schools, colleges and other visitors. The provision of appropriate access and interpretation facilities will encourage sensitive use of the site by visitors.

The managers of the project are keen to ensure that the project is carried out in partnership with the local community, and by conducting a Citizens' Jury the priorities, suggestions and opinions of the local community may be incorporated into the planning of the project. However, at the same time the BFT need to assure sponsors that the project adds value to the area, in terms of biodiversity, recreational opportunities and aesthetics. A CV appears to be the ideal tool to provide such assurances.

[1] This section draws heavily on Part II of the Ettrick Project Plan, 1998, written by Laurel Hannah (Hannah, 1998).

[2] Scottish Natural Heritage, Forest Authority, Forest Enterprise, Farm Wildlife and Advisory Group, Scottish Environment Protection Agency, Scottish Executive Rural Affairs Department.

6. Design and implementation of CV and CJ

6.1. Design of the Contingent Valuation

There is much debate in the literature about the appropriate design of CV questionnaires, with respect to a number of issues, in particular the elicitation format and the payment vehicle. Recent research on payment vehicles suggests that a mechanism where the respondent has no choice but to pay, is most appropriate (e.g. taxation). Carson et al. (1999) suggests that the use of charitable donations as a payment vehicle within a CV survey may lead to strategic behaviour by the respondent. He suggests that the optimal strategic response in the face of a CV question with a charitable donation payment mechanism would be to respond positively, which would encourage the organization to carry out the fundraising effort. Once asked for the donation proper the optimal strategic response would be for the respondent to contribute less than her maximum WTP and perhaps even nothing. However, others suggest that a charitable bid is appropriate in certain circumstances, and indeed recommend that the information and questionnaire be in a campaigning style to imitate real scenarios of this nature (MacMillian et al., 1998). MacMillian et al. (1998) found that a charitable donation achieved a high level of convergence with real payments.

One of the other important design issues in CV surrounds the elicitation format used. The NOAA panel recommend that the dichotomous choice (DC) format should be used, but this contrasts with other recommendations that the most conservative questionnaire design is most appropriate (Arrow et al., 1993). The DC format consistently produces greater estimates than do open ended elicitation formats (Boyle et al., 1996; Ready et al., 1996), and is therefore not the most conservative.

Despite these recommendations one of the most important considerations in the design of a CV questionnaire is to make the scenario believable (Mitchell and Carson, 1989). In the Ettrick case study we used a charitable donation payment vehicle, and an open ended elicitation format. There were two main reasons for this choice. First, a number of focus groups were carried out during the design of the questionnaire, where different payment vehicles and elicitation formats were discussed. Participants of these groups indicated that they were most comfortable with the open-ended format and the charitable bid vehicle. Secondly, this format and vehicle is one which respondents to the survey are likely to be familiar with, especially given the local nature of the forestry project. A wildwood project also in the Borders Region of Scotland, was campaigning for funds at a similar time that the questionnaire was designed, tested and conducted. In this real situation an open bid in conjunction with a payment card type elicitation method was used with a charitable donation as the payment mechanism. Respondents to the Ettrick survey may therefore have been familiar with this payment context, making our choice most suitable in the circumstances.

The questionnaire consisted of three sections. The first requested general information about respondent's residential status, their participation in outdoor activities, and attitudes towards the environment. The second section provided information about the forest floodplain and asked a 'payment principle' question, as well as the willingness to pay question. This section also reminded the respondent of their budget constraint, that the money would go to the Ettrick Project only, and that the project would not go ahead if enough money was not raised through public donation. It also contained a question which allowed protest bids to be identified. The final section of the questionnaire requested the usual socio-economic data.

The questionnaires were completed in the late summer of 1998, by an independent research company. Nine towns in the Borders were selected as sites for the questionnaires to be carried out, and responses were collected from a stratified sample of the Borders population, and a small proportion of visitors to the Region.

6.2. Design of the Citizens' Jury

The second approach used to evaluate the pro-

ject was a Citizens' Jury. The Jury met over three days in December 1998 to assess the project site and to provide qualitative information on its value and importance to the local community. The Jury was carried out in collaboration with a local community environmental organization, the Borders Forest Trust, who were keen to encourage consultation and participation of the local community in the project. The Jury was asked to consider the restoration of floodplain forest in the Ettrick Valley and identify its good and bad points and how it might add value to the area. The Jury was also asked to make recommendations about what this and other such projects should aim to achieve, both individually and collectively, in a region such as the Borders.

The CJ participants were selected from a pool drawn from the CV questionnaire. The final question on the CV asked respondents whether they would be willing to attend a group meeting to discuss local issues in more depth. Those who responded positively to this question formed the pool from which jurors were selected.[3] As the questionnaire provided extensive socio-economic information about the respondent, the sample drawn to attend the jury were chosen to be as representative of the wider population as possible. Eleven jurors finally took part in this 3-day-long process.

The Jury took place over the 3 days of Friday, Saturday and Sunday. A pre-Jury meeting was held on the preceding Wednesday, which allowed Jurors to be introduced to the concept, to each other, and to the moderator. The jurors were asked to deliberate on the following issues:

1. What should individual land use and environmental projects in Southern Scotland such as the Ettrick Forest Floodplain Project aim to achieve?
2. How might the success of such projects be determined?

Ten witnesses in all attended the Jury and gave evidence. These were selected in consultation with the Borders Forest Trust, and in discussions with stakeholders from all sides of the debate. The witnesses provided oral and visual evidence during the proceedings and supplied a summary sheet of their evidence for reference. They came from a variety of backgrounds such as Scottish Natural Heritage, the local council, the Forestry Commission, the Scottish Tourist Board, and environmental managers. Witnesses made short presentations to the Jury of 10–15 min followed by a discussion session with the Jury of approximately 30–40 min. In addition to sessions involving witnesses, the process included a number of Jury only sessions, where the jurors discussed particular issues as a whole unit, or in smaller groups. To aid value construction, Gregory et al. (1997) suggest that respondents should be assisted in making three fundamental decision steps. Firstly, framing the decision which might involve specifying exactly what is proposed, identifying major impacts, and identifying beneficiaries. Second, respondents should be assisted in defining key objectives. Third, participants should be assisted in making trade-offs amongst these objectives. Using tasks within the CJ process each of these steps were taken. Although jurors were assisted to think through the fundamental steps suggested by decision research theory, they were not restricted to certain answers, as they might be in closed format questionnaires.[4] This ensured that the process was free from bias, whilst at the same time tracing the value construction process that jurors go through.

The final recommendations were achieved entirely by discussion and consensus, and approved by all of the jurors. A report on the process and outcome of the Jury was written and sent to the jurors for approval, before being sent to the

[3] The Borders Jury was selected in this way to minimize recruitment costs. Despite the final Citizens' Jury being a reasonable representation of the Borders population, the research team does not consider this to be the most reliable means of Jury selection. Selection processes utilizing the electoral register are considered to provide a better sample of jurors.

[4] Such as decision pathway questionnaires used by Gregory et al. (1997).

Table 1
Decision to protest or not to protest

Variable		Probit
CONSTANT		−1.4694 (−4.428)***
EDUC	Years of education	0.1055 (1.996)**
INC	Income	0.00001 (1.664)*
*Q*5	Where brought up	−0.1086 (−1.624)*
*Q*10	How likely to visit site	−0.0654 (−0.727)
χ^2 (d.f.)		11.743 (4)
LOG-*L*		−90.506
N		336
P		0.019

T ratio in parentheses. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Borders Forest Trust and other interested parties (Kenyon, 1999).

7. Results

7.1. Contingent Valuation results

The results of the CV were of interest to the BFT in measuring the total benefit of the Ettrick project. Of the 336 respondents, 10% were protest bids. Table 1 shows the results of a probit regression on the decision to protest or not. Most influential in the decision whether to protest or not appears to be education, in that the higher the level of education of the respondent the less likely they are to protest. Income was also influential in whether the respondent protested or not, as was where the respondent was brought up. It is interesting to note that a respondent's future use of the site (whether they were likely to visit it in future) did not appear to influence the decision to protest to a significant degree.

Protest bids were removed from the data set for further analysis, and Table 2 shows the resultant descriptive statistics for the project. The mean willingness to donate was £10.39 per person for the project in a one-off payment. Defining the population over which such numbers can be aggregated can be problematic, however, it seems reasonable that the minimum population might be all households in the Borders Region. The most recent figure available for this is 43 147 (Scottish Borders Council, 1998). This implies a minimum total value for the project of £448 297. Of course, it may be argued that the beneficiaries of the project may be wider than the Borders Region, in which case the total value would be greater, and the figure above can be considered conservative. This compares with the costs of the project of approximately £350 000, showing that it does pass the cost benefit test, even using a conservative estimate of benefit.

As is common in such circumstances there were a large number (59%) of genuine zero bids (MacMillian et al., 1998; Mourato and Pearce, 1999; Alvarez-Farizo et al., 1999). Determinants of willingness to pay were therefore estimated using a Heckman procedure. The Heckman selection model uses the notion that some of the same variables may influence two decisions that the respondent encounters: first the probability of making a positive bid, and second, the amount the respondent bids if the bid is positive. This model assumes at least one variable driving the decision to participate in the contingent market is different to the variables that drive the decision about how much to pay. The participation model, estimated as a logit shows those factors that influence the decision of whether to make a zero bid or not. The payment model focuses on the variables that influence the decision about how much the respondent will bid, given that she bids a positive sum. These two models are estimated simultaneously. Table 3 shows the results of this analysis. A number of variables affect the decision to make a positive or a zero bid. Education is significant and positive, so that a respondent with a higher level of education is more likely to make a positive bid. The length of time the respondent has lived in the Borders Region is also significant. Those who have lived in the Borders for longer periods of time are less likely to bid zero. The most significant variable was whether the respondent was likely to visit the area if the project went

Table 2
Descriptive statistics for WTP for the Ettrick Project (on a one-off basis)

Mean	Median	S.D.	Range	95% C.I.
£10.39	£0	62.13	£0–£1000	£3.29–£17.49

Table 3
Heckman selection model on whether to pay and how much to pay

Variable		Participation	Payment
CONSTANT		2.4683 (3.48)***	−1.0407 (−0.019)
AGE	Age	−0.0194 (−1.821)*	
EDUC	Years of education	0.1844 (2.164)**	−9.3810 (−1.115)
INC	Income	0.00002 (0.106)	0.0003 (0.338)
*Q*5	Where brought up	−0.0699 (−0.686)	15.3155 (1.920)**
ENVATT	Environmental attitude		−3.2803 (1.076)
*Q*10	How likely to visit site	−0.8577 (−5.094)**	−24.3564 (−0.680)
LONGLIV	How long lived in Borders	−0.0293 (−1.711)*	0.0327 (0.20)
Lambda/sigma			33.1598 (0.331)
R^2			0.14
LOG-*L*		−110.4330	−517.10
χ^2 (d.f.)		50.196 (6)	
P		0.0000	

T ratio in parentheses. *Significant at 10% level, **significant at 5% level, ***significant at 1% level.

ahead. Those who were more likely to visit were less likely to make a zero bid. Interestingly, income does not appear to be influential in this decision, nor in the decision on how much to pay if they are to make a positive bid. The only significant variable in how much the respondent bids is where the respondent is brought up. The nearer to the countryside the respondent was brought up, the higher will be the respondents bid, indicating that those familiar with rural areas are more likely to pay to enhance them. The inverse Mills ratio (the coefficient of λ) indicates whether the sample selection specification used to model the data is statistically significant (Mourato and Pearce, 1999). Our results show the impact of the selectivity is not statistically significant.

The CV therefore provided interesting data on the economic benefit of the changes brought about by the project, and the incentives behind respondents' bids. However, broader indicators of value are also useful, and the CJ provides different but equally policy relevant information.

7.2. Citizens' Jury results

The Jury made recommendations about individual environmental projects using the Ettrick Project as an example and how they might be managed and co-ordinated to achieve environmental and social goals in Southern Scotland. With respect to Ettrick Forest Floodplain the Jury felt the project was positive and identified the merits of the project, and suggested that similar projects should be developed throughout the Borders and Southern Scotland (Table 4).

Despite the many positive issues discussed by the Jury two areas of concern or contention were identified, access and future management. Jurors

Table 4
Positive issues identified on the Ettrick Forest Floodplain Project

Preservation of a natural ecosystem — a world resource	Good demonstration scheme for copying
Flood control	Preservation of indigenous life forms and eradication of non-indigenous
Balance of different habitats	Education of the young and encouraging educational studies
Encouraging wildlife	Getting back to nature
Monitoring of species	Decrease the number of sheep and fencing of sensitive areas
Community involvement	Getting rid of blanket forestry

felt that visitors should be allowed access to the site, but specific recommendations were made regarding the arrangements and the information provided to visitors. The Jury was also concerned about the future management of the site and that the money for the project might run out. The Jurors felt that it may be possible to start a trust fund dedicated to the Ettrick to make sure that money was available for future management. However, after speaking with a member of the local community, the jurors became less concerned as they were assured that the local community were involved and seemed likely to ensure that the site was managed into the future.

The Jury were able to look at the Ettrick project in a wider context and make a number of recommendations regarding the management of individual environmental projects in other areas. They felt that a variety of projects were needed in an area like the Borders, which met a variety of different needs. Different projects might aim to meet different needs, but they suggested that all of these projects should be co-ordinated in an integrated way. For example, some environmental projects might aim to attract tourism to the area, but such projects must be situated in less environmentally sensitive areas. Others might aim to increase biodiversity, but may not aim to attract tourists. The range of projects should be considered as a whole, to ensure that many different achievements were being made over a particular geographical region as a whole.

Finally, the Jury considered the success of environmental projects, including the Ettrick Forest Floodplain Project, and made a number of suggestions about how the success of project might be assessed. Environmental and land use projects are inevitably long term, and some measure of success would help in deciding what future projects should seek to achieve. The Jury felt that the criteria offered (Table 5) could be seen as elements to be included within the project plan and design in future environmental programmes.

Table 5
Jury suggestions on how environmental projects success can be measured

Has it got community and farmer approval?
Has the variety of wildlife improved? And is it being protected?
Has community spirit improved?
Has the project created any problems?
Is the site attractive?

8. Discussion

Both the CV and the CJ methods provide policy relevant information, but the information provided by each may be useful in different ways. The results of the CJ identify the project needs and how it should develop. Table 4 lists those issues that the jurors felt to be positive, and that might be used as objectives by the managers of the project. Similarly, by identifying concerns relating to the project, jurors provide direction to the managers and policymakers as to the development of the project. The information provided by the jury therefore may play a practical role in directing the management of the project.

The results of the CV method also provided policy relevant information. The data do not offer practical direction to the project, but may feed into further economic analysis. The benefit of the project estimated at £448 297 can be compared with the costs of approximately £350 000, showing economic efficiency, and justifying the diversion of public funds to the project.

Our results also shed light on some of the concerns related to CV discussed above, and the role that more deliberative methods may have in mitigating these concerns. One of the concerns about CV relates to the provision of information. The respondents to our CV were given visual and verbal information about the project site, and then asked, "Do you prefer the site with or without the project?" Thirteen percent of respondents did not know whether they preferred it with or without. This may indicate that the information was not sufficient for them to be able to determine their preference. This did not appear to be a problem in the CJ. Jurors were all able to determine their own preferences regarding the Ettrick, and further they were able to break these preferences down and identify those aspects they preferred most (Table 4).

Secondly, a number of researchers suggest that CV questionnaires ask the wrong question and assume that respondents act as consumers and not citizens when responding. Our results indicate that this assumption may be valid. Table 2 shows that the most significant variable in influencing whether a respondent would be willing to pay anything, is whether she was likely to visit the site if the project went ahead. This may indicate, in line with welfare economic theory, that respondents acted as consumers and not citizens when responding to the questionnaire. If this is the case, the CJ can be seen as a complement to the CV by evaluating the project from what Blamey and Sagoff might suggest is the 'right' standpoint, i.e. from a citizens' point of view, whilst the CV takes the consumer standpoint.

The issue of value construction is also a matter of debate within the environmental valuation literature. Neither our CV nor CJ results provide evidence regarding the detailed construction of final recommendations and values. However, comments from the participants to the CJ in the evaluation discussion and questionnaire at the end of the process suggested that breaking down the process into manageable blocks [using Gregory's recommendations based on behavioural decision research (Gregory et al., 1997)] made the whole task less daunting, and more manageable.

Finally, in a climate where both national and international agreements seek to enhance public participation in environmental decision making it seems clear that the environmental decision making process should rely on more than just economic estimates of value as provided by traditional CV. Whilst such estimates are still useful, policy makers are increasingly required to incorporate decision making, planning and management into one process, and include both expert and lay opinion within it. New methods which are able to provide a more holistic approach to environmental policy are needed so that these national and international targets can be met. The CJ is able to offer such an integrated approach. Evidence from the CJ shows that the Jurors were able to think holistically. One of the recommendations was that the Ettrick Project should not be considered in isolation, but as part of a suite of projects, to ensure that the Borders environment developed in an holistic and integrated way.

9. Conclusion

The results provided by the CV and CJ fulfil different roles, and each provide policy relevant information. However, in relatively small scale localized environmental projects the use of two evaluation methods will usually be excessively costly in both time and money. One method which is able to carry out both the value for money evaluation and which encourages local participation in the process seems more appropriate. Even if issues such as information provision, value construction, and citizen vs. consumer values could be addressed adequately within CV, the technique is not able to fulfil the role of incorporating participation in the evaluation process. CV is not able to carry out both functions in tandem.

The challenge now is to test whether CJs are able to fulfil this dual role. Juries could be charged with providing monetary valuations. Common (1998) suggests that CJs could respond to referendum type questions such as 'should society pay a £x increase in taxes to pay for project Y?" However, such estimates would not equate with economic theory as CV figures do, and would be open to criticism in terms of sample size and representativeness.

One of the interesting outcomes of the CJ is that the report is being used by the BFT in a practical way to show sponsors that the project does have public approval, and is being used to secure future funding. Perhaps in the case of small scale, localized environmental projects, CV surveys and results are not required to prove value for money. CJs can perform a dual role by encouraging community participation and providing a means of reassuring sponsors, past and present without needing to produce monetary valuation figures.

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