



Research Note

The economic and social contribution of forestry for people in Scotland

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Over the past decade an increasingly diverse range of social and economic benefits has come to be recognised within the forestry sector. Scottish forestry is now seen to deliver on several new governmental agendas, such as improving quality of life, tackling social exclusion, and promoting sustainable lifestyles. Declining timber prices and new societal demands have provided incentives to enhance these benefits and to demonstrate their value to decision makers and other stakeholders. This Research Note summarises the results of a two-year valuation of the current social and economic contribution of forestry, forests and woodlands to the people of Scotland. The research was structured around 30 quantitative indicators distributed across seven themes: employment and volunteering; contribution to the economy; recreation and accessibility; learning and education; health and well being; cultural landscape; and community capacity. Key findings are presented here for each theme. Additional insights from qualitative research undertaken in two case study regions highlight how people value forestry in multiple and often intangible ways that cut across the seven themes to support both individual and community development. The research will provide a valuable resource for policymakers and researchers over the next few years, and a model upon which similar valuations in other countries might be based.

Introduction

This Note summarises the results of a research project aiming to provide a comprehensive valuation of the current social and economic benefits of Scottish forestry, forests and woodlands derived by the people of Scotland. The project used an interdisciplinary methodology, which made use of the following:

- Economic analyses of the market and non-market benefits of forestry (CJC Consulting, 2006).
- Two national Omnibus surveys, each involving a representative sample of 1000 adults (TNS, 2006, 2007).
- An innovative methodology that employed GIS-based viewshed analyses to assess the visibility of forests from residences in Scotland as a basis for economic valuation of the contribution of forests to the Scottish landscape.
- Questionnaire surveys of all known organisations in

Scotland involved in forest-related activities.

- Two qualitative case studies (Evans and Franklin, 2008).
- Literature and data searches.

The research was organised around a framework of 30 quantitative indicators, distributed between seven 'forestry for people' themes, as shown in Table 1. The framework was developed following a scoping study with forestry stakeholders, discussions with the project steering group, and a comprehensive literature review of typologies of values and indicators used within the forestry sector. The use of quantitative indicators was supplemented by qualitative research (using focus groups and interviews) from two case studies in contrasting regions: the Loch Ness region of the Highlands, and the Glasgow and Clyde Valley region.

This Research Note and the final report (Edwards *et al.*, in press) are structured around the seven 'forestry for people' themes.

Table 1 The 'forestry for people' indicator framework.

Theme	Indicator
Employment and volunteering	1 Number of people employed in forestry
	2 Number of full-time equivalent jobs in forestry
	3 Number of full-time equivalent jobs due to forest-related and forest-associated visitor spending
	4 Number of volunteers and volunteer days associated with forestry
	5 Percentage of time spent working and volunteering on different forest-related activities
	6 Percentage of forestry employees who are satisfied with their job
Contribution to the economy	7 Gross Value Added of forest-related and forest-associated spending
	8 Gross Value Added of forest products and services
	9 Public perceptions of the contribution of forestry to the economy
Recreation and accessibility	10 Number of visitors and visits to forests
	11 Percentage of visits involving different activities
	12 Non-market value of visits to forests
	13 Number and purpose of forest-related public events
Learning and education	14 Public perceptions of forest-based recreation and accessibility
	15 Percentage of the population involved in organised forest-related learning activities
	16 Percentage of the population who have seen or read about Scottish forests, woodlands and trees in the media
	17 Public perceptions of the learning and education benefits of forests
Health and well-being	18 Percentage of the population involved in organised forest-based health activities
	19 Economic impacts of forest-based health activities
	20 Impacts of forests on mental well-being
	21 Public perceptions of the health and well-being benefits of forests
Culture and landscape	22 Number of forest-based cultural events, activities and sites, and number of visits
	23 Value of forest landscapes to the Scottish population
	24 Public perceptions of the cultural and landscape benefits of forests
	25 Percentage of the population who benefit from knowing that there are trees and woodlands in Scotland
Community capacity	26 Number of community woodland groups, number of members and levels of involvement
	27 Hectares of woodland managed by community woodland groups
	28 Incomes of community woodland groups
	29 Number of people involved in, or consulted about, forestry plans
	30 Public perceptions of the community capacity benefits of forests

Employment and volunteering

Forestry plays a significant role in the provision of employment in Scotland, in particular in rural areas. It can help retain and enhance local skills, especially among young people, and help to strengthen local economies. Forest-related volunteering can also bring measurable benefits: to the volunteer, to individual beneficiaries, groups and organisations, communities, environment and society at large (Scottish Executive, 2007). Since volunteering is not motivated primarily by financial gain it needs to be seen in terms of its multiple social, economic and psychological benefits to volunteers and to society rather than as a substitute for paid employment that supports the national economy.

Key findings

- The total employment (i.e. direct, indirect and induced) in the Scottish forestry sector associated with the use of Scottish timber (Figure 1) is estimated to be 13 200 Full-Time Equivalent (FTE) jobs. This breaks down into 10 300 FTEs for direct employment (see Table 2), 1500 FTEs for indirect employment, and 1400 FTEs for induced employment. The figure for direct employment equates to around 12 000 jobs, since not all employment is full-time. These estimates are based upon a broad definition of the forestry sector that includes: forestry harvesting and planting; farm woodlands; haulage; primary wood processing; pulp and paper; and public sector, non-governmental organisation, and research and education employment that is associated with Scottish forests. However the estimates exclude employment associated with the use of timber not grown in Scotland.
- In addition, the total employment due to first-round (direct) spending from tourism and recreation attributable to woodland, where woodland was the primary reason for the visit, is estimated to be around 17 900 FTE jobs.
- The number of volunteers in forest-related work in Scotland is estimated to be around 7500, while the number of volunteer days in the 12 month period from mid-2006 to mid-2007 is estimated to be around 47 400.

Figure 1 Harvesting operations in Dornoch.



Table 2 Direct employment (FTEs) and Gross Value Added (GVA) in Scottish forestry associated with Scottish timber, by sub-sector.

Activity	Direct employment (FTEs)	Direct GVA (£m)
Forest planting	3 294	59.6
Forest harvesting	2 447	46.1
Farm woodlands	646	27.5
Haulage	542	22.4
Wood processing	2 577	111.4
Pulp and paper	350	20.5
Local authorities	207	9.4
Membership organisations	85	3.0
Research and education	105	3.7
Total	10 253	303.6

Contribution to the economy

The contribution of the forestry sector to the Scottish economy was assessed through estimates of Gross Value Added (GVA), which is defined as *the difference between the value of goods and services produced and the cost of raw materials and other non-labour inputs which are used up in production*. The research concluded that the total contribution of Scottish forestry is about 0.5% of the total GVA for the Scottish economy of £82 953 million in 2004. While this proportion may appear low compared to some other sectors, forestry makes a highly significant contribution to the economy in many rural areas.

Key findings

- The total GVA (direct, indirect and induced) associated with Scottish timber is estimated to be around £460 million at 2007/08 prices, or 0.5% of the total GVA for the Scottish economy. This total breaks down into £304 million for direct GVA (Table 2), £86 million for indirect GVA and £69 million for induced GVA. These estimates are based on the broad definition of the forestry sector outlined above, excluding GVA associated with the use of timber not grown in Scotland.
- In addition, the GVA of first-round (direct) visitor spending attributable to woodland visits, where woodland was the primary reason for the visit, is estimated to be £209 million at 2007/08 prices.
- In mid-2006, an estimated 74% of the Scottish adult population agreed or strongly agreed with the statement that ‘woodlands in Scotland are important in helping people to earn a living or make ends meet’.
- GVA and employment associated with non-timber forest product harvesting and the game sector in Scotland are difficult to assess, although both sub-sectors appear to provide small but significant contributions to the economy.

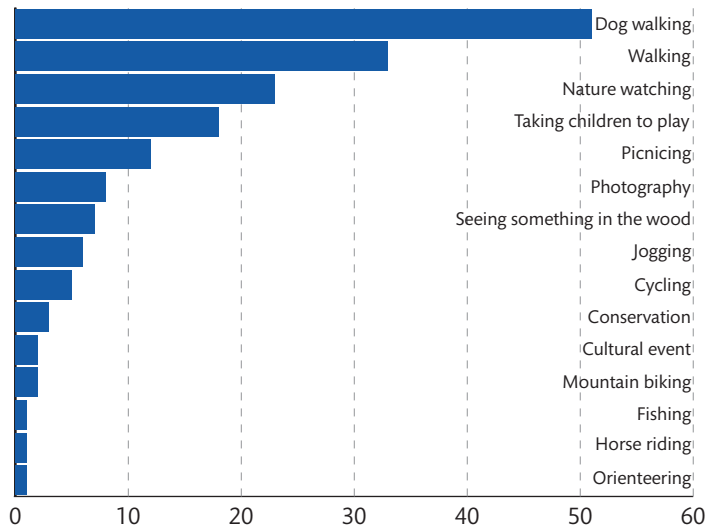
Recreation and accessibility

This theme is concerned primarily with the number and types of visits and visitors to forests and woodlands in Scotland, and the economic value of those visits. The number of visits is also a measure of the accessibility of woodlands for recreation, and other benefits identified in this study such as 'health and well-being', and 'education and learning'. The *Scottish forestry strategy* (Forestry Commission Scotland, 2006) seeks to enhance accessibility as a means to increase the range of people who visit woodlands and the range of benefits they derive. However, accessibility needs to be seen as more than just physical access, and includes the full range of economic, social, cultural and psychological factors (or barriers) that influence decisions to visit woodlands (Ward Thompson *et al.*, 2004; Weldon *et al.*, 2007).

Key findings

- The percentage of Scottish adults who visited Scottish woodlands varied between 56% in 2005/06 (August 2005 to August 2006), and 41% in 2006/07 (August 2006 to August 2007). This equates to 2.3 and 1.7 million people respectively. The substantial decline between 2005/06 and 2006/07 is likely to be largely due to the unusually wet summer of 2007.
- It is estimated that the annual number of visits by Scottish adults ranged between 68 million in 2005/06 and 37 million in 2006/07. At least six million of these visits were made to woodlands managed by the Forestry Commission (FC). Although more visits were made to non-FC woodlands, on average, visits to FC woodlands were of a longer duration and involved longer round trips.
- In addition, in 2006/07 an estimated 63.5% of Scottish children made a total of 11.6 million visits to Scottish woodlands.
- An estimated 51% of visits to Scottish woodlands by Scottish adults were made while accompanied by a dog (see Figure 2).
- Adults from the most deprived areas in Scotland, those from urban areas, C2 and DE socio-economic groups, and the 55+ age class, were all significantly less likely to have visited woodlands in the previous 12 months than those from other social groups.
- The non-market value of visits to Scottish woodlands by Scottish adults is estimated to be between £44 million and £76 million per year.
- Around 1500 public events were organised by the FC between August 2006 and August 2007, involving an estimated total of 134 000 visits.
- 72% of Scottish adults surveyed stated that they had woodland near to where they lived (within a 10 minute walk). Of those who had local woodland, 22% did not feel safe visiting their local woodland, with women more likely to feel unsafe than men.

Figure 2 Percentage of all woodland visits by activity.



Learning and education

There appears to be a growing concern that children and young people are losing contact with the natural environment, as well as strong public and political support for outdoor education including forest-based education and learning. A range of physical, educational and social benefits of outdoor play and adventure in forest settings has been identified (Travlou, 2006). Formal education is provided by school trips to woodlands, visits to schools by rangers, and Forest School and Forest Education Initiative activities, primarily for 3–18 year olds (O'Brien and Murray, 2007). Informal learning can be a significant part of life-long learning, and takes place through organised trips including guided walks and interpretation, while printed and web-based information contributes to learning outside the woodland itself.

Key findings

- 15% of the Scottish adult population, or members of their families, were estimated to have attended a forest-based organised learning activity or event in the previous 12 months.
- 24% of Scottish children were estimated to have visited woodland in the previous 12 months as part of a nursery or school trip. Each child made an average of 2.3 visits per year, which equates to a total of around 510 000 visits.
- The FC works with an estimated 20% of schools in Scotland, through school trips to forests, ranger visits to schools, and Forest School initiatives.
- An estimated 24% of the Scottish adult population, who had visited woodland in the previous 12 months, had followed an interpreted trail.
- 58% of the Scottish adult population were estimated to have recalled seeing or reading about at least one topic related to Scottish forests, woods or trees in the previous 12 months. 13% of respondents had used the Internet and 14% had

used a leaflet to find out something about woodlands. 22% had discussed something about woodlands with their family or friends.

- An estimated 96% of the Scottish adult population agreed or strongly agreed that woodlands allow families to learn about nature. 95% agreed or strongly agreed that woodlands play an important role in children and young people’s outdoor learning experience.

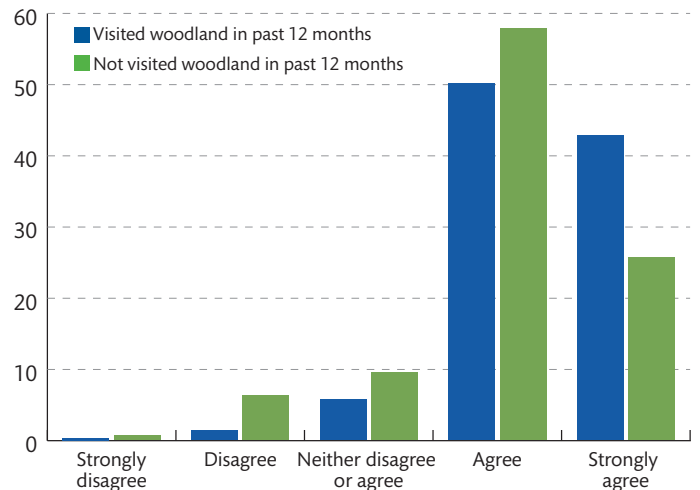
Health and well-being

As outlined in the *Woods for health* strategy (Forestry Commission Scotland, 2007) a growing body of evidence demonstrates that trees and woodlands can have a role to play in improving people’s health and well-being (O’Brien, 2005). Benefits tend to be separated into three types, although for many forest users all are perceived to be closely linked: physical well-being is enhanced through the ability to exercise in a pleasant environment which may encourage higher levels of exercise; psychological well-being is derived through stress reduction, mood improvement and restoration in natural environments; and social well-being can be realised through participation in health intervention projects, such as walking schemes that motivate people to get involved and stay involved because they meet others and develop social networks.

Key findings

- An estimated 5% of the Scottish adult population had been to an organised event in a wood that involved physical activity in the previous 12 months.
- Around 40% of the Scottish adult population carry out the recommended minimum level of at least 30 minutes of moderate intensity exercise on at least five days a week. 2.5% are estimated to be exercising at this level in woodlands, while 2% are estimated to be exercising for at least 30 minutes on three or four days a week in woodlands.
- 9% of the public events organised by the FC between mid-2006 and mid-2007 were considered to have had ‘health and well-being’ as the primary purpose. ‘Health and well-being’ events involved 13% of all visits by the public to FC events in that year.
- A rough estimate for the annual value of health benefits of Scottish woodlands is calculated to be between £10 million and £111 million at 2007/08 prices, depending upon the assumptions used. Further research is needed to refine these estimates.
- An estimated 82% of the Scottish adult population agree or strongly agree that woodlands are places to reduce stress and anxiety (Figure 3), while an estimated 79% agree or strongly agree that woodlands are places to exercise and keep fit.

Figure 3 Percentage of Scottish adult respondents who thought woodlands are places that reduce stress and anxiety.



Culture and landscape

The cultural benefits of forests and trees can be particularly difficult to define and value, since many are intangible – for example the contribution of trees to ‘sense of place’ – and attempts to quantify them are often considered inappropriate or controversial (Weldon, 2008). Intangible cultural values are also difficult to separate from each other, yet they are undeniably important and may rank higher in some stakeholder consultations than timber benefits. Three related perspectives were included in the study: 1) cultural values associated with cultural sites and features, cultural and artistic activities and events, and the meanings people attach to woodlands and trees; 2) aesthetic values gained from the contribution of trees and forests to the landscape, and 3) the non-use values people derive from knowing that trees exist for the benefit of present and future generations, and as a habitat for biodiversity preservation (Pritchard, 2008; Rodger *et al.*, 2006).

Key findings

- There are 1418 scheduled ancient monuments located within Scottish forests, and 150 recorded Heritage Trees and at least 1000 recorded Ancient Trees in Scotland.
- An estimated 3.5% of the Scottish adult population who had visited woodlands in the previous 12 months said that their visits had involved seeing something of cultural interest in the wood (e.g. sculptures, ancient trees or historic sites). Approximately 7% of all visits to woodlands involved seeing features such as these.
- Approximately 1.5% of the Scottish adult population who had visited woodlands in the previous 12 months said that they had attended a cultural event or activity while in the woodland.
- Around 3% of events organised by the FC between mid-2006 and mid-2007 were considered to have had ‘cultural

activities' as the primary purpose. These events involved a total of 4900 visits (i.e. 4% of all visits to FC events).

- Preliminary results from viewshed analyses suggest that approximately 557 000 people in Scotland have visible woodland within 1 km of their homes, while 275 000 people have visible woodland within 300 m of their homes. The economic value of woodland views from homes and on journeys by commuters in Scotland is estimated to be between £21 million and £90 million per year at 2007/08 prices, depending upon the assumptions used.
- An estimated 95% of the Scottish adult population agree or strongly agree that woodlands in Scotland are an important part of the country's natural and cultural heritage.
- Around 57% of the Scottish adult population are estimated to gain substantial benefit from seeing trees or woods from where they live, while 50% are estimated to gain substantial benefit from seeing trees or woods as they undertake their daily activities.
- An estimated 68% of the Scottish adult population gain substantial benefit from knowing that there are trees and woods in Scotland, while around 72% gain substantial benefit from knowing that Scottish woodlands will be there for future generations. 70% gain substantial benefit knowing that Scottish woodlands provide a place for wildlife.

Community capacity

When forestry is practiced at local level with community engagement there can be benefits derived by individuals, and the community as a whole (Figure 4). At the individual level, benefits may include self-esteem and self-confidence, personal identity, sense of belonging, ownership, empowerment, well-being, and quality of life. Benefits to the community may include social connectedness, cohesion, integration, stability, and resilience (Donoghue and Sturtevant, 2007).

Figure 4 Mothers and their children taking part in a community tree planting event at Craigmillar urban forest in Edinburgh.



Arguably the most important benefit is the building of 'community capacity', a process which has been defined as *activities, resources and support that strengthen the skills, abilities and confidence of people and community groups to take effective action and leading roles in the development of communities* (Skinner, 2006). The focus of this theme is on the community woodland movement in Scotland, which is characterised by local ownership of woodlands, and/or control over woodland-related decision making. A high level of community capacity may be evident, for example, when a community woodland group works in partnership with a range of external agencies to bring in new sources of income as a means to realise shared goals (Evans and Franklin, 2008).

Key findings

- An estimated total of 138 community woodland groups are active in Scotland, with a total membership of around 13 500.
- Of the sample of community woodland groups surveyed in 2007, 66% of their directors, committee members and trustees were male, 28% were over 60 years of age, 5% were disabled, and all were from a 'white' ethnic background.
- The total number of woodlands managed by community woodland groups in Scotland is estimated to be 245, covering a total of 18 275 hectares, or around 1.4% of the total woodland area in Scotland.
- The total income that was received by community woodland groups in Scotland is estimated to be around £4.5 million between mid-2006 and mid-2007, of which 50% was grants from public bodies, 17% from donations, 10% from membership fees, 6% from sales of forest products, and 6% from sales of other goods and services.
- The proportion of Scottish adults who were involved in, or consulted about, forestry plans in the 12 months prior to mid-2006 is estimated to be 2%, while 83% agreed or strongly agreed that it is important to have a say in what happens in your local woodland.
- Around 65% of the Scottish adult population are estimated to agree or strongly agree that woodlands are good places to meet with friends and family.

Insights from the case studies

The primary objective of the two case studies was to complement the national-level thematic valuation summarised in this Note with detailed, context-specific assessments of forest-related benefits as they accrue to the resident populations of two contrasting areas in Scotland: the rural Loch Ness region of the Scottish Highlands, and the Glasgow and Clyde Valley region. The case studies highlighted how the multiple benefits derived from any one forest-related initiative

with social objectives cut across the seven themes used to structure the research (see Box 1). The range of benefits to the people of Scotland includes the following:

- Employment and volunteering opportunities provided by forest-related organisations and initiatives, and due to visits to the region associated with forests and woodland.
- Contributions to local economies due to forest-related employment and visitor spending.
- Increased human capital and hence employability of individuals who participate in forest-related initiatives and activities, through educational attainment, training and skills development, and life skills such as teamwork and leadership.
- Fun, happiness and well-being.
- Raised awareness and understanding of the natural environment of residents and visitors through connections with nature.
- A sense of civic responsibility for, and ownership of, local natural resources.
- Positive reinforcement of good behaviour among young people and associated increases in capacity for learning.
- Improvements to mental and physical health associated with outdoor activity and associated healthy lifestyles.
- Stress reduction and other emotional and mental health improvements due to woodland visits and woodland views, and due to associated social interaction with friends and family.
- Stronger sense of identity and belonging associated with particular wooded landscapes.
- Increased social inclusion and community cohesion associated with shared experiences of forests through visits, or volunteering and employment, associated with forests.
- Increased community capacity to achieve shared goals, through increased 'bonding' social capital (i.e. within communities), and 'bridging' social capital (i.e. between members of communities and external partners).

There was good evidence to show that forest-related initiatives targeting individuals and communities in both the case study locations confront a range of local development issues and needs, and hence address a number of key government agendas.

The most striking finding was the evidence of a substantial increase in the scale and extent of partnership working between agencies, both within and beyond the forestry sector at different spatial scales and levels of governance. In contrast to the 1990s, partnerships are now a fundamental feature of contemporary 'forestry for people' activity in Scotland, reflecting a new, outward-facing and collaborative dynamic that is having a positive effect on community development and the generation of public goods.

Box 1 Perspectives on the benefits of forestry for people

The following quotes selected from interviews and focus groups give a sense of the benefits of forests and forest-related initiatives as perceived by local people in the two case study areas.

'It is more than just a nice place to walk the dogs ... [It's about] being part of something ... and also the sociability factor is high ... meeting other people, finding out what's going on in the area. And they interconnect with people they would not normally connect with. And again there is a value in that.'
(Scoping Study Participant).

'I just like going to the woods 'cause they're fun!'
(Special Needs School Student, Glasgow).

'The group from the High School ... they are children that have needs – that are not coping in class. The last group that we had was a group that are in a practical class together, that bicker and fight in the class ... and they have been out with us for Forest School and they are actually getting on ... and you know, helping each other ... and accepting the help from each other.'
(Community woodland group member in Loch Ness region).

'Health-wise, fantastic; friendship-wise, even better.'
(Walking group participant, Loch Ness region).

'I was in hospital for quite a while. I was scared to go out. I was even scared to go home on pass. Then I was referred to the walking group. I was really unsure about it. I tried to go but I was nervous so I just went back to bed ... I decided to give it a shot ... I felt fitter and it really cleared my head. I enjoyed meeting other people and chatting on the walks. I feel this was a good step to me being discharged.'
(Paths to Health Participant, Glasgow).

'There is not a day that goes by that I don't send people walking in the forest. The interest in those trees is tremendous.'
(Tourism operator, Loch Ness region).

'It's a big draw. They come up and it just blows them away when they see the landscape like it is.'
(Accommodation provider, Loch Ness region).

'[The voluntary woodland management project has] brought together a group of people from many different backgrounds who have all bonded together. We are more like a family.'
(Drumchapel Greenwork Mates Participant, Glasgow).

'[Starting a community woodland group] builds a lot of community capacity in as far as, in the beginning, it brings the latent leadership within a community together, and it brings the energy together.'
(Councillor, Loch Ness region).

'Land is power, and when you have the power, you have the capacity to do things.'
(Community woodland group member, Loch Ness region).

Sources: Evans and Franklin (2008), and Edwards *et al.* (in press).

Conclusions and next steps

Over the past decade the social agenda in forestry has firmly established itself within Scottish forestry, and this is reflected in a greater demand for researchers to evaluate the 'social forestry sector'. The research summarised here represents the most comprehensive response to this need. It should provide a valuable resource for policymakers and researchers over the next few years, and a model upon which similar valuations in other countries might be based. A number of areas of further research have been identified that would enhance the overall quality of the assessment, including the following:

- Further work is needed to strengthen the contextual information available to allow more meaningful interpretation of the results, in particular by providing data to show trends over time, and by comparing social and economic values for woodland with other alternative land uses.
- Use of spatial datasets and GIS could contribute new information on all 'forestry for people' themes in this study, and on cross-cutting issues relating to differential participation and impacts upon different social groups.
- The challenge of integrating the use of quantitative indicators with the qualitative approach employed in the case studies could be realised more fully with research that systematically quantifies and describes use and non-use of particular woodlands for different purposes by different kinds of people. Such studies could monitor changes over time, and be broadened to include a wider range of benefits.

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The final full report for the 'Forestry for people' project will be available to download from autumn 2008. For more information: www.forestresearch.gov.uk/forestryforpeople

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