EFORWOOD
Tools for Sustainability Impact Assessment

Social and Cultural Values associated with European Forests in Relation to Key Indicators of Sustainability

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EFI Technical Report 58, 2011

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Publisher: European Forest Institute
Torikatu 34, FI-80100 Joensuu, Finland
Email: publications@efi.int
http://www.efi.int

Editor-in-Chief: Risto Päivinen

Preface

This report is a deliverable from the EU FP6 Integrated Project EFORWOOD – Tools for Sustainability Impact Assessment of the Forestry-Wood Chain. The main objective of EFORWOOD was to develop a tool for Sustainability Impact Assessment (SIA) of Forestry-Wood Chains (FWC) at various scales of geographic area and time perspective. A FWC is determined by economic, ecological, technical, political and social factors, and consists of a number of interconnected processes, from forest regeneration to the end-of-life scenarios of wood-based products. EFORWOOD produced, as an output, a tool, which allows for analysis of sustainability impacts of existing and future FWCs.

The European Forest Institute (EFI) kindly offered the EFORWOOD project consortium to publish relevant deliverables from the project in EFI Technical Reports. The reports published here are project deliverables/results produced over time during the fifty-two months (2005–2010) project period. The reports have not always been subject to a thorough review process and many of them are in the process of, or will be reworked into journal articles, etc. for publication elsewhere. Some of them are just published as a "front-page", the reason being that they might contain restricted information. In case you are interested in one of these reports you may contact the corresponding organisation highlighted on the cover page.

Uppsala in November 2010

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EFORWOOD

Sustainability Impact Assessment of the Forestry - Wood Chain

Project no. 518128

EFORWOOD

Tools for Sustainability Impact Assessment

Instrument: IP

Thematic Priority: 6.3 Global Change and Ecosystems

Deliverable D2.3.1
Social and Cultural Values associated with European Forests in Relation to Key Indicators of Sustainability

Due date of deliverable: 30.11.2006
Actual submission date: 20.11.2006

Start date of project: 011105
Duration: 4 years

Organisation name of lead contractor for this deliverable: Forest Research (FR)

Revision [FINAL]

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Social and Cultural Values Associated with European Forests in Relation to Key Indicators of Sustainability
EFORWOOD D2.3.1

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November 2006

ABSTRACT

This deliverable presents the results of a literature review and analysis of Social and Cultural Values (SCVs) associated with European forests, and their relationship to existing and new indicators to measure or describe those values. The report examines ways in which SCVs have been categorised for different purposes within policy and academic literature, and indicators for SCVs used by international criteria and indicator processes for Sustainable Forest Management (SFM). A typology of nine SCV themes is identified and described, and incorporated into a provisional template of indicators. The template will guide further work within EFORWOOD, and may act as a stand-alone product of the project to improve the assessment and monitoring of the social aspects of SFM in Europe. The template is intended to be both comprehensive (e.g. to include less tangible values that cannot be readily measured) and generic (i.e. to measure impacts of multiple drivers in multiple contexts at different spatial scales). Key issues raised by the development of the template are discussed.

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1. INTRODUCTION

Scope of the research

This report explores the Social and Cultural Values (SCVs) associated with European forests, and the ways in which these can be quantified or described through the use of Criteria and Indicators (C&I) as part of contemporary approaches to Sustainable Forest Management (SFM). SCVs covered by the report include collection of Non-Timber Forest Products (NTFPs), recreation activities, and non-recreational values such as appearance of the landscape, historical value, and well-being derived from living near a forest.

The report is based upon a literature review of descriptions and typologies of SCVs associated with forests and of relevant national and international processes that are developing C&I. Given the huge scope of this topic, the report focuses on a small number of key studies and on well-established indicator frameworks. A generic framework of C&I for SCVs for Europe is proposed in Appendix 1. Issues regarding the process of indicator development and use of indicators for SCVs in SFM are discussed.

The geographical focus of the review has been Europe, and to a lesser extent other temperate and boreal regions. Some reference to developing and tropical countries has been made. It is often in developing country contexts that the social aspects of SFM have been most developed, and their inclusion has provided a source of new C&I, and issues, that may have relevance to Europe, in particular in the fields of governance and social justice.

EFORWOOD

The research was conducted as part of the EU-funded Integrated Project EFORWOOD: "Tools for Sustainability Impact Assessment of the Forestry Wood Chain" (EFORWOOD 2005). The project began in November 2005 and will run for four years. The Tools for Sustainability Impact, or ToSIA, are being developed to assess impact on different parts of the Forestry Wood Chain (FWC) for a broad range of drivers, and to cover up to 80 percent of the wood flows within Europe.

ToSIA is being developed to support the process of Sustainability Impact Assessment (SIA), which represents a recent integration of economic, social and environmental concerns into impact assessment for new policies, projects or programmes, the so-called 'three pillars' or 'triple bottom line' approach. SIA is typically an ex-ante exercise but it can also be used for ex-post evaluation (Pope *et al.* 2004). ToSIA extends the definition of SIA to include a wider range of drivers, including European and national policies, changes in forest management practices, technological innovations in production, processing or marketing, as well as climate change and the global economy.

Work has been carried out within EFORWOOD during its first year to develop the indicators through an iterative process with stakeholders. At this strategic level of operation, stakeholder contributions can only realistically involve a selection of experts from established NGOs and other stakeholder groups in Europe. To this end a pan-European stakeholder meeting was held in September 2006 with some 30 participants, which provided valuable suggestions. The goals of the project demand a broad and generic indicator set to reflect the pan-European scale, the broad nature of the drivers to be assessed, and the multiple ways in which they may impact on different stages in the FWC. The options for indicator selection were also limited by the availability of data, and the requirement for quantitative indicators that are sufficiently tractable for modelling purposes.

This process has produced a framework with three levels of indicators, as follows:
1. A shortlist of approximately six lead indicators
2. A list of approximately 30 indicators which apply across the entire FWC (and which includes the six lead indicators)

3. Four separate lists of 'module specific' indicators which have been developed for different stages in the FWC

Indicators for Social and Cultural Values

Module 2 of EFORWOOD is concerned with the forest management end of the chain. Different Work Packages focus on each of the three pillars of SFM. The research reported here was conducted as part of Work Package 2.3: 'Social and Cultural Values'. The first task of WP2.3 has been to review SCVs associated with European forests and develop a generic template from which to select a shortlist of operational indicators for use by the project at the European level. This list is the module-specific social indicator set for Module 2, and is given in Appendix 3.

Subsequent research will aim to describe and where possible quantify the extent to which different forest management strategies impact on these indicators in seven Reference Forests throughout Europe which, when taken together, aim to represent forest types that are the source for 60-80 percent of the wood flows in Europe. Each Reference Forest is located within a Reference Region consisting of the corresponding administrative NUTS 3 region, the primary level of data collection and impact analysis. In Scotland, Craik Forest has been selected as a Reference Forest, while the Scottish Borders will be the corresponding Reference Region. A small number of forest management scenarios are being developed as the drivers for which impact assessment will be carried out. Craik and other Reference Forests will act as case studies for later extrapolation to higher spatial levels.

The task of producing an indicator set for SCVs, and determining their responsiveness to forest management strategies, presents numerous challenges, in particular for the non-market SCVs, but also for many biodiversity values. Many SCVs are intangible, and attempts to quantify them, for example through contingent valuation or hedonic pricing, are often inappropriate or controversial. Intangible SCVs are also often hard or impossible to separate from each other, and tend to be referred to by undifferentiated labels such as 'cultural and spiritual values' or 'cultural heritage'. Yet they are undeniably important and often rank higher in stakeholder consultations carried out for forest planning and policy-making than the traditional timber benefits.

This report conceptualises studies of SCVs in relation to forests as two ends of a continuum. At one end we have typologies and descriptions of individual SCVs. At the other end we have quantitative indicators for measurable aspects of those SCVs. There is now a wealth of literature which explores one or the other of these approaches, but few studies attempt to integrate the two. At one extreme, there are studies that aim to produce typologies of SCVs regardless of whether they can be measured with indicators. At the other extreme are studies that have produced indicator sets by focusing on what can be realistically measured, without critically assessing the extent to which they cover the full range of SCVs held by different stakeholders (e.g. MCPFE). Although development of the latter may have involved the former, it is not made explicit in the final product. This approach runs the risk that less tangible SCVs become undervalued or forgotten. In between these extremes are a few studies that take a more interactive approach, with the selection of SCVs informing the selection and development of indicators, and vice versa. This is the approach attempted here.

The scope for stakeholder participation in the development of a module-specific indicator set for SCVs relating to forests throughout Europe is constrained in much the same way as it was for the FWC indicators. It is essentially an expert-driven process. The pan-European stakeholder meeting raised additional issues, for example rights of forest dependent people, a topic not well covered, for example, by the MCPFE Pan-European C&I process (MCPFE 2002). More thorough stakeholder engagement in this process will be possible in Reference Regions throughout Europe in later stages of the project. The generic template (Appendix 1) is more or less suited to different local contexts. Within each Reference Region it will be possible to develop a regionally specific C&I framework grounded in local sustainability issues, and to use this to assess and refine the generic template. Through successive application in different Reference Regions, a fully tested generic template will be produced. The same process will also be followed for the operationalised shortlist of module-specific indicators. As with

the FWC indicator set described above, it is hope that the generic template will be used as a stand-alone product available for other SFM assessments in Europe.

To conclude, the role of stakeholder engagement in the development of C&I for SCVs described here is to allow iterative refinements to an expert-led generic template applicable throughout Europe, through interaction with a series of bottom-up context specific C&I sets developed with stakeholders in different regions of Europe. The framework presented here is the first stage: the result of a purely expert-led process that now requires local validation.

2. TYPOLOGIES OF SOCIAL AND CULTURAL VALUES

Introduction

What do we mean when we talk about the Social and Cultural Values of European forests and woodlands? How are those values separated from each other, labelled, and then described, measured or valued economically? What is the scope of SCVs as defined in this report? Our definition of SCVs is shaped by two factors. First, it needs to be grounded in accepted understandings of the 'social' pillar of sustainable development, and of SFM. Secondly, the overall scope of the term SCVs was pre-defined by the EFORWOOD Description of Work (DoW) to include the following three categories (EFORWOOD 2005):

a) collection of non-wood forest products (e.g. mushrooms, berries, game hunting, medicinal plants)
b) recreation activities (hiking, mountain biking, bird watching)
c) non-recreational values (e.g. appearance of the landscape, historical value, well-being of living near a forest).

There are different ways to extend this list and develop a typology of SCVs. One approach is through consultation with experts and other stakeholders. A workshop was held in Copenhagen in January 2006 during which EFORWOOD partners from WP2.3 were invited to brainstorm a comprehensive list of SCVs. This informal approach was not grounded in any explicit conceptual framework (although the exercise was clearly informed by participants' previous experience), and at first not shaped by considerations of quantification or data availability. A second stage involved listing proposals for indicators for each criterion. The exercise produced 18 criteria (or themes) and 50 indicators.

This list was a starting point for the subsequent development of the generic template of SCVs and indicators for European SFM, refined over the next nine months through literature reviews and expert consultation. The latest version is given in Appendix 1, which will be further refined in the light of fieldwork in EFORWOOD Reference Regions throughout Europe. As with a similar generic template developed by CIFOR, the SCV template should be understood as work in progress (CIFOR 1999: iv).

The template uses a thematic approach and nine themes representing different groups of benefits or values have been developed as follows:

1. Employment
2. Harvesting (Non-Timber Forest Products)
3. Governance
4. Community development
5. Recreation and tourism
6. Education and learning
7. Health and well-being
8. Landscape and aesthetic
9. Cultural and heritage

The value in developing a typology of SCVs should not be downplayed, since the social benefits of SFM assessment and monitoring remain in their infancy. There is a need to develop a comprehensive, robust, and authoritative typology, and then to promote it in the international arena so that the full range of SCVs is considered in policymaking. It is acknowledged that SCVs are not being addressed adequately within the development of C&I for SFM and that social impact assessment needs more systematic application in forestry (Raison *et al.* 2001: 6, 10). Templates of this kind can help European researchers, statisticians and policymakers determine priorities for data collection and indicator development (Segnestam 2002: 10). This section explains how the SCV template was derived through a review of typologies of social benefits of forests, and of individual SCVs, focusing on a small number of exemplary studies. The aim is to focus on the structure of the typologies rather than the description of each category, which will be the focus of a later section.

After a brief discussion of different conceptions of environmental value, we examine three approaches to categorising and valuing SCVs as follows:

a) The 'Forestry for People' project in Scotland, which aims to provide a comprehensive coverage of the social benefits of forestry at national level in Scotland. It has produced a typology of benefits, and a framework of indicators. Where possible these indicators are economic, or quantitative, and are supplemented by qualitative indicators and descriptions for the less tangible aspects of each SCV.
b) Willis' (2003) study of UK woodlands' contribution to quality of life. This work also sought economic values. Otherwise benefits were briefly described. Later sections attempted to link each category of benefit to the UK government's Quality of Life indicators [?]. However, a new indicator set was not proposed.
c) The 'ecosystem functions' approach and associated approaches to economic valuation. This also aimed for a systematic coverage of benefits, but it was grounded conceptually in a typology of ecosystem functions, which in turn are seen to provide products or services valued by individuals and society. Again, the exercise is focused on economic valuation where possible. There is a typology of functions, and related products and services, including for SCVs, most of which are called 'information functions', but there is no developed set of economic, quantitative and qualitative indicators as for F4P.

Conceptions of value

Social and cultural values can be conceptualised in several ways in the context of forests and the environment. Pearce (1999) makes a distinction between extractive, non-extractive, and preservation values. Drawing on research in tropical forests, where pioneering work on the valuation of non-market benefits of forests was carried out, he writes:

> "Lampietti and Dixon (1995) divide non-timber values into extractive, non-extractive and preservation values. Extractive values involve an actual harvest, e.g. of nuts or rattan. Non-extractive values should be more correctly titled non-extractive use values since they involve use but not harvest of the forest. They include recreation and tourism, but also the indirect ecological functions of forest such as watershed protection and carbon storage. Preservation values are what most now call non-use or passive use values" (Pearce 1999: 8).

Similarly, four types of value were identified by Slee *et al*. (2004) to evaluate the contribution of forestry to rural development in UK:

- Forest values (forest-related economic activity, e.g. employment and outputs)
- 'Shadow values' (economic activities resulting from forestry, e.g. tourism)
- Non-market values (external effects of forestry, e.g. informal recreation, health)
- Social values (values arising from identity, belonging attributable to trees and forestry, e.g. social capital)

Pearce's distinction closely resembles that made by the EFORWOOD DoW between NTFPs, recreational activities, non-recreational values. However the typology from Slee *et al.* appears to be more useful for developing our SCV template. They divide Pearce's 'non-extractive values' into 'shadow values', for which money enters the local economy, and 'non-market values', for which there is no direct economic benefit. Clearly recreation and tourism can provide both of these values depending on the nature of the activity. Slee *et al.* also identify the notion of 'social values'. This more closely reflects what EFORWOOD means by the 'non-recreational values' than Pearce's notion of 'preservation values', which is of limited use outside the paradigm of environmental economics. 'Social values' may or may not result from use of the forest, and may or may not include aspects of preservation value. As discussed below, they represent the benefits people gain through their positive associations with forests, identification with forests, and inspiration derived from forests, rather than from the economic functions they provide. (This does not mean that these benefits cannot be expressed, to some extent, through economic valuation.) Slee *et al.*'s typology is also useful because

its categories were derived in part from the different methodologies required to value each category, a pragmatic approach which makes sense for the SCV template developed here, given its proposed use within an operational context.

A more detailed typology of environmental values is given by More *et al.* (1997), with particular reference to wildlife. Following Brown (1984), they distinguish between preference-related and non-preference-related values. Non-preference-related values refer to "the function something serves", for example, the recreational functions of forests. Preference-related values are evaluative and refer to the sense of good or bad (ibid: 237-8). Our SCV template will draw on both of these, since they reflect different dimensions of the same SCV themes.

The preference-related values can be further divided into 'assigned' values and 'held' values (following Brown 1984). As More *et al.* explain: "Assigned values represent one major category of preference-based values. Assigned values are derived from a consistent standard of comparison across various tangibles" (ibid). Held values are more subjective, and include aesthetic, moral and spiritual values.

Assigned values include the 'forest values' and 'shadow values' identifed by Slee *et al.*, and can be further divided into market and non-market values. The 'non-market values' can be assigned an economic value through methods such as travel cost, hedonic pricing, and contingent valuation (ibid). As many authors have pointed out, application of these techniques can be controversial, and, even for their proponents, credible estimates are often expensive to derive. Sagoff (1988) has highlighted the distinction between individual consumer values (which form the basis of most non-market valuation methods) and citizen values (which are derived through contextualised deliberation) and argues that the latter are the appropriate measure of public good for use in decision-making. Some provisional indicators based on these techniques have been included in the SCV template, but alongside indicators which value non-market values, such as informal recreation, through simple quantification of visitor numbers.

Non-market values can be further sub-divided into use values and external values, which reflects Pearce's distinction between non-extractive and existence values. Indeed, More *et al.* identify four kinds of external value: existence, option, bequest and altruism. Arguably our study is concerned primarily with delineating and quantifying the use values. The external values may become part of the meanings attached to forests covered under 'culture' as discussed below, although it appears that these categories of value are rarely used in public discourses surrounding the benefits of forests.

According to More *et al.* the held values are "more enduring, and are deeply embedded in a person's personality structure". They are "actually the standards by which we make judgements", and are divided into five groups: economic, aesthetic, moral, spiritual and rational values (More *et al.* 1997: 239). These are considered briefly in turn below.

'Held economic values' differ from the economic values related to extraction or tourism functions. They refer to "the standards we use to judge goods and services" and are not relevant for present purposes (ibid: 239). Similarly, rational values are not particularly relevant for the SCV template. They write: "Rational values link values with decision making: rational decisions are considered good, while irrational decisions are bad." (ibid: 242).

Aesthetic values in this context are "standards for appreciation". In a modern context, these are acknowledged to be subjective personal or cultural criteria for judgement of experiences, and can be subdivided into "pleasure (enjoyment), absorption (concentration), detachment (a contemplative attitude) and challenge (innovation and mastery)" (ibid: 240). These concepts have not been used as separate divisions under the 'culture' theme in the template and alternative categories are proposed.

Moral values are standards for judging conduct. In forest policy these values relate to questions such as whether local communities should have privileged access or ownership rights for forest resources.

As More *et al.* explain: "The moral content of these and similar questions concerns issues such as the fairness of the decision making process or equity in the distribution of costs and benefits" (ibid: 241). These political issues do have a place in the SCV template, and are also covered by other C&I frameworks, through indicators for participation and social justice.

Finally, there are spiritual values, which are "standards for judging meaning". These are clearly relevant to understand how people judge, or value, the meanings attached to forest and woodland (by themselves as individuals and by others). 'Spiritual' here refers to the notion of a world-view rather than the narrower idea of religion. Spiritual values "provide the framework within which other values are interpreted" (ibid: 242).

The ecosystem functions approach to valuation of environmental benefits developed by de Groot and his colleagues, and grounded in environmental economics, adds further useful perspectives on value. They note that the value of ecosystems can be divided into three broad types: ecological, socio-cultural and economic (cf. Farber *et al.* 2002, Limburg *et al.* 2002, Howarth and Farber 2002 and Wilson and Howarth 2002). The 'ecological value' concerns ecological criteria such as integrity, resilience, and resistance, and ecosystem parameters such as complexity, diversity and rarity (de Groot *et al.* 2002: 403, c.f. O'Hara 1996: 224). Regarding 'economic value' they note four broad kinds of valuation methods: direct market valuation, indirect market valuation, contingent valuation, and group valuation.

Group valuation is a relatively recent development within ecological economics that seeks to derive 'citizen's values' as opposed to 'individual values' through discussion within groups of stakeholders. It was developed as a response to critiques of neo-classical economic valuation of non-market benefits, in particular its commitment to methodological individualism, and the use of money as a universal means of measurement. Group valuation aims to incorporate the diversity of values held by stakeholders, and to reach a consensus view through deliberation (Chiesura and de Groot 2002, cf. Martinez-Alier *et al.* 1998; O'Neil 1993, Functowicz and Ravetz 1994a). For example, Chiesura and de Groot (2002: 226) argue that such techniques are based on the "wrong paradigm" for valuing SCVs. Instead they propose participatory methodologies and open-ended surveys to reveal attitudes, perceptions and behaviour regarding the environment. Tabbush raises similar concerns:

> "Socio-cultural considerations are best illuminated in dialogue with stakeholders, in this case those affected by the decisions involved in forest planning. […] A clear change is needed from an idea in which quantification is seen as almost obligatory, to an idea in which descriptive and discursive evaluation of socio-cultural factors can carry as much weight as more easily quantified variables in the analysis of sustainability (Tabbush 2006:20-21).

As discussed above, the scope for stakeholder participation during the development of the SCV template is constrained by the strategic scale at which it seeks to be used. However, work in several European Reference Regions will be used to refine and validate the template in later stages of the project.

To conclude, these perspectives on the valuation of social benefits have shaped the assessment template developed here. Four kinds of indicator are proposed according to the nature of different SCVs and appropriate methods for their assessment as follows:

a) economic (value expressed in money terms)
b) quantitative (absolute numbers or percentage)
c) qualitative (ordinal ranking)
d) descriptive (using common criteria for comparison)

In principle, indicators for each of the above could be devised for each SCV theme. In practice, some kinds of indicator are not appropriate, because they will not reflect the value being measured, or because data is not likely to be obtainable. These considerations are discussed for each theme in subsequent sections.

The social benefits of forests

Numerous lists of public benefits derived from woodlands and forests exist in the literature. O'Brien (2005) conducted focus groups in the north-west and south-east of England, in both rural and urban areas, with participants from a range of socio-economic backgrounds, to discuss people's relationships with woodlands. A number of benefits of being out in green space and woodlands were given, including: 'the personal pleasure of walking and taking exercise', 'the beauty of the scenery as a whole', and emotional and psychological pleasures such as freedom, escape, quietness, being away from pressure, relaxation, contemplation, privacy, contentment and calm (ibid: 329). The same study produced a list of the varied meanings associated with woodlands derived from the focus groups:

- Locations for learning and education both formal and informal
- Social settings; a place to be with families, partners and friends
- Symbols of nature and environmental health
- Locations for improving well-being particularly mental and emotional well-being
- Community locations for action, activity and social participation
- Low cost area for activity particularly for families and those on low incomes (O'Brien 2005a: 181)

This bottom up exercise, which was not shaped strongly by pre-existing categories of value held by the researcher, indicates the complexity surrounding SCVs. It is hard to see how to organise these into a neat typology. There is a mixture of meanings, attitudes, feelings, and practices of people, and properties of the woodland as a physical resource. Many of the benefits overlap and are hard to separate.

Interestingly this list of values is largely restricted to those that belong under the social pillar of sustainable development. However, this is not always the case. Edwards and Weldon (2006) discovered that focus group participants valued the 'ecological' and 'economic' benefits as well as the social ones, but the 'social' benefits dominated the discussions. Similarly, citing Satterfield (2001) O'Brien suggests that "under naturalistic conditions respondents had much to say about values and that ecological, recreational and spiritual values appeared to be particularly important" (O'Brien 2005a: 171).

Researchers and policy makers involved in forest policy over the last decade have tended to produce similar lists of benefits of woodlands to society. For example, Bass lists the following 'key forest goods and services' (Bass 2001: 21):

1. Wood products
2. Non wood products
3. Watershed functions
4. Soil protection/nutrient cycling
5. Wind and noise control
6. Microclimate moderation
7. Recreation and tourism
8. Cultural and spiritual values
9. Sense of place
10. Landscape and aesthetics

In an account of the development of the Community Forest Programme in England, Collins and Stewart Roper (1999: 315-6) list the following ten basic public benefits of the programme, which came to be represented as corporate objectives: a) sustainability/regeneration, b) landscape, c) recreation, d) heritage, e) biodiversity, f) education, g) timber, h) inward investment, I) private finance, and j) jobs. Similarly, Edwards and Gemmell (1999: 320) describe the range of non-market benefits derived from the Central Scotland Forest (an example of a community-forestry-type project) as follows:

1. Desirable physical and labour outputs
2. Improved investor appeal and quality of life

3. Conservation and enhancement of the natural heritage
4. Management of the environment in itself
5. Enhancement of enjoyment, recreation, access and tourism
6. Environmental education and awareness
7. A positive identity and image and an improved development process
8. An 'engaged' community and processes for partnership
9. Additional/levered expenditure.

These lists include environmental and economic benefits, but tend to focus on the social. It could be argued that all of these benefits belong under the 'social' pillar, because they are goods or services that society values. However, the three pillars approach forces us to divide the list into economic, social and environmental. From Bass, 7-10 clearly belong under the social pillar, although one might also include NTFPs depending on whether one stressed their benefits for local communities and as subsistence, as opposed to their contribution to the economy. The distinction here between 'economic' and 'social' is arbitrary. From Collins and Stewart Roper, we would probably choose landscape, recreation, heritage, education, and perhaps jobs. Again, inward investment for example would probably be considered economic, yet if it is seen in terms of local community development, it is perhaps part of the social pillar. Similar divisions could be made for the list given by Edwards and Gemmell.

A report on 'non-wood goods and services of the forest' by UNECE/FAO (1998) aimed to clarify definitions and explore data availability across a selection of temperate and boreal forest countries. Their categories were expert-derived and reflect the structure of data and of categories within forest policy, as follows:

1. Non-wood goods (food, fodder, plant products, other non-wood goods)
2. Environmental services (protection, water protection, global climatic effects, biodiversity, local environmental functions)
3. Social and cultural services (hunting and fishing, leisure and tourism, aesthetic and scenic values, cultural and spiritual values, scientific and historical values).

As stated, environmental services are not covered within SCVs as defined here. The categories they provide for social and cultural services, however, are useful. The category for 'aesthetic and scenic values' strengthens the case that this requires a separate theme of its own. Missing from this list is any mention of participation and social inclusion, which have been included in the template under a separate theme entitled 'governance'.

Tabbush (2006:16) produces a more comprehensive list of 'socio-cultural values', which extends and delineates further the scope of the 'social pillar', (adapted) as follows:

- Livelihoods (employment but including aspects of quality)
- Non-wood products
- Physical and mental health and well-being
- Cultural identity and spiritual well-being
- Opportunities for recreation and sport
- Educational opportunities
- Positive effects on human behaviour, crime, safety and risk
- Social cohesion, social capital, social inclusion and social interaction
- Symbols of nature

The lists given above are useful to develop our own typology of SCVs, because they are grounded in the needs of policymakers and managers. They are operationalised to some extent. Categories such as 'educational opportunities' or 'physical and mental health and well-being' can be linked to particular government departments, targets, and funding sources. The benefits given for community forestry by Edwards and Gemmell are in fact policy objectives. This is worth bearing in mind. Arguably, there

should be separate categories for landscape and culture, rather than subsuming them both under 'culture', since these are recognised by policymakers as distinct objectives.

The approach adopted by the template developed here is policy-oriented and thematic. It is essentially the one used in the various international C&I processes described below. However, it can lose something that was present during O'Brien's focus groups: a sense of the interconnectedness, richness, and multidimensionality of different benefits or values attached to forests. People do not always experience these categories separately. They may visit a forest and experience all of them at once, which clearly makes them harder to assess or value. Similarly, de Groot and Ramakrishnan (2005: 457) write:

> "While there are specific cultural 'services' that ecosystems provide (such as aesthetic enjoyment, recreation, spiritual fulfilment, and intellectual development), it is quite artificial to separate these services or their combined influence on human well-being. For example, a jogger… obtains a recreational benefit from that ecosystem through aesthetic enjoyment and physical exercise while simultaneously perhaps gaining spiritual benefits from watching a swan land in the lake".

The 'Forestry for People' approach

The most useful example of a thematic framework of SCVs identified during the literature review was developed as part of a two-year project managed by Forest Research on behalf of Forestry Commission Scotland, entitled: "Valuation of the Economic and Social Benefits of 'Forestry For People' in Scotland, or 'F4P'. The typology developed by F4P is also based on themes, and, as with the examples given above, is particularly relevant because it is pragmatic, applied and policy-oriented, grounded in the task of valuing benefits to influence decision-making in forestry. It has been used as a starting point for the template in Appendix 1.

A scoping study was carried out in 2005, including a literature review and semi-structured interviews with stakeholders to determine what was meant by the term 'forestry for people'. The review covered 55 recent evaluation studies, largely from UK, most of which have not been published. (Hislop and Elliott 2005: 25). Five themes for the valuation were chosen:

a) Livelihoods
b) Health
c) Education
d) Quality of Life (Recreation, Amenity and Culture)
e) Community Capacity

Note that 'forestry for people' is not exactly the same as the social pillar of sustainable development. Hislop and Elliott decided that environmental benefits such as biodiversity conservation were not part of F4P, and that economic benefits should be restricted to those that are realised locally as opposed to nationally, including small sawmills for example. A similarly arbitrary cut-off is required for our framework given the conceptual constraints of the three pillars approach. The F4P themes are useful because they reflect a combination of bottom up stakeholder interviews and a top down refinement to devise categories that can be operationalised for use by policymakers.

A common core list of benefits was given by many interviewees, which typically included economic, recreation, health, education, community, aesthetic, and environmental benefits. Economic benefits were mainly stated as local direct and indirect employment and wealth creation. Recreational benefits were often linked to health benefits by stakeholders. All stakeholders mentioned health, and distinguished between physical and mental health. Other terms included well-being, relaxation, de-stressing, restorative benefits, and wellness. Education was recognised by all interviewees, and understood in its wider 'learning' context. Education was seen to include: environmental education and guided walks; forest school; awareness and understanding of forestry and the environment; training and the acquisition of marketable skills; communication and interpretation of habitat

management; learning, leading to employability. A substantial part of discussions typically focused on the community benefits of forestry, a category that was seen to include the benefits of participation. 'Culture' was not always mentioned by stakeholders, but implied within other categories, such as aesthetic, education, community, and the 'wellbeing' dimension to health. Another benefit of relevance, but not always mentioned outside the context of community development, was 'social justice'. One informant said: "I think a successful forest is one that provides for all needs and all sectors" (Hislop and Elliott 2005: 10-20).

The F4P typology, and indicator framework, provided a useful starting point for the SCV template presented here. Given that 'economics' belongs under another pillar, we have not included the category 'livelihoods', but include the livelihood sub-categories 'employment' and 'harvesting of NTFPs' in our template.

The 'quality of life' approach

An attempt to produce a comprehensive typology of values people attach to woodlands, and to link this with existing indicators to measure changes to those values, is given by Willis (2003) in a report entitled "Woodland – its contribution to sustainable development and the quality of life". The primary focus was to produce a list of benefits (including SCVs) rather than an indicator framework. However, monetary values are given where possible. The report is an extensive review of the valuation literature for the non-market benefits forestry and woodlands in UK. It aimed to supplement a related study published by the Forestry Commission (Willis *et al*. 2003).

Willis categorises and describes four economic benefits, six social benefits, and six environmental benefits, as follows:

a) economic benefits: timber production and processing, employment, land regeneration, urban regeneration
b) social benefits: education, cultural history, rural development, archaeology and heritage, social inclusion, health effects
c) environmental benefits: biodiversity, carbon sequestration, flood alleviation, pollution, landscape and recreation, water quality

This typology is useful since he is also using the three pillars approach. Unlike EFORWOOD, he places employment within 'economic benefits'. For some reason he puts 'landscape and recreation' under 'environmental benefits', which we include as separate themes within our list of SCVs. The categories 'land and urban regeneration' probably do best belong under 'economic' although there is a social dimension to regeneration that should not be forgotten, as discussed later. Interestingly, 'social inclusion' is considered. This is a political value that cuts across SCV themes, but for it to be acknowledged effectively it will be given separate treatment in the template.

As a second step, the benefits are matched against UK Government's Quality of Life indicators, which are used to measure progress against sustainable development targets (Willis 2003: 2.1). He believes that woodland in UK can contribute to 11 of the 15 headline indicators, and presents these in a matrix. Willis does not develop his own framework of indicators, since the aim is to see how woodlands contribute to quality of life. He continues the study by assessing evidence for relationships between the quality and scale of benefits and different woodland types, a topic that will become the focus of later work within EFORWOOD.

The 'ecosystem functions' approach

One of the most established approaches to categorising and accounting for environmental values and functions is the work conducted on ecosystem functions by de Groot and his colleagues. The approach was developed within environmental economics to try to ensure that "the 'full value' of natural ecosystems, and the wildlife within them, should be better represented in land use planning and decision-making instruments, such as environmental impact assessment and cost-benefit analysis" (de

Groot 1992: xi-xii). With the increasing use of the 'ecosystems approach' in international conservation, including the MCPFE process, this approach to valuation needs to be considered carefully when developing the SCV template presented here (see MCPFE *et al.* 2006).

A series of papers by de Groot offer different versions of a typology and framework for "integrated assessment and valuation of ecosystem functions", one of the most recent being de Groot *et al.* (2002). They define ecosystem functions as "the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly" (ibid: 394). They continue: "Each function is the result of the natural processes of the total ecological sub-system of which it is a part" (ibid). The functions are grouped into four categories: regulation functions, habitat functions, production functions and information functions. They list a total of 23 functions within these categories.

Their next step was to identify the goods and services that are derived from these functions, and to assess their value. De Groot *et al.* clarify the step that this involves: "The primary insight here is that the concept of ecosystem goods and services is inherently anthropocentric: it is the presence of human beings as valuing agents that enables the translation of basic ecological structures and processes into value laden entities" (ibid: 395). As discussed above, for the social benefits, different kinds of value, both assigned and held, need to be taken into account.

Regarding SCVs, the most relevant functions, and corresponding goods and services, considered in the ecosystem functions typology are referred to as "Information functions: providing opportunities for cognitive development". They are given in Table 1.

Table 1. Information functions, processes and components, and goods and services

Functions	**Ecosystem processes and components**	**Goods and services (examples)**
Aesthetic information	Attractive landscape features	Enjoyment of scenery (scenic roads, housing, etc)
Recreation	Variety in landscapes with (potential) recreational uses	Travel to natural ecosystems for eco-tourism, outdoor sports, etc
Cultural and artistic information	Variety in natural features with cultural and artistic value	Use of nature as motive in books, film, painting, folklore, national symbols, architecture, advertising, etc
Spiritual and historic information	Variety in natural features with spiritual and historical value	Use of nature for religious or historic purposes (i.e. heritage value of natural ecosystems and features)
Science and education	Variety in nature with scientific and educational value	Use of natural systems for school excursions, etc. use of nature for scientific research

Source: de Groot *et al.* (2002: 396-7).

The SCV themes of 'employment' and 'harvesting of NTFPs' do not fit obviously into these categories. NTFPs cut across the five production functions given by de Groot *et al.*: food, raw materials, genetic resources, medicinal resources, and ornamental resources. Employment arguably cuts across all of these, and all of the information functions. The regulation functions and habitat functions given in the paper are not significantly relevant to SCVs as defined here.

Different publications on the ecosystem function approach give different versions of the functions and services for the 'information function' (see Table 2). For example, de Groot (1992) writes that examples of the importance of 'aesthetic information' includes housing, scenic routes, and recreation and tourism, while, in later publications, 'recreation and tourism' is elevated to the level of function-category. In Chiesura and de Groot (2002) 'recreation' can include "space for recreation and escape from urban stress" and "aesthetic enjoyment and 'higher' experiences and related therapeutic effects

(mental and physical health)". Values are grouped together which could benefit from separate treatment. In different publications, 'cultural', 'historical', 'artistic', 'spiritual' and 'religious' appear singly or in interchangeable pairs. Similarly for the production functions there is a different, expanded, list given in de Groot (1992).

Table 2. Variations in typologies for information functions

Function	De Groot 1992	De Groot *et al.* 2002	Chiesura and de Groot 2003	De Groot and Ramakrishnan 2005
1	Aesthetic information	Aesthetic information	Recreation	Cultural identity
2	Spiritual and religious information	Recreation and (eco)tourism	Scientific and educational information	Cultural heritage
3	Historic information	Cultural and artistic inspiration	Cultural and historical information	Spiritual services
4	Cultural and artistic inspiration	Spiritual and historic information	Religious and artistic information	Inspirational services
5	Educational and scientific information	Scientific and educational information		Aesthetic services
6				Recreation and tourism

The ecosystem approach has also been adapted for the needs of the Millenium Ecosystem Assessment. For this purpose the information functions have been relabelled, and reworked, as 'cultural and amenity services' (de Groot and Ramakrishnan 2005: 457). The authors distinguish the following six categories:

1) Cultural identity (the current cultural linkage between humans and their environment)
2) Heritage values ('memories' in the landscape from past cultural ties)
3) Spiritual services (sacred, religious, or other forms of spiritual inspiration derived from ecosystems)
4) Inspiration (the use of natural motives [sic] or artefacts in arts, folklore, and so on)
5) Aesthetic appreciation of natural and cultivated landscapes
6) Recreation and tourism

These categories provide a rich basis for rethinking the cultural SCV theme in our template. As discussed below we shall retain 'identity', 'heritage', 'inspiration' and 'aesthetic', while 'spiritual services' will be included within a wider category of 'meanings and associations'. The list appears incomplete when compared with that of Willis (2003) or Hislop and Elliott (2005). It includes recreation and tourism, yet it excludes several other themes of a comparable kind such as education, health and well-being, and community development (although these are mentioned in the text). De Groot's own category 'Educational and scientific information' is missing from this typology. As mentioned above, employment and NTFPs do not fit easily in a list of information functions.

Chiesura and de Groot (2002) provide additional categories to help us produce a typology of SCVs. First they distinguish between personal and social needs or benefits:

> "In addition to the basic physiological needs (clean air, water, etc.), human life requires many other needs to be fulfilled, both at the personal (freedom, self-development, recreation, psycho-physical health, etc.) and at the collective (social contacts, norms and values, ideals

cultural identity, etc.) levels. These needs, when fulfilled, benefit not only the individuals as such, but also the society they compose" (ibid: 224).

These cut across the themes in the SCV template, although the theme 'community' includes social networks derived through participation in forestry, while norms, values, ideals and identity relating to forests are included within the 'culture' theme. Meanwhile, the personal needs cut across different themes, in particular education, health and recreation.

Another useful distinction is between "natures' immaterial and intangible services such as mental health, recreation or heritage values" and "the cognitive and emotional aspects of people's relationship with nature". These categories reflect the distinction between preference-related and non-preference related' and both feature within the SCV template, as discussed above.

A third distinction, raised by de Groot and Ramakrishnan (2005: 467), differentiates between direct experience and virtual representation through the media. The latter is covered by de Groot elsewhere through the idea that the environment (and forests) provide 'cultural and artistic inspiration', a category that is adopted by the SCV template developed here.

Additional insights arise when we consider the methods for valuation of different 'information functions'. De Groot *et al.* (2002) draws from an influential synthesis study (Costanza *et al.* 1997) to propose valuation methods to each of the functions they identify (ibid 404-5). This analysis helps us to develop our own SCV typology. The practical and theoretical possibilities for valuation of different kinds of SCV may help us to choose how to categorise them. De Groot *et al.* propose just one method, namely hedonic pricing, to value 'aesthetic information'. Similarly only one method, contingent valuation, is proposed for both 'cultural and artistic inspiration' and 'spiritual and historic information'. Hence it makes sense to combine 'cultural, artistic, spiritual and historic', but to separate these from 'aesthetic'. 'Recreation and tourism' also makes more sense as a separate category, partly because it can be valued with several techniques: direct market pricing, factor income, travel cost, hedonic pricing and contingent valuation. It is also conceptually different from other 'information functions' in that it is both a means to an end (e.g. to experience well-being, aesthetic, and cultural benefits) and, when equated with 'happiness' or 'pleasure', is an end in itself. These considerations are reflected in the typology presented in Appendix 1.

3. CRITERIA AND INDICATOR FRAMEWORKS

We continue in this section with the overall structure of the template, by examining the existing criteria and indicator frameworks for SFM, and how SCVs have been incorporated into these. We also look at different ways in which indicators can be conceptualised, and identify the most appropriate ways of doing this for the SCV template. This paves the way for the next section to discuss individual themes, sub-themes and indicators in the template itself.

C&I frameworks for SFM

There are nine international processes, mainly organised on a bio-regional basis that have developed C&I frameworks, and are working to improve data collection among respective member states. Two of these are considered here in detail: the Montreal Process, and the Pan-European forest process (MCPFE). FAO estimate that 150 countries are participating in one or more of these processes. There are substantial differences in the sub-criteria and indicators that have been selected, but all are organised around common themes: extent of forest resources, biological diversity, forest health and vitality, protective functions of forests, productive functions of forests, socio-economic functions, and legal policy and institutional framework (FAO 2006).

At national and forest management unit level, C&I frameworks have been developed which reflect more closely local sustainability issues. Even for these frameworks the criteria are much the same as for the nine international processes, which allows comparability between sites. The differences lie in the detail (FAO 2006). Several studies have made comparisons of the initiatives. Rametsteiner (2001) gives an overview, and compares the two most relevant to this study, the Montreal Process and Pan-European C&I process (cf. Eeronheimo 2001).

According to FAO: “Criteria and indicators are tools used to define, assess and monitor periodic progress towards sustainable forest management in a given country or in a specified forest area, over a period of time” (FAO 2006). They add: “The ultimate aim of criteria and indicators is to promote improved forest management practices over time, and to further the development of a healthier and more productive forest estate, taking into consideration the social, economic, environmental, cultural and spiritual needs of the full range of stakeholder groups in countries concerned” (ibid). The apparent equal acknowledgement of social *and* cultural values needs to be backed up by the kind of work reported here to develop a C&I framework and to promote in the European policy arena.

FAO defines criteria as follows: “Criteria define the essential elements against which sustainability is assessed, with due consideration paid to the productive, protective and social roles of forests and forest ecosystems. Each criterion relates to a key element of sustainability, and may be described by one or more indicators” (ibid).

They define indicators as follows: “Indicators are parameters which can be measured and correspond to a particular criterion. They measure and help monitor the status and changes of forests in quantitative, qualitative and descriptive terms that reflect forest values as seen by those who defined each criterion (ibid). To the definition given above, we may add that indicators should convey a “single meaningful message” (Prabhu *et al.* 2001: 42). Criteria and indicators can developed for and applied at different spatial scales. FAO focus on three levels: regional, national and the forest management unit level (FAO 2006).

Considerations for indicator selection

Segnestam (2002) gives an overview of the technical and practical issues surrounding indicator work for environment and sustainable development. She discusses three frameworks that are commonly used, based on: a) phases in the project management cycle, b) the Pressure-State-Response framework, plus variants, and c) sustainable development themes (Segnestam 2002: 12)

The project-based framework, or Input-Output-Outcome-Impact framework, is primarily designed for monitoring and evaluating projects. It is relevant to our SCV template because of the distinction between types of indicators, as follows:

a) Input indicators: monitor the project-specific resources provided.
b) Output indicators: measures goods and services provided by the project.
c) Outcome indicators: measure the immediate or short-term results of project implementation.
d) Impact indicators: monitor the longer-term or more pervasive results of the project"

The distinction between output and outcome is useful for the template. For example outcome derived from investments in the health benefits of forests could be assessed by counting numbers of visitors or health-related events, while the economic savings to the government health department would be a measure of outcomes. The distinction between outcome and impact indicators is not always clear, and Segnestam proposes that they should be merged into a single category 'impact indicators' (ibid: 5-6).

The Pressure-State-Response (PSR) framework was developed originally by OECD for national, regional and international level analysis, monitoring and evaluation of environmental problems. Different indicators are developed for each part of the framework. The European Environment Agency use a DPSIR (Driver-Pressure-State-Impact-Response) framework, while others use DSR or PSIR. All of these rely on linear causal relationships, and are criticised for over-simplifying the inter-relations between the different kinds of indicator (ibid: 8).

The third framework for organising indicators is based on environmental or sustainable development themes. Interestingly, the United Nations Commission on Sustainable Development (UNCSD) began by using the PSR framework in 1995 for monitoring sustainable development, but abandoned the approach in favour of the simpler thematic framework (ibid: 9). One of its advantages is its straightforward link to core sustainability issues without a need to analyse causal relationships. The Millenium Development Goals also use a thematic approach (ibid: 11).

McCool and Stankey (2001: 102-3) give clear criteria for selecting indicators:

a) a focus on the outputs of management, indicating progress towards results
b) measurable at forest level and quantifiable rather than qualitative measures of commitment to sustainability which are open to interpretation
c) subject to reliable measurement by independent observers
d) valid representations of the object of measurement
e) comparability across spatial and temporal units
f) be specific to particular spatial and temporal scales

The consensus is that output indicators are to be preferred to input indicators, although they are typically harder to develop and use (e.g. Raison *et al.* 2001: 11). Prabhu *et al.* distinguish between input-, process-, and outcome-based indicators. The additional 'process' category, focuses on "human management processes, i.e. actions". They note that most C&I frameworks are in fact a mixture of all three kinds (Prabhu *et al.* 2001: 50). They go on to say that: " In certification contexts where evaluation of compliance with a management process is important, such process-based indicators are useful". The CIFOR generic template discussed below is largely process-based, and has few outcome indicators, and this may reflect a history of development within the context of certification. Similarly, the response indicators within the DPSIR framework are likely to be of most value, but are harder to develop and use (ibid: 51).

There is now almost universal acceptance of the need for stakeholder participation in forestry (MCPFE 2002a) and this extends to the selection of criteria and indicators. Despite the prescriptive nature of the criteria put forward by McCool and Stankey, the authors underline the need for stakeholder participation. Similarly Raison *et al.* (2001: 11) write: "Stakeholders must collectively define what is to be sustained and how that should be assessed". Bass (2001) takes this further by asserting that C&I are 'tools of compromise' rather than a means to achieve a state of Utopia: "reaching compromise is

fundamentally a social or political process. Hence participation is essential in setting C&I for good forestry" (Bass 2001: 31-2).

The principles of participation need to be applied to criteria and indicator selection as well to SFM itself. Aspects of the scale of participation among different stakeholder groups need to be assessed as part of the SCV template, which in turn needs to be refined, validated and reworked through stakeholder inputs at strategic level and in local case studies. As mentioned elsewhere, although stakeholder participation will contribute to the refinement and validation of the template, it is essentially an expert-led tool.

The rest of this section reviews several existing C&I frameworks, focusing on how SCVs are covered, and the sub-criteria and indicators that are used, with notes on their suitability for the SCV template being developed here. Reference should be made to the template in Appendix 1. As mentioned elsewhere, this template must be seen as an evolving document. Frameworks reviewed are:

a) Pan-European (MCPFE) process, including an EU funded 'gap analysis' (Sollander 2001)
b) Montreal Process
c) The CIFOR C&I generic template
d) UK Indicators of Sustainable Forestry
e) Other indicator sets (Canadian Council of Forest Ministers, Global Forest Resources Assessment, EU Sustainable Development Indicators and Impact Assessment Guidelines, and EFORWOOD indicators for the whole Forestry Wood Chain).

a) The pan-European (MCPFE) process

The MCPFE Improved Pan-European Indicators for Sustainable Forest Management are the outcome of work carried out since the early 1990s. They were adopted at the MCPFE Expert Level Meeting in Vienna in October 2002 (MCPFE 2002, 2003) and will be used for reporting in member countries from 2006. There are a total of 35 quantitative indicators organised within six criteria. As with other processes, the criteria are as follows:

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles
2. Maintenance of forest ecosystem health and vitality
3. Maintenance and encouragement of productive functions for forests (wood and non-wood)
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems
5. Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)
6. Maintenance of other socio-economic functions and conditions

The indicators of relevance to SCVs as defined here belong within Criterion 6, and also Criterion 3 if NTFPs and marketed services such as recreation are included within the definition of SCVs, as is the case for EFORWOOD. The relevant indicators are as follows:

3.3: Non-wood goods: value and quantity of marketed non-wood goods from forest and other wooded land
3.4: Services: value of marketed services on forest and other wooded land
6.3: Net revenue: net revenue of forest enterprises
6.4: Expenditure for services: total expenditures for long-term sustainable services from forests
6.5: Forest sector workforce: number of persons employed and labour input in the forest sector, classified by gender and age group, education and job characteristics
6.6: Occupational safety and health: frequency of occupational accidents and occupational diseases in Forestry
6.10: Accessibility for recreation: area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use

6.11: Cultural and spiritual values: number of sites within forest and other wooded land designated as having cultural and spiritual values

The two kinds of qualitative indicators used by MCPFE are as follows:
a) Overall policies, institutions and instruments for sustainable development
b) Policies, institutions and instruments by policy area

The first of these indicators cuts across all criteria, and is concerned with description of the quality of national forest programmes, institutional frameworks, legal/regulatory frameworks and international commitments, financial instruments/economic policy, and informational means. The 'Group B' indicators elaborate on governance-related aspects of some, but not all, of the quantitative indicators. Those of relevance to SCVs are: Criterion 3: Indicator B5: production and use of non-wood goods and services, provision of especially recreation. Criterion 6: Indicator B8: economic viability, Indicator B9: Employment (including safety and public health), Indicator B10: Public awareness and participation, Indicator B11: Research, training and education, and Indicator B12: Cultural and spiritual values. The detailed research and data collection agenda for each of these, and how they will supplement the quantitative indicators and fill gaps in the MCPFE framework is not yet clear.

By 2001, the MCPFE indicator framework was the only one that had been supported at ministerial level in each member country (Rametsteiner 2001: 115). This may help to explain why the framework appears more operational than some of the others, since the data requirements closely reflect the reality across Europe. The framework focuses on outputs, which, as discussed, is preferable.

There are considerable gaps in its coverage of SCVs, and especially the intangible aspects of SCVs, when compared with the template being developed here. While this is partly due to the lack of data, there is still much scope to refine the qualitative indicators for pan-European level, to identify data needs and promote data collection at national level to support future SCV indicators.

One improvement would be to add the phrase 'and indication of intensity of use' for indicator 6.11. In doing so, the indicator would reflect more closely public benefits of cultural sites, many of which may be hardly known and thus unvalued by the public. This phrase is also present for indicator 6.10, and is an important clause, although the methods of reporting on visitor numbers across Europe still require development.

<u>MCPFE Gap-analysis</u>

Eric Sollander (2001) reports on a Gap Analysis for the MCPFE Criteria and Indicators based on inputs from seven organisations from Denmark, Finland, France, Germany and Sweden. This exercise provided an assessment of the suitability, reliability and data availability for the existing MCPFE indictors for their respective countries, and proposed numerous additional indicators, many of which have helped to shape the SCV template in Appendix 1.

The analysis assessed the quantitative indicators in the MCPFE framework according to the following criteria:

- Relative importance of the criterion for the sustainability of forestry
- Relative importance of the Concept Area for the Criterion
- Validity of this indicator for the Concept Area (i.e. how well the indicator reflects the object of interest)
- Reliability of the methods for indicator assessment (ibid: 8).

The notion of Concept Area has since been abandoned by MCPFE, but it is useful to consider the results of their analysis. The criteria were all considered very important by participating organisations. Within Criterion 6, the concept area 'recreational services' was considered most important. Mixed responses were given for the other concept areas such as 'cultural value' but there were none considered of low importance (ibid: 10).

Regarding the validity of the indicators, there was a low score given by all countries for 'provision of recreation: area of forest with access per inhabitant'. Access was acknowledged to be a poor measure of recreation provision (ibid: 12). However, regarding reliability of monitoring methods, 'provision of recreation' scored highly (ibid: 16). Each participating country offered new national level indicators for each of the criteria. The relevant ones for SCVs are given in Appendix 2.

b) The Montreal Process

The Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests, or Montreal Process, was formed in June 1994. The ten original member countries of the Group represented a total of 90 percent of the World's temperate and boreal forest. Two additional countries joined, with the signing of the Santiago Declaration in 1995 (MP 1999: iii). The resulting C&I framework is not legally binding, but, as for other C&I processes, it provides a shared understanding of SFM, a common framework for assessment, and guidelines for policymaking at national level (ibid: v, 1).

Statements from the Montreal Process acknowledge the limits of quantitative indicators and accept the need for new data collection, sampling and research. They acknowledge that some benefits cannot be quantified. They state: "In cases where there are no reasonable quantitative measures for indicators, qualitative or descriptive indicators are important. These may require subjective judgements as to what constitutes effective, adequate or appropriate national conditions, or trends in conditions, with respect to the indicator" (ibid: 4). This approach appears more progressive than MCPFE, but it partly reflects how the MP framework includes indicators that require further development and as such may not have the same commitment from its members.

The criteria are as follows:
1. Conservation of biological diversity
2. Maintenance of productive capacity of forest ecosystems
3. Maintenance of forest ecosystem health and vitality
4. Conservation and maintenance of soil and water resources
5. Maintenance of forest contribution to global carbon cycles
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of society
7. Legal, institutional and economic framework for forest conservation and sustainable management

The following criteria and indicators are relevant to SCVs:

<u>Criterion 2</u>
2.e. Annual removal of non-timber forest products (e.g. fur bearers, berries, mushrooms, game) compared to the level determined to be sustainable.

<u>Criterion 6</u>
This criterion has six sub-criteria. All of the indicators relate more or less to SCVs (with the exception of two indicators under 6.1 relating to wood).
6.1. Production and consumption (6 indicators)
6.2. Recreation and tourism (3 indicators)
6.3. Investment in the forest sector (4 indicators)

<u>Criterion 7</u>
This criterion has five sub-criteria. They are cross cutting in a similar way to the MCPFE qualitative indicators. All of the indicators relate more or less to SCVs:
7.1. Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests

7.2. Extent to which the institutional framework supports the conservation and sustainable management of forests
7.3. Extent to which the economic framework (economic policies and measures) supports the conservation and sustainable management of forests
7.4. Capacity to measure and monitor changes in the conservation and sustainable management of forests
7.5. Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services.

Taken together these indicators cover SCVs in more detail, for example 6.2 'recreation and tourism' is much more detailed than the equivalent for MCPFE. It consists of three indicators:

- 6.2a: Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forest land'
- 6.2b: Number and type of facilities available for general recreation and tourism, in relation to population and forest area
- 6.2c: Number of visitor days attributed to recreation and tourism, in relation to population and forest area

Similarly, for 6.4 'Cultural, social and spiritual needs and values' there are two interesting indicators:

- 6.4a: Area and percentage of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values
- 6.4b: Non-consumptive use forest values [sic]

There may of course be difficulties collecting these data. Each indicator is assigned a or b, according to the difficulties likely to be attached to data collection. The MCPFE indicators are more operationalised than many of those under the Montreal Process.

c) The CIFOR C&I generic template

The Centre for International Forest Research (CIFOR) has produced a series of documents providing guidance for the assessment, monitoring and evaluation, and valuation methods and decision tools involving stakeholders. One of these is a generic template for C&I for SFM (CIFOR 1999). It was developed for use primarily for commercial purposes in tropical natural forests, although it was also tested in a natural temperate forest in USA and found to be largely applicable. They envisage that the template can be "modified and customised to comply with local conditions… used both as a flexible set that is adaptable to all types of forest situations, and as a operational 'mother' set" (ibid: 3). It can also be used by a variety of user groups. The template is not for use at FMU level, but is considered a "starting platform to formulate a more locally sound set of C&I. Thus the adoption of the complete set is not mandatory" (ibid: 5). These ideas closely match those behind the SCV template developed here.

The C&I are structured hierarchically according to what they call 'principle', 'criterion', 'indicator' and 'verifier'. Each level adds meaning, precision and (for verifiers at least) site specificity. Verifiers may define the limits from which recovery is possible (i.e. performance threshold or target) or procedures needed to provide conditions for the indicator concerned (ibid: 8-9). The criteria are divided according to four "areas of concern", as follows:

1. Policy;
2. Ecology
3. Social
4. Production of goods and service

All of these except 'Ecology' are of relevance to SCVs.

Under 'Policy', there are six criteria and 22 indicators. These tend to be cross cutting. Two of the criteria are particularly relevant:
C.1.4. A functioning buffer zone exists

C.1.5. Legal framework protects access to forest and forest resources

Under 'Social', there are three principles and nine criteria. The principles are:
P3. Forest management maintains or enhances fair intergenerational access to resources and economic benefits
P4. Concerned stakeholders have acknowledged rights and means to manage forests cooperatively and equitably
P5. The health of forest actors, cultures and the forest is acceptable to all stakeholders

Approximately half of the 33 indicators under these three principles are of direct relevance to SCVs. However they are structured as inputs, conditions or processes of policy or management. They are the means to achieve SCVs, rather than outputs or outcomes, and they are less useful to assess impacts or changes in the values themselves.

Under 'Production', there is one principle, divided into six criteria. Again they are related to inputs and requirements for policy and management rather than ways to assess changes to SCVs. The most relevant criterion is probably C.6.1: 'Forest management unit is implemented on the basis of legal title on the land, recognised customary rights, or clear lease agreements'. As such it has much in common with criteria under the other three areas. Another interesting indicator is V6.4.3.2 'NTFP and their uses are identified'.

To conclude, the CIFOR generic template contains a host of indicators for issues hardly developed in the Montreal and MCPFE processes, and indeed in national indicator frameworks for SFM in member state countries. This may be partly because the developing country focus has forced social and governance issues onto the agenda. Nevertheless they provide a good source of ideas to improve the social, legal and ethical dimensions of SFM in Europe.

d) UK Indicators of Sustainable Forestry

This indicator set has six groups. The most relevant to SCVs is 'Group E: People and forests', which consists of the following indicators:
E1. Visits to woodland
E2. Extent of open public access
E3. Public awareness
E4. Community involvement
E5. Historic environment and cultural heritage
E6. Health and safety

In addition, under 'Group F: Economic aspects' there are the following indicator headings, some of which are relevant to SCVs in Europe:
F1. Financial return from forestry
F2. Value added in forestry
F3. Value added in wood processing
F4. Employment
F5. Social and environmental benefit

These 'indicators' might more accurately be described as criteria, or sub-criteria. They more closely resemble headings for reporting on SFM. Each heading gives relevant data from different sources. For example, under 'visits to woodlands' data is given from the UK Day Visits Surveys, which record the number of day visits from home to forests or woodlands in the last 12 months. The indicator set is not presented as a framework of Criteria and Indicators analogous with the MCPFE process, although, as with all participating countries, UK now provides available data on all the MCPFE indicators.

At the country level within UK there have been a number of recent developments in indicator frameworks for SFM. A new Scottish Forestry Strategy has just been published with a new set of

indicators with six key themes: 1. Climate change; 2. Timber; 3. Business development; 4. Community development; 5. Access and health; and 6. Environmental quality (FC Scotland 2006). Themes 4 and 5 are most relevant to SCVs, and useful indicators have been incorporated into Appendix 2.

Similarly in Wales, there is a new indicator set to monitor Woodlands for Wales, the Welsh National Assembly's strategy for trees and woodlands. It is a hierarchical framework with vision level, objective level and action level indicators. There are five 'vision level indicators': 1. woodlands for people, 2. A new emphasis on woodland management, 3. Wales as a location for world class forest industries, 4. A diverse and healthy environment, and 5. Tourism, recreation and health (FC Wales 2006). As with the UK SFM indicators, the indicators tend to resemble headings for reporting data from more than one source, but have been included in Appendix 2 where useful.

e) Other frameworks

Canadian Council of Forest Ministers

The Canadian Council of Forest Ministers (CCFM) produced its latest framework of Criteria and Indicators in September 2003. Canada is part of the Montreal Process, although its own country framework is structured rather differently. There are six criteria, and Criteria 5 and 6 are the most relevant to SCVs.

Criterion 5: Economic and social benefits
5.1. Economic benefits
5.2. Distribution of benefits
5.3. Sustainability of benefits

Criterion 6: Society's responsibility
6.1. Aboriginal and treaty rights
6.2. Aboriginal traditional land use and forest based ecological knowledge
6.3. Forest community well-being and resilience
6.4. Fair and effective decision-making
6.5. Informed decision-making
Relevant indicators have been included in the template in Appendix 2.

EU Sustainable Development Indicators

The EU Sustainable Development Strategy led to the production of Sustainable Development Indicators (SDI) published by Eurostat (European Commission 2005). They are not sufficiently focused on forestry to contribute much to this report.

The European Commission Impact Assessment Guidelines, prepared in June 2005 (European Commission 2005a) have been used as the basis for selection of indicators in SENSOR-IP (Bach *et al.* 2005). The guidelines list some 30 'impact issues' including about 10 for the social pillar of sustainability. These issues are analogous to SCVs. They are worded as questions, e.g. 'does the policy option impact on landscape quality?' The guidelines do not propose a set of indicators to measure these issues, which has been left up to those responsible for impact assessment. Tabbush (2006) notes the advantages of the open-ended nature of the questions in this table, which offers a valuable source of issues of known interest to the Commission that need to be considered within the SCV template developed here. See also Rametsteiner *et al.* (2006) who reviews indicator sets relevant to the EFORWOOD project, namely SDI, the EC Impact Assessment approach, MCPFE, and the Commission on Sustainable Development (CSD) approach.

Global Forest Resource Assessment

The Global Forest Resource Assessment 2005 uses a different set of indicators than those used by MCPFE. They focus on the following areas: a) value of wood removals; b) value of NWFP removals, c) employment, d) ownership of forests and other wooded lands, e) forest area designated for social services. The level of analysis is so high that there is little to gain from these categories for present

purposes. Results for the Global FRA for 2005 have been published (FAO 2006a) as have reports from 229 countries and territories.

EFORWOOD

Rametsteiner *et al.* (2006a) describes the draft EFORWOOD Whole Chain Indicators (WCI) that had been selected by October 2006 through expert consultation within and beyond the project with pan-European stakeholders. A total of 25 indicators were identified and grouped according to the three pillars of sustainable development: economic, social and environmental. These indicators apply to the entire forestry wood chain, not just for SFM. For this reason the coverage of social issues leaves many areas untouched. Under 'social' there are four indicators, all of which relate to employment: employment, wages and salaries, occupational safety and health, education and training. A fifth, quality of employment, may become a qualitative indicator. Social indicators under consideration include 'community participation', 'corporate management systems', and 'recreational use of forests'. Work on the latter may lead to development of MCPFE indicator 6.10. All of these are incorporated into the module-specific indicators for SCVs given in Appendix 3.

4. DESCRIPTIONS OF THEMES

This section considers each of the themes identified for the SCV template given in Appendix 1.

1. Employment

The EFORWOOD 'whole chain' indicator set (Rametsteiner et al 2006a) has already identified five aspects or sub-criteria within the criterion 'employment':

1. Level of employment
2. Wages and salaries
3. Occupational safety and health
4. Education and training
5. Quality of employment

Indicators have been proposed for each of these (although quality of employment is under consideration). These sub-criteria have been selected partly because they are measurable rather than because they represent all aspects of employment of interest to stakeholders.

Willis makes several useful distinctions regarding the employment benefits of forests. He starts by separating the following kinds of employment (Willis 2003: 3.2.2):

- The direct employment generated by trees as a crop
- The indirect employment in industries selling to and purchasing output from Forestry
- The induced employment supported by an increase in household expenditure among the people who have gained employment through both the direct and indirect employment effects

EFORWOOD has not included induced employment, partly because of the difficulties there would be in finding any data, although it may be possible to generate multipliers for different parts of Europe. EFORWOOD also does not include employment due to NTFP harvesting and marketing, and forest based activities such as recreation and tourism. However, the project will distinguish between employment associated with different operations within the forestry-wood chain. Much of the direct employment within the forestry sector is not directly linked to planting and harvesting operations and other traditional economic functions of forest, but involves making sites physically accessible to the public and different kinds of public engagement. Level of employment will depend on the use to which the forest is put (ibid).

Willis makes a useful distinction between gross impacts and net employment impacts. The net impact takes into account alternative land uses, and can be measured in terms of its 'displacement effect' when compared with these alternatives. This effect is also dependent on the type of forest. Such a calculation may indicate a net loss of jobs per hectare (Willis 2003: 3.2.2).

The benefits of volunteering can be assessed as the cost saving to the organisation. Apart from volunteers' contribution towards the overall level of employment, volunteering can contribute to other SCV themes such as community development and wellbeing.

Another useful distinction concerns the contribution employment within forestry can have, especially if local people are employed and trained, by enhancing the viability of local communities both economically and socially. This applies of course to rural areas, but also to urban areas undergoing regeneration. For stakeholders in the F4P project 'local employment' was considered a more important social benefit of forestry, although it was difficult to define what is meant by the term.

A measure or description of quality of employment is appropriate since many people choose to work in the countryside sector for the benefits of living and working in, or for, attractive outdoor environments, and forego higher salaries as a result. While this is intuitively understood, it is also supported by research. Lohr *et al.* (1996) has shown that offices with plants, or views of nature, can

increase productivity, as a result of improved quality of employment. For others, however, employment in forestry is a necessity for rural residents, who are required to carry out unpleasant and at times dangerous physical work against their preferences. A qualitative or descriptive approach is required to assess this issue.

2. Harvesting (Non-Timber Forest Products)

This theme is concerned with harvesting of forest products. However the structure of EFORWOOD restricts the scope of this theme to NTFPs. Throughout Europe, many small enterprises and households depend upon timber products as part of their livelihood strategies, but this category of benefits is considered to belong under the economic pillar.

There has been some confusion about the definition of NTFPs, partly due to the range of related terms in use. FAO define NTFPs as "goods of biological origin other than wood that are derived from forests, other wooded land and trees outside forests" (FAO 1999). NTFPs have generated great interest internationally in forestry, especially during the 1990s, in particular due to recognition of their contribution to household livelihoods in developing countries. FAO identify 150 Non-Wood Forest Products that have significant international trade. The range of non-wood goods in temperate countries include: game meat, fish, mushrooms, honey, berries, medicinal plants, chestnuts, forest pasture, forage, maple production, christmas trees, pelts, seeds for forest plants, forest plants, decorative materials, bark chips, beeswax, compost, mould, and lichen (UNECE/FAO 2006: 12).

Although NTFPs are undoubtedly important in developing countries, their significance in Europe has received less attention, but they are the basis of numerous small-scale enterprises, and are important for their social and cultural values, for example as a form of recreation. In Scotland, approximately one quarter of people who visited woodlands in the last few years gathered fungi or plants. Eighty-six percent gathered for personal use or enjoyment, while for nine percent the activities were considered very important to their livelihood (SERG 2006, cf. Emery *et al.* 2006). The following benefits of gathering were identified, ranked in order of importance:

1. Recreational enjoyment (64%)
2. Feelings of relaxation (60%)
3. Spending time with family and friends (59%)
4. Understanding nature and the environment (49%)
5. Ability to exercise (46%)
6. Religious and spiritual well-being (26%)
7. Contribution to livelihood (9%)

The list of benefits, and the number of beneficiaries, within a developed country such as Scotland, justifies the inclusion of NTFP harvesting in the SCV template, and their importance in many other European countries is far higher than in Scotland. As mentioned above, it would be wrong to consider NTFPs solely within the economic pillar of SD since their benefits are so obviously social and cultural rather than just economic. As with other themes, however, these intantible benefits could be included under the category NTFPs, or included within other themes such as culture, recreation, and health and well-being.

3. Governance

The themes 'governance' and 'community' cover related issues. Governance might also have been labelled 'social development', and includes public participation, social inclusion, and public attitudes towards forests. These inter-related issues are seen to be part of the policy agenda of many national forest services in Europe, at a strategic level. Under 'community' we cover comparable issues from a local perspective, with indicators for community participation, social justice, and community well-being.

The benefits and contributions of public participation to sustainable forest management have been presented clearly in an MCPFE statement as follows:

1. Increase public awareness of forests and forestry among the public (which, in turn, can "strengthen trust between forest actors")
2. Maximize the total benefits of forests (increased dialogue with the public opens up new possibilities to improve market-oriented delivery of forest goods and services)
3. Share costs and benefits in a fair and equitable way (through equal opportunities to express opinions, and assert interests and rights, leading to commonly agreed solutions)
4. Enhance the social acceptance of sustainable forest management (through better informed and more widely accepted forest management outcomes) (MCPFE 2002a: 7).

They conclude that: "public participation represents a tool to enhance the social sustainability of forest management" (ibid). Thus, participation is largely seen as a means to an end, i.e. more sustainable (and by definition fairer) forestry. However, participation can also empower individuals and communities, leading, in turn, to greater human and social capital. In this sense participation begins to resemble an end in itself, which should be encouraged, in line with principles of good practice outlined in the rest of the MCPFE document. Its assessment and inclusion in the SCV framework is clearly necessary.

An additional perspective within this theme is public attitudes towards, and understanding of, forests and forestry. Like participation, an informed and supportive public is seen to support SFM, but also, like participation, it could be seen as an end in itself. We have listed 'public awareness' under governance, but 'pubic understanding' is seen to belong under 'education and learning'. However, the understanding of managers regarding SCVs is seen to belong under governance (and in turn is linked to the training sub-theme under 'employment').

We need to consider the question 'participation in what?' It is a cross cutting theme that applies to employment, NTFP collection, recreation, education and exercise in the forest, and so on. Participation in recreation, or community development, for example, is measured implicitly through indicators such as 'number of forest visits' or 'number of participants in community forestry groups'. However, we must also include participation in forest-related governance, and indicators for this have been proposed in the template.

Another side to participation is the issue of social inclusion. Two perspectives on this issue are relevant here. One perspective focuses on participation of under-represented groups such as the young and old, disabled groups, and ethnic minority groups who currently do not have access to the benefits of forests due to a range of physical, economic, social and cultural barriers. Their under-representation, can of course also be the result of fully informed choice (Edwards and Weldon 2006, Countryside Agency 2005). In some countries, including UK, legislation requires the active promotion of the inclusion of many under-represented groups by all public authorities, including countryside service providers. This is backed up by European legislation, and may be similar for other EU member states. Accordingly it should be a category that is assessed and included in the SCV template.

4. Community

This theme covers the local social benefits that can be derived from participation in forestry, and in forest based activities. A good place to start is with the statements that derive from interviews and focus groups with stakeholders during the scoping study for the F4P project, since these have not been reworked to fit any preconceived structure:

- "It can be very positive I think for bringing the community together in a common purpose."
- "…it has increased their self confidence because they have been working with people. They have done things that they didn't know they could do."
- "…there is a range of opportunities to actually reconnect people back into decision-making processes: that whole dimension which comes through engagement, through empowerment,

through ownership, which has a wide range of social benefits for people… restoring an individual's confidence… a degree of self esteem."
- "It would be a sense of local use, local control, local ownership. A sense of belonging, maybe."
- "But it is more than just a nice place to walk the dogs…. [its about] being part of something. …and also the sociability factor is very high. …meeting other people, find 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." (Hislop and Elliott 2005: 12).

These quotes indicate values, which typically remain unseen by policymakers who list the non-wood benefits of forests. The F4P study teased out the following benefits under what they call the 'community capacity' theme (ibid: 18):

- Sense of belonging and ownership
- Capacity building
- Community and individual confidence
- Individual skills and training
- Self esteem and community pride
- Community empowerment
- Connectedness and social cohesion
- Community engagement
- Community stability

The list above can be divided into benefits accruing largely to individuals (e.g. individual skills and training, sense of belonging, self-esteem) and to social groups (e.g. community empowerment, connectedness and social cohesion, and community stability). Most of the latter benefits can be thought of in terms of the notion of social capital. There are many definitions of social capital but there is growing consensus that it comprises social connectedness and norms of trust and reciprocity. Thus, Putnam writes that social capital refers to "features of social organisation, such as trust, norms and networks, that can improve the efficiency of society by facilitating coordinated actions" (Putnam 1993: 167). There have been numerous efforts to quantify changes in social capital and link these to positive economic and social outcomes, with varying success. To do so for the forestry sector in Europe would be a valuable if challenging goal.

On similar lines, a review of literature on social and cultural services of ecosystems by Chiesura and de Groot (2002) cites Coley *et al.* (1997: 225) who "show that nature encourages the use of outdoor spaces, increases social integration and positive social interaction among neighbors" in public housing projects." They also cite Kuo *et al.* (1998) who suggest that "the presence of trees and grass in outdoor common spaces may promote the development of social ties." Similarly, according to de Groot and Ramakrishnan (2005: 469), Kweon *et al.* (1998) demonstrate that "increased social integration due to the function of urban natural settings as social meeting places". Reviewing similar literature, Willis also notes the social and psychological benefits of trees, and describes study in Chicago (Sullivan and Kuo 1993) which showed that: "In buildings with trees, residents reported significantly better relations and stronger feelings of unity and cohesion with neighbours, and greater reliance on more constructive and less violent means of dealing with conflict" (Willis 2003: 3.2.4).

The notion of social justice, and fairness, represents an additional related local perspective on participation. This relates to the moral values identified by More *et al.*, discussed above, regarding the fair distribution of costs and benefits of forests and their management. There are numerous examples of poorer households and communities, which are located within more degraded, or polluted, or less attractive habitats, an insight that lies at the centre of the environmental justice movement. The issue of justice or fairness needs to be included within this theme, with assessments of local and stakeholder perceptions of the degree of fairness in which forest management, policy and planning is executed.

A broader definition of the term 'social inclusion', covered under the 'governance' theme, above, goes beyond participation of individuals in particular activities. In the context of the Euroepan social

agenda, Atkinson *et al.* note that the term is used as a shorthand for several inter-related issues: poverty, deprivation, low educational qualifications, labour market disadvantage, joblessness, poor health, poor housing or homelessness, illiteracy and innumeracy, precariousness, and incapacity to participate in society (Atkinson *et al.* 2002: 3).

A related definition, given by Willis in the context of woodlands, is as follows: "Social exclusion describes what happens when people or areas suffer from a combination of linked problems such as unemployment, poor skills, low incomes, poor housing, high crime environments, bad health and family breakdown. Social inclusion is the process of trying to bring these people or areas back into the community" (Willis 2003: 3.3.5). He adds: "It is thought that woodland activities such as tree planting, walking and craft training can provide a forum for people of all ages and cultural backgrounds from local communities to come together and learn about, enjoy and improve their environment" (ibid). Such activities are developed further with community forestry programmes involving communities in partnership or total ownership and control of local forests. Both represent different perspectives on participation.

These sorts of activities, which are grounded in the context of local community forestry projects, belong firmly within the theme of 'community'. As mentioned above, the earlier, broader, notion of social inclusion as overcoming under-representation should also be included, but can be considered, and assessed, as a separate theme entitled 'governance'.

A separate category of benefit, which may belong within the community development theme, concerns the contribution of trees and forests to 'local development', whether that is rural or urban. Similar points can be made about the benefits of regeneration projects. The point about all these benefits is that local people are not necessarily involved, although of course the benefits may be enhanced if they are. For this reason, such benefits may be considered economic rather than social, or perhaps they belong under 'aesthetic' since beautification of a location is the main cause of the economic benefits.

Willis identifies the linked nature of the rural development benefits of forests and trees, and the difficulties in separating them out. They include employment, landscape, biodiversity, recreation, heritage, archaeology, and land development. He suggests that they should be considered 'economic': "Rural development generally aims to improve the social and economic development of rural areas by encouraging environmental protection, improving agricultural structures and promoting equal opportunities. This category of benefits could thus also be categorised as an economic benefit" (ibid: 3.3.3).

Additional perspectives on local development is provided by examples of urban regeneration projects on 'brownfield sites' where there is good evidence to show that trees can quickly and cheaply improve the landscape and reduce pollutants in the soil. In either case, an established way to measure the benefits of regeneration involving trees is through effects on real estate prices and business profits. Willis writes: "Increased property values, increased tax revenues, increased income levels, faster real estate sales turn-over rates, shorter unoccupied periods, increased recruitment of buyers, increased jobs, increased worker productivity, and increased number of customers have all been linked to tree and landscape presence" (ibid: 3.2.4).

As with other themes, the methods for valuation offer one way to subdivide the contribution of forests and forestry to rural development and urban regeneration. The economic values may belong under the 'economic' pillar. The 'softer' benefits such social capital and social inclusion may need to be considered separately. Hence the title of this theme is 'community' rather than 'rural development and urban regeneration'.

An attempt to develop an interdisciplinary approach has been proposed within the forest sector in USA through two new composite indices, which can be used to assess the contribution of forestry to 'community well being' (Magis 2005). These indices are:

a) Community liveability: the community's ability to meet people's basic needs

b) Community resilience: the community's ability to adapt to change.

Similar indices could be adapted for the European forestry context, although data availability would probably limit its application beyond case study level.

5. Recreation and tourism

The benefits of recreation derive from numerous activities including informal pursuits such as walking, jogging, nature watching, cycling, horse riding, and more organised activities such as hunting, paint balling, and car rallies. The range of activities differs across Europe, between forest types and cultures. Recreation is easier than some other SCVs for policymakers to acknowledge since it is tangible and relatively easy to monitor and value compared to some of the cultural benefits of woodlands. This is particularly the case for organised recreation.

Willis divides recreation benefits into three categories: leisure, health, and lifestyle benefits. He makes the point that "Access to woodlands is obviously paramount to the maximisation of recreational benefits" (Willis 2003: 3.4.5). Access is used as a proxy for recreation benefits in MCPFE indicator 6.10, although there is no clear relationship between area of woodland with access and number of visitors. Also it is worth making a distinction between physical and social access, since owners of many woods with legal access do not encourage visitors through investments in trails and visitor centres. Level of investment in recreation facilities may represent a more accurate indicator, even though it measures inputs rather than outputs. There is also the fact, noted by Willis, that "Woodlands close to settlements where there is little other opportunities for outdoors leisure activities will provide larger benefits per person than woodlands in areas with lots of other open spaces and recreational options" (ibid: 4.1.2). Thus, distance from settlement to accessible woodland is another useful measure of recreation benefits.

There are often distinctive and enduring cultures surrounding particular recreation activities that take place in woodlands. These need to be taken into account in the SCV template. The same will apply for other themes, although for recreation the examples may be more obvious. It is useful to distinguish between those recreation cultures, for which forests play a significant role from those which incidentally take place in forests. Thus, mountain biking is extremely popular in state-owned forests in Scotland, and there is a culture surrounding this activity, with particular norms and social networks. Although the forest is clearly part of the experience, the features of mountain-biking culture may not be significantly dependent on the forest. This might be contrasted with the culture surrounding people who practice woodland crafts, or are specialist gatherers of NTFPs, or who carry out more conventional employment in the forest.

There are other forms of recreation, or tourism, which are focused on the natural environment, and in some cases forests contribute significantly to the values attached to these experiences. De Groot and Ramakrishnan (2005: 470) briefly review some of these, in particular cultural tourism, rural tourism and ecotourism. Following Reisinger (1994), they define cultural tourism as "a form of experiential tourism based on the search for and participation in new and deep cultural experiences of an aesthetic, intellectual, emotional, or psychological nature". Cultural landscapes can be important in this regard. They note that definitions of rural tourism can include an interest in rural livelihoods, values, customs and folklore, as well as the rural recreation activities listed above (citing Bramwell and Lane 1994, Pedford 1996). For ecotourism they use an IUCN definition: "environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features – both past and present) that promotes conservation, has low negative visitor impact and provides for beneficially active socio-economic involvement of local populations." Within these categories of tourism there will be activities where forests are an important direct cause of the quality of the experience. As mentioned above, these could be distinguished from activities that occur incidentally in forests but where the quality of experience is less dependent on them.

6. Education and learning

Woodlands provide an opportunity for formal education and informal lifelong learning about the environment, and its relationship with people. Regarding formal education and research, De Groot *et al.* write: "Natural ecosystems provide almost unlimited opportunities for nature study, environmental education (e.g. through excursions) and function as 'field laboratories for scientific research, leading to thousands of publications each year. Natural areas also serve as important reference areas for monitoring environmental change" (de Groot *et al.* 2002: 402).

O'Brien noted that some of her focus groups (including the group with mothers with young children) "clearly attached great value to the idea of education and learning for children" (O'Brien 2005a: 176). She continued: "Rural respondents also considered education to be of importance but this was focused less on children and more on opportunities for life long learning for all ages through regular use of woodlands" (ibid: 177).

Through the activities people pursue there, forests can also provide settings for challenging activities leading to personal development. De Groot and Ramakrishnan (225:469) note that many education benefits are derived from all kinds of greenspace, but wilderness areas can be particularly valuable for the opportunities it can provide for personal growth and increasing of self-confidence. There can be a dark side to wilderness, though, through the real and perceived fears and risks associated with it.

There are certainly economic and social benefits resulting from these positive learning experiences, although their valuation and assessment is not straightforward beyond the case study level. Again, de Groot and Ramakrishnan (2005: 469) cite work by Russel *et al.* (1998) which provides evidence that the economic benefits for society include "enhanced employability, reduced criminal behaviour and lower substance abuse by disadvantaged youths who participate in wilderness programmes". Willis noted that: "There are no studies on the economic value of education visits to forests. However, a study for the south-west of England estimated the annual expenditure on day trips and residential courses for woodland education. This can (and has been) seen as an approximation of the value of educational benefits using a revealed preference method" (Willis 2003: 3.3.1). Numbers of participants in organised education events can also be a useful measure. For example, in many countries 'forest school' and similar initiatives take the classroom into the forest and use the environment as a setting to teach several subjects in the school curriculum. An evaluation of forest school in UK indicates the range and depth of social benefits reported by participants on the programme (Murray and O'Brien 2005).

One way to measure the outcome of investment in forest based education and learning is by testing public understanding of forests and forestry by asking questions with factual answers, for example the direction of change in forest cover in Europe over previous decades. Ideally an index would be developed based on answers to several questions. Rametsteiner and Kraxner (2003) carried out a review of European attitudes towards forests and concluded that: "forest area is perceived to be in decline (almost) everywhere", whereby in practically all countries in Europe forest area has actually increased.

7. Health and well-being

This theme considers both physical health and mental well-being. The health benefits of physical exercise in forests are relatively tangible and easily understood. To assess these benefits, to the individual, or to society, for example by estimating the savings to the government health service, is less straightforward, and has rarely been attempted. One issue surrounding valuation concerns the extent to which the benefit would be derived if access to the forest was denied, or if it were converted to another form of land use. To what extent would an individual change his or her behaviour? For practical purposes, the best measure of physical health benefits may be to use visitor numbers as a proxy, possibly taking into account time spent by visitors on different activities such as walking or jogging. This could be taken further by estimating total calories expended.

Although the physical health benefits may be more apparent, it is the contribution of forests to mental well-being, which appears to dominate public expressions of the value of woodlands (O'Brien 2005a: 180, cf. Henwood 2001, Rhode and Kendle 1994, Tabbush and O'Brien 2003). O'Brien outlines the particular features of woodlands identified by her focus groups that set them apart from other natural habitats:

> "Some respondents, particularly in the urban groups, talked about 'nature as escape' from their mainly urban lives… Feelings of contentment were articulated… There was more intensity in people's descriptions of trees and woodlands than when they spoke of other types of green spaces. People described feeling healthier and more energetic when they used woodlands, there was a sense of achievement: 'you feel as if you've done something'… Feelings of well-being related predominantly to mental and emotional well-being rather than physical well-being" (O'Brien 2005a: 179).

There is a growing body of evidence for the stress reducing and restorative benefits of contact with the enviornment, and by extension forests. These benefits derive simply through exposure to views of natural landscapes. Several papers by Ulrich quantify this effect, for example by showing that certain patients in USA recovered in ten percent less time if they were exposed to a view of trees (Ulrich 1984). Such findings are supported by related research for example by Hartig *et al.* (1991) and Schroeder (1991).

The stress reducing and restorative benefits are closely linked to the aesthetic benefits of environments. Referring to work by Siebenhuner (2000), Chiesura and de Groot (2002) write: "it seems to be a universal human trait to feel some kind of happiness in intact natural scenery." To some extent, similar benefits could be derived from representations of forests within built environments such as offices as well as direct contact with the forest. Below, under 'landscape', we have noted that plants, and pictures of nature, located in offices can lead to higher quality of employment and even higher productivity. As with the physical health benefits, a full assessment of the contribution of forests and trees to these benefits would require us to take into account the net contribution in relation to alternative views and land uses. As discussed below, there is some evidence to suggest that, from an aesthetic point of view, park-like habitats are the most preferred environment, a finding that appears to cut across cultures at least in the West.

An additional point needs to be made about the benefits derived from forests due to their environmental services through absorption of carbon dioxide and pollutants, reducing respiratory diseases, and provision of shade from the sun reducing the risk of skin cancer (Willis 2003: 3.3.6). Such effects arguably belong as part of a full coverage of the environmental services of forests rather than as one of the Social and Cultural Values discussed here.

8. Landscape and aesthetics

The aesthetic benefits of forests and trees in the environment could be considered a sub-category within the 'culture' theme, but there are good reasons for elevating it to the level of a separate theme. First, landscape is consistently listed among the social and cultural benefits of forests by the general public and by forestry policy makers and managers. Thus, for the F4P project, Hislop and Elliott (2005: 12-13) note that many interviewees identified the role of attractive wooded environments in supporting local tourism as well as directly benefiting local people, in both rural and urban settings. Secondly, there are particular methods, and thus indicators, for valuing these benefits which tend not to apply to other themes. These include hedonic pricing to measure their impact on local property prices (e.g. Costanza *et al.* 1997, Luttik 2000), economic assessment of the impacts of new businesses attracted to an area, quantitative assessment of the change in number of recreational visits to a particular place, and qualitative assessment of landscape preferences using photographs.

A third reason for considering 'landscape' as a separate theme is that it is already institutionalised, with landscape architects employed by some state forest services to develop and use separate guidelines on best practice in landscape design. Similar guidelines exist for private forest owners and companies. Several countries have special designations for scenic values, such as Areas of Outstanding Natural Beauty (AONB) in UK, which are subject to strict planning regulations. In contrast, similar designations in other countries combine scenic with historical and other values (UNECE/FAO 1998: 38).

Willis distinguishes between two kinds of landscape benefits: a) the values created by being able to view trees or woodlands, and b) the environment that they create. Both, he notes, are major drivers for tourism in UK (Willis 2003: 3.4.5). We need to be careful here that this theme doesn't 'double count' values that are considered elsewhere in the template. The benefits of viewing a landscape are expressed for example in terms of stress reduction and other improvements to mental well-being, and in terms of increased tourism. Indeed, Willis notes that these benefits tend to be covered within the theme of recreation, or urban regeneration (ibid). Similarly, de Groot and Ramakrishnan (2005-468) assert that: "aesthetic pleasure has consistently been found to be one of the most important motivations for outdoor recreation". They could also be considered under 'culture', for example as a characteristic of certain cultural landscapes, or as part of the meanings attached to forests. Since we are not attempting to aggregate values from each theme, this overlap is not a problem so long as the user of the template is aware of overlaps. To reduce the overlap, however, this theme will focus on the values created by being able to view trees or woodlands as part of a wider rural or built landscape.

Regarding the kinds of forest that maximises landscape benefits, there is a strong preference for 'natural looking' forest rather than uniform commercial plantations (Entec 1997). .A landscape with a patch-work of woods and fields is also more valued than complete forest cover (Willis 2003: 4.1.1, citing Garrod and Willis 1992). As with other themes, certain ways of valuing landscape benefits need to consider net benefits as opposed to gross benefits, as discussed above under 'employment'. In this regard, Willis reports on research by Garrod (2003) using willingness to pay methods in UK which suggests that: "Clear preferences for forested landscapes compared with the non-forested alternatives were only found for broad-leaved woodland in a peri-urban setting" (Willis 2003: 3.4.5). While a general preference for broad-leaved woodland is most likely for the majority of the UK population, the limited net value of woodland in the landscape assigned by the study appears to be contradicted by qualitative research and anecdotal evidence.

A brief review of landscape preferences by de Groot and Ramakrishnan (2005: 467-9) produced three findings:

a) a preference for natural over built environments (e.g. Ulrich 1983),
b) a preference for park-like settings (e.g. Kellert 1993), and
c) individual differences can "nearly always be interpreted in terms of differences in the preferred degree of 'wildness' in natural landscapes (e.g. Kaplan and Kaplan 1989).

In addition they note that people prefer healthy, green vegetation rather than arid landscape, and forests are preferred if they look healthy (cf. Abello and Bernaldez 1986, Ulrich 1986). They warn against concluding that a preference for healthy-looking environments means that 'aesthetic quality' and 'ecological quality' can be considered synonymous, as there are many situations where the opposite is the case.

Although the majority of the studies they draw upon were from industrialised countries, they highlight research by Kaplan and Kaplan (1989) which shows "the overwhelming similarity in aesthetic preferences between people from different subgroups and with different backgrounds". From this evidence they conclude: "there is no indication that the assessment presented here would be highly different for developing countries" (de Groot and Ramakrishnan 2005: 467-8). While the latter claim may benefit from stronger evidence, the broad similarity in preferences between ethnic groups is supported by focus group research in UK (Edwards and Weldon 2006).

9. Culture and heritage

The following distinctions can be made within this theme, based upon the literature review and expert consultations during the course of the study.

1. Sites and features

- Cultural heritage sites and features that happen to be located *in the forest* (but for which the forest is not a direct part of their cultural value, although the presence of forest may add to the visitor experience). Typically this category will include Scheduled Ancient Monuments.
- Cultural heritage sites and features *of the forest*, whose cultural value is inseparable from the forest and trees, such as ancient trees, forests, stands or landscapes, which have particular cultural interest because they have been, or continue to be, managed in traditional ways.
- Modern man-made cultural sites and features such as sculptures or ecologically-sensitive-designed interpretation centres, nature observation hides or other structures, which have particular cultural interest, value and attraction to the public beyond their purely practical function, and which somehow interpret or interact with their forest setting.

2. Activities, practices, skills and events

- Cultural activities, practices, skills and events that happen to be located *in the forest* (but for which the forest is not a direct part of their cultural value, although the presence of forest may add to the visitor experience). This category includes jogging, walking, mountain biking, car rallies, and music concerts in forests.
- Cultural activities, practices and skills *of the forest*, including the cultural aspects of livelihood strategies and ways of life, whose cultural value is inseparable from the forest and trees. Examples include traditional crafts and practices involving forest products such as hedge laying and basket weaving, or management of trees or forests such as pollarding and coppicing. Also, collection and use of NTFPs such as medicinal plants and foods, where specialist traditional knowledge and skills are required for their identification, harvesting or processing, and hunting in forests where specialist knowledge and skills relating to the forest are required. Events of the forest may include musical or theatrical performances, which interpret or interact with the forest.

3. Meanings, identities, and representations

- Meanings, associations, beliefs, and norms attached to specific forest-based natural or cultural sites or features, to forests and trees in general, or to forest-based activities, by individuals or groups.
- Spiritual or emotional attachment to, or identification with, specific forest-based natural or cultural sites or features, to forests and trees in general, or to forest-based activities, by individuals or groups.
- Inspiration derived for art, advertising, and the media, from forest-based natural or cultural sites or features, forests and trees in general, forest-based activities, or meanings, identities and representations of trees and forests.

In the above scheme, the distinction between historical and cultural has not been underlined, since each of the three categories above more or less combine the two. An exception is the modern man-made sites and features, which form a sub-category within ‘sites and features’.

The distinction between ‘in the forest’ and ‘of the forest’ is probably best seen as a continuum. The distinction applies to ‘sites and features’, and to ‘activities’, but not to ‘meanings, identities and representations’ since the latter concern ideas and emotions about forests rather than the location of the site or person. Some sites and features cannot be easily located in one or the other category. Similarly some activities are not clearly in or of the forest, but both, such as hunting, or nature watching. One point is whether the activities are practiced differently, or whether there is significantly different cultural meaning attached to them, due to their forest setting.

Considerations of the definition of 'particular cultural interest or value' raise an additional distinction that cuts across the categories given above, according to the number of people valuing the site, and how valuable they consider the site to be. Thus we have: a) sites or features deemed valuable by a high number of people, and b) sites that are hardly known to the general public but which are assessed as extremely important by experts.

Some points need to be made about the inclusion of these categories under 'culture'. Regarding 'sites and features' these clearly belong under 'culture', although there are doubts about inclusion of trees or forests that are considered important for their ecological as opposed to their cultural characteristics. Trees that are simply large or old, or ancient forests that are untouched by humans arguably do not belong under 'culture'. Such trees or forest are so unusual that for practical purposes all 'remarkable trees and forests' may be included in this category. The criterion needs to be whether the site has substantial cultural interest in the eyes of the public and experts. On a larger scale, the inter-relatedness between culture and ecology is also a feature of the notion of the 'cultural landscape'.

Regarding 'activities, practices and skills', it is their 'cultural' characteristics which justifies their consideration under 'culture' rather than under their respective themes (such as 'recreation' or 'employment', or 'harvesting NTFPs'), i.e. the meanings, norms, emotions and sense of identity associated with the activity by its practitioners or proponents. There are also 'social' characteristics, i.e. the informal social networks and formal institutions that may have evolved alongside each activity. These could be linked to positive social benefits such as social capital, community resilience, social cohesion, etc, and thus ought to be placed under the theme 'community'.

Some 'meanings, identities and representations' are attached to 'cultural sites and features', or to 'activities, practices, skills and events'. These could be covered instead under those other categories, or even as a cultural element within other themes, such as 'NTFPs', 'employment', 'recreation', etc. However, some meanings, identities and expressions are best seen as applying directly to natural sites and features, and firmly belong under this category.

Of relevance here is how members of the public may not label different benefits they see as deriving from forests as being 'culture'. In the F4P scoping study, culture was not always mentioned by stakeholders, but implied within other categories, such as aesthetic, education, community, and the 'wellbeing' dimension to health (Hislop and Elliott 2005).

In practice, these categories often simply do not work. For example, as detailed by Rackham (1986: 62-118), ancient woodlands in England, with their irregular borders, rides, earthworks and trees that mark historical boundaries, indicator species of ancient woodland sites, coppiced and pollarded stands, etc, can be experienced and valued as a whole. Taken together, these elements make the woodland a living link with a distant past. This is a good case for considering all cultural and historical dimensions of forests within a single theme.

The rest of this section uses the literature review to expand upon the typology outlined above.

MCPFE cultural sites in European forests

A good place to start is with MCPFE who continue to develop Indicator 6.11, 'cultural and spiritual values'. The full text for the indicator is "number of sites within forest and other wooded land designated as having cultural or spiritual values" (MCPFE 2002). In 2005, the Liaison Unit in Warsaw sent out a questionnaire to the 44 MCPFE signatories to determine data availability and to refine the categories of site covered by the indicator (Gaworska 2006: 51). Data was collected on the incidence in each member state of the following kinds of cultural site. The percentage of countries who reported having many of these objects is given in brackets (n=15).

- Archaeological sites (73 percent)
- Nature monuments (60 percent)
- Sites of historical events (60 percent)

- Sites of ceremonies or customs (33 percent)
- Sites related to legend, literature and art events (53 percent)
- Individual trees (giant or unusual) (80 percent)
- Arboretum (20 percent)
- Valuable landscape sites (87 percent)
- World Heritage sites (recognised by UNESCO) (present in 11/15 countries)

Most of these kinds of site were present in at least 50 percent of the 15 European countries that provided data, and provide useful distinctions to make. 'Individual trees', and 'valuable landscape sites' are the most widely present kinds of site. A host of other possibilities were listed, providing opportunities to extend the scope of the indicator in the future (ibid: 52):

- Man and Biosphere sites – UNESCO (France)
- National parks, nature parks and reserves (Russian Federation, Finland)
- Monasteries (Cyprus)
- Architecture and settlement heritage (Slovenia, Poland)
- Graves, mounds (Denmark)
- Stone fences (Denmark)
- Old roads (Denmark)
- Cultural reserves (Sweden)
- National landscapes (Finland)
- Cultural historical environments (Finland)
- Forest formed for special historical uses (hunting, pasturing, etc). (Germany)

Forestry and cultural heritage

The notion of 'cultural heritage' crops up frequently in the literature on culture and forestry. This is no doubt partly because of its use in international policy, for example the UNESCO World Heritage Convention, adopted in 1972, which defines cultural heritage as "monuments, groups of buildings or sites with historical, aesthetic, archaeological, scientific, ethnological or anthropological value" (Rössler 2006: 14). This early conception of cultural heritage, which focuses on sites, has evolved to include the meanings attached to those sites. Thus, the 2003 UNESCO convention on the safeguarding of the intangible cultural heritage deals with "myths, rituals, language and other traditions related to nature and the universe" (ibid: 13).

A conference was organised with MCPFE and other partners in 2005, hosted by Sweden, to explore cultural heritage and forests in Europe, partly with a view to developing Indicator 6.11. The case of Sweden, presented at the conference, is useful to outline here since they work with similar categories to those we have identified above. For the Swedish Forest Administration, cultural heritage includes "both material and immaterial" aspects. Four main categories are identified (Aronsson 2006: 31-2), with relevant notes, below:

a) ancient monuments
b) culture remains listed in the Swedish Forestry Act
c) bio-cultural heritage
d) immaterial heritage

a) *Ancient monuments* are defined as permanent traces of human activity in the past, which have been abandoned. These are:

1. Graves, funeral buildings and burial grounds, churchyards and other cemeteries
2. Raised stones and stones and rock bases with inscriptions, symbols, marks and pictures, as well as other carvings and paintings
3. Crosses and memorials
4. Places of assembly for the administration of justice, cult activities, trade and other common purposes

5. Remains of homes, settlements and workplaces and cultural layers resulting from the use of such homes or places, e.g. traces of working life and economic activity
6. Ruins of fortresses, castles, monasteries, church buildings and defence works, and also of other remarkable buildings and structures
7. Routes and bridges, harbour facilities, beacons, road markings, navigation marks, and similar transport arrangements, as well as boundary markings and labyrinths
8. Wrecked ships, if at least one hundred years have presumably elapsed since the ship was wrecked

All of these sites and features appear to be 'in the forest' rather than 'of the forest'. However, Aronsson adds: "Permanent ancient monuments also include natural formations associated with ancient customs, legends or noteworthy historic events, as well as traces of ancient popular cults" (ibid: 32). For some of these sites, the forest may be an inseparable part of their cultural heritage value.

b) Regarding '*cultural heritage in the Swedish Forestry Act*', the Act lists "valuable cultural environments" where damage should be avoided or delimited, including "abandoned crofts, overgrown pasture and meadows with trees, clearing cairns, remains of saw-mills" (ibid). This represents a mixture of sites in and sites of the forest. It is not clear whether management to avoid or delimit damage would allow trees to grow on the site. There is a tension faced by managers between clearing trees from a cultural site in the forest, or allowing them to grow but running the risk of damaging the site through tree roots, tree fall, and neglect.

c) The notion of '*bio-cultural heritage*' is useful since it recognises the distinction between sites in and sites of the forest. It was defined at the seminar as: "the biological manifestation of human activity in the landscape, e.g. traditional farming and forestry practices" (MCPFE 2006: 147). The term was proposed in response to the lack of funds and interest being generated for conservation and management of such sites, for example grazed forest and pollards, on the basis of biological values alone (Aronsson 2006: 32). The act of labelling them of cultural value in forest policy supported arguments for their active management.

d) The category '*immaterial cultural heritage*' was seen to provide meaning and value to the "dead stones" of cultural heritage sites. It covers many of the items we have listed above, under 'meanings, identities and representations' and to some extent 'activities, etc'. Aronsson explains:

> "The physical cultural heritage, such as old barrows, cairns and so on is very obvious to all people. But to make dead stones speak we need to give them names, explain them and tell stories about them. The physical and immaterial cultural heritage therefore depend on each other and strengthen each other. The immaterial cultural heritage includes a lot of different phenomena, names of places, knowledge on handicraft, songs, poems, tales proverbs and much more. They all have in common that they help to explain and give life to abstract things" (ibid).

Thus, the framework given by Aronsson for Swedish forestry reproduces the main distinctions proposed for our cultural theme. There is one notable omission: the present-day expressions of culture surrounding activities in the forest such as mountain biking or birdwatching are not included.

The distinction between culture in the forest and of the forest has also been thought through by Swedish academics. Svensson (2006) supports the inclusion of the 'socio-cultural sector' within the MCPFE process, but is concerned that it is still marginal, and not given equal importance to economic viability and biological diversity. She is also concerned that 'nature' and 'culture' should not be artificially separated. Thus, she asserts: "The forest is, and will always be, a product of both natural and cultural processes." She supports the Swedish government's view that these are "two sides of the same coin", but asserts that a true integration of nature and culture has not yet emerged (Svensson 2006: 106-8).

Another popular understanding of forestry and culture which Svensson wishes to challenge is how forests are equated with untouched wilderness, while agricultural landscapes are seen to be more influenced by humans, and can thus be considered 'cultural landscapes'. She asserts: "this ideology is one of the greatest threats to the cultural heritage of the forest. It prohibits the understanding of today's forests…" (ibid: 108). She goes on to say that forest people can be labelled primitive and wild on the basis of this false dichotomy.

Regarding the distinction between "cultural heritage of the forest and in the forest", she writes:

> "This means that there are cultural remains (of the forest) in today's forests that were associated with the forest in the time of use, and there are remains (in the forest) that simply have been overgrown with trees. Meaning that the cultural remains of the first category would not have been created at all if there had been no forest." (ibid).

For Svensson the cultural heritage *of* the forest includes resource extraction and manipulation of natural conditions to produce goods for sale. Her examples include pitfalls for catching big game, bloomery furnace sites, blast furnace sites, shielings and tar production sites (ibid). Regarding cultural heritage *in* the forest, Svensson locates "everything that is associated with the open landscape, but has been reforested after desertion". Examples include settlement sites and fossilised fields (ibid).

Willis also implicitly makes the distinction between culture in and of the forest, and notes that the majority of archaeological sites in Great Britain predate the forest. He writes:

> "British forests contain a diverse and rich collection of archaeology. Some of this archaeology is associated with woodland past and present, such as wood-banks, saw-pits, and charcoal-burning platforms. However, the vast majority of ancient monuments within our forests actually pre-date the woodlands themselves, originating in a historic landscape that was essentially agricultural. Among this latter group are burial mounds, fortifications, earthworks, field systems, and standing stones" (Willis 2003: 3.3.4).

<u>Cultural practices and cultural landscapes</u>

There are various traditional forest-based practices throughout Europe in addition to those listed above. Parviainen (2006) lists traditional ways of using forests and forest products, including hunting and fishing, slash and burn agriculture in Finland, forest pasture in Spain and Portugal, tar distilling, collecting resin and using cork. The important claim about these traditional forest-based practices, made by Parviainen and others, is that their practice in the present-day helps to maintain our relations with forests. He writes: "Recognising the cultural and spiritual values shows that forest management is not only production or protection but also maintaining the relationship between people and forest" (Parviainen 2006: 67). Similar arguments are made to support the conservation of traditional forest-dependent communities, along with their indigenous knowledge and practices, which are often seen to be inherently sustainable.

This term 'cultural landscape' often recognises that the three categories listed above – sites, activities, and meanings – can be present in the same place, with close interrelationships between them. According to Rössler (2006: 16) the 1992 World Heritage Convention recognised three categories of cultural landscapes:

a) Clearly defined landscapes defined and created intentionally by humans
b) Organically evolved landscapes which can be either relict landscapes or continuing landscapes
c) Associative cultural landscapes

Perhaps the most useful distinction here is between 'relict' and 'continuing' landscapes.

For Oliver Rackham, and others, all landscapes are cultural: "the reality is that what we call landscape is a cultural landscape; it is not wholly artificial, but is the result of interactions between the

environment, human activities, and the behaviour of plants and animals" (Rackham 1991, cited in Tabbush 2006: 11).

Some of these sentiments are expressed in the European Landscape Convention, adopted in 2000, which states among other things that landscape: "contributes to the formation of local cultures and… is a basic component of the European natural and cultural heritage, contributing to human well-being and consolidation of the European identity… [It] is a key element of individual and social well-being" (Déjeant-Pons 2006: 23). This strong statement supports efforts within the forestry sector to acknowledge cultural values of forests. Thus, Tabbush adds:

> "Since landscape everywhere reflects human influence, it is loaded with cultural meaning, and this meaning constitutes the history and identity of the peoples associated with it. The socio-cultural dimension of SFM implies a duty to respect and conserve those aspects of the environment that contribute to and reflect human values" (Tabbush 2006: 12).

During the F4P scoping study, a forest manager gave an interesting related perspective on forest cultures, as follows: "what we are trying to do is build a forest culture and that takes in the ideas of community development, community capacity, social benefits… it could be how people define themselves" (Hislop and Elliott 2005: 16). Such a mission aims to recreate the sort of interactions between forest landscape, forest practice, social networks, and cultural meanings and attachments, which can exist in a living, or 'continuing' cultural landscape.

Meanings associated with forests

Turning away from the relatively unusual situations where there are close links between forests, traditional forest based cultural practices, and associated meanings and identities, we will consider the meanings attached to forests by more industrialised members of the European public. One of the most common associations people attach to woodlands concerns their physical, biological and symbolic link to the past. Thus, Willis writes: "Trees are often important elements in the cultural history of areas. For example, the Burnham Beeches near Maidenhead [England], attract thousands of visitors each year, some of whom are attracted by the historical significance of the beeches, their management including pollarding, and their association with mediaeval farming practices" (Willis 2003: 3.2.2).

Reviewing literature on the meaning people attach to forests, O'Brien notes how trees and forests are potent symbols of human life cycles and connections between past, present and future:

> "Symbolic anthropologists have studied tree symbolism and suggest that trees enable people to make connections between the past and the future. Hagender (2000) emphasizes the importance of trees in the development of people in both and physical and spiritual sense. He goes on to describe the 'sacred groves' which were used for the spiritual purposes of meditation and prayer. Zelter (1998) argues that trees not only stand for nature but are also associated with issues of justice and public space. Trees are potent symbols of nature, and eco-protesters have chained themselves to trees in acts of protest to stop the destruction of the countryside and the development of new road systems. Rival (1998: 7) reveals that 'all over the world, rituals marking the life cycle make extensive use of trees', which emphasizes the symbolic connection between human life cycles and trees." (O'Brien 2003: 11).

Several other authors highlight the sense of continuity and related spiritual meanings attached to forests and some other environments. Thus, de Groot *et al.* write: "Natural ecosystems and natural elements (such as ancient water falls or old trees) provide a sense of continuity and understanding of our place in the universe which is expressed through ethical and heritage-values. Also religious values placed on nature (e.g. worship of holy forests, trees or animals) fall under this function-category" (de Groot *et al.* 2002: 402). A similar perspective is given by Macnaghten *et al.* (1998).

Not all associations with forests are positive or benign. Rössler (2006: 16) writes: "Forests have often been seen as the wild nature, as the darker primitive and mysterious side, the opposite of the civilized Western world. The forest is the place of magic, of trolls and elves. This can be still seen in many fairy tales and stories, paintings and poems" (cf. Miller 2000, Wood 1997). There are also crime and safety issues associated with woodlands, which have been explored in UK by O'Brien and Tabbush 2005.

Identity and emotional attachment

Several studies highlight how people identify with woodlands, forests or trees (Balee 1989, Clayton and Opotow 2003, Rival 1998, Stevens 1997, O'Brien 2004, 2005, Schmithusen and Wild-Eck 2000, Tabbush 2006). Various kinds of identity are put forward in this context: 'personal identity', 'community identity', 'cultural identity', 'environmental identity', and 'identity of place'. Drawing on Brubaker and Cooper (2000), 'identity' in this context might be seen to have two perspectives:

a) '*Identification with*' forest-related places or activities, by both individuals and groups, and
b) contribution of forest related places or activities towards the '*self-understanding*' of either an individual or group.

The link between identity and memory has been made, for example, by O'Brien, who, on the basis of focus groups, reports that:

> "One of the ways in which people's sense of their own personal identity was articulated was through descriptions of their childhood experiences of using trees and woodlands. Childhood memories of using woodlands seemed to be linked to frequent use as an adult… Childhood was often talked of as a time of freedom when respondents had the opportunity to explore and use their imagination" (O'Brien 2005a: 175).

Incidences where the identity of an entire group, or 'cultural identity', is associated directly with forests, or with activities 'of the forest', may be found with communities whose livelihoods are dependent on forests, especially when these have evolved over long periods of time, perhaps in certain cultural landscapes, which can be seen as examples of "traditional societies co-evolving with their environment" (de Groot and Ramakrishnan 2005: 458-9). A common view is that loss of identity in this context can go hand in hand with abandonment of traditional sustainable management, and degradation of environments.

According to an international study of non-market benefits of temperate and boreal forests, several countries have cultural groups with strong ties to the forest. Regarding Finland they write: "The Finns are deeply tied to the forest, which are often important to their livelihood. Numerous mental images and beliefs back to prehistoric times illustrate ties to the forest. Many festivals are based on old traditions. The majority of Finns believe there are spirits in trees and other natural objects" (UNECE/FAO 1998: 39). They continue by describing the Lapps, whose livelihoods are highly dependent on their local environment. While these claims about the Finns may require further investigation, there are certainly significant differences in the ways and extent to which different regional cultures in Europe identify with and relate to forests that are a legitimate topic for assessment.

To an extent, there may be a 'cultural identity' for any group with an interest in forests, including even government forestry departments, NGOs, forest recreation clubs, etc, and their identities and associated norms may influence forest management in different ways to forest-dependent communities.

Representations of forests and trees

One of the categories of 'information functions' given in the ecosystem functions approach is 'inspirational services'. De Groot and colleagues have described this category of benefits more than most other researchers of environmental values. Thus, we hear that:

> "Natural and cultivated systems inspire an almost unlimited array of cultural and artistic expressions, including books, magazines, film, photography, paintings, sculptures, folklore, music and dance, national symbols, fashion, and even architecture and advertisement. Consciously or subconsciously, representations of natural (and cultivated) ecosystems in art, writings, and so on remind us of our ties with nature (and our cultural heritage) and shape our views and appreciation of the represented ecosystems and species" (de Groot and Ramakrishnan 2005: 465).

As stated by Van Dieren and Hummelinck (1979) "There is hardly any province of culture to which nature does not give shape or inspiration" (cited in de Groot *et al.* 2002: 402).

They distinguish five types of 'inspirational services': verbal art and writings inspired by nature, the performing arts, fine arts, design and fashion, and the media in general" (de Groot and Ramakrishnan 2005: 465). They note that "Radio, films, videos, television, the Internet, photography, and advertising all use nature as a source of inspiration to make programs and sell products" (ibid 466). Regarding measurement, they add:

> "Various measures of the dependence of human society on inspirational services have been suggested. These include the number of people engaged in various art activities, the number of people growing and harvesting the raw material used to create fashion and art, the quality and variety of natural resources used for art activities the variety and numbers of art pieces created, and the price people are prepared to pay form products based on these services. In principle, these indicators could be used…" (ibid: 467).

This benefit is often overlooked in accounts of social and cultural values of forests. It has been redefined here as oral, written and visual 'representations of forests and trees' to include in particular visual art, stories and folklore. This category is analogous with other artistic expressions located within forests considered above, namely sculptures and other positional art (under 'sites and features'), and artistic performances and events (under activities, etc). Finally we should not overlook other parts of the forestry-wood chain, since, as pointed out by Rössler, many forms of cultural expression are derived from wood. He also reminds us that "conservation and forest protection are themselves cultural concepts" (Rössler 2006: 14).

5. CONCLUSIONS

One of the outputs of EFORWOOD will be a generic template of themes and indicators for Social and Cultural Values associated with European forests. The review and analysis reported here has produced a number of distinctions and categories which have been used to structure the template. These are outlined below:

SCV themes

The SCV template is based on a pragmatic thematic approach, with nine themes, each representing a related cluster of benefits or values, as follows: employment, extraction (NTFPs), governance, community, recreation and tourism, education and learning, health and well-being, landscape and aesthetics, and culture and heritage. These themes closely resemble 'criteria' in terms of their relationship with indicators, but the term is avoided so that they are not confused with the criteria used in the international C&I frameworks for SFM.

Pillars of sustainable development

The template is expected to cover all the values under the 'social' pillar of sustainable development, or Sustainable Forest Management. However, economic values that are derived to express aspects of each SCV theme could equally belong under either the social or the economic pillar. One way of deciding which pillar to allocate them under is to assess the extent to which the benefit or value relates directly to local economies and communities as opposed to its wider contribution, for example, to the national economy.

Disciplinary perspectives

It is possible to apply an economic, social, political, psychological or cultural perspective to the values under each SCV theme. Thus, employment and harvesting are primarily economic, but have social and cultural aspects (such as quality of livelihoods). Similarly, the social benefits (e.g. increases in social capital) could apply to all of the themes. Thus, there are social benefits relating to employment, NTFP harvesting, recreation, and so on. The social benefits have been placed mainly under the themes 'governance' and 'community' depending partly on whether one takes a strategic or local perspective to the benefit in question. For the cultural benefits, the non-use values are considered together under 'culture', but some of them could also be seen to apply to each of the other themes. Each theme is primarily but not exclusively concerned with one of these disciplinary perspectives. The themes have been ordered roughly to follow a continuum from tangible (economic), to intangible (cultural).

Valuation methods

There are different methods for valuation applicable to each discipline, and thus different kinds of indicator. Each theme can be assessed economically, quantitatively, qualitatively on an ordinal scale, or descriptively, using methods appropriate for that discipline.

Resources, activities and meanings

Three dimensions can be identified when considering each SCV theme, as follows:

1) *Resources:* Forests, woodlands and trees in a landscape, and man-made facilities, sites and features
2) *Activities*: Forest-based livelihood strategies, ways of life, activities and practices
3) *Meanings*: Norms, values, beliefs, attitudes, expressions, identities, meanings and associations different people attach to forests and their use.

These dimensions are inter-linked. People attach particular meanings to forests, which, in turn, are shaped by the activities or livelihood strategies they carry out in them. Cultural landscapes are examples where the interactions between these three entities are particularly strong. Each theme in the template can be seen to involve all three dimensions, but in the template only the 'culture' theme does so explicitly. Thus, we value 'employment' not just for the money, but for activity itself, and for the meanings and identity and other cultural benefits we associate with a given job. The economic-focused

themes of ‘employment’ and ‘extraction’ are also focused on ‘resources’, whereas the cultural theme is more focused on ‘meanings’.

The template given in Appendix 1 has used these distinctions as a checklist to identify relevant indicators for each theme. The template needs to be seen as work in progress, and will be revised in response to expert consultations and fieldwork with stakeholders in different Reference Forests throughout Europe. It is hoped that the end product will be used to increase the range and depth of coverage of these often-neglected values in assessments and decision-making for sustainable forest management in Europe.

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APPENDIX 1. GENERIC TEMPLATE OF INDICATORS FOR SOCIAL AND CULTURAL VALUES OF EUROPEAN FORESTS

Criterion or value	Sub-criterion or value	Indicator	Units	Disaggregation
1. Employment	Level of employment	Number of persons employed in total, by type of employment	Absolute number, FTEs	Type of employment gender, age rural or urban
	Wages and salaries	Total gross earnings [or average earnings]	Euro	Type of employment gender, age rural or urban
	Occupational safety and health	Frequency of occupational accidents	Absolute numbers, %	Non-fatal accidents (absence more than three days) Fatal accidents
		Frequency of occupational diseases	Cases per person year, %	Occupational diseases
	Education and training	Education [and training] time per employee	Years per person, % of turnover	Gender up to 16, 17-19, still studying)
		Education [and training] expenditure	% of turnover, Euro	Gender
	Quality of employment	Level of skills [of employees and/or required for the job]	Absolute number, FTEs	low vs high skilled workers Type of employment gender, age rural or urban
		Type of employment (direct/indirect)	Absolute number, FTEs	direct vs indirect employment Type of employment gender, age rural or urban
		Equality of treatment	Absolute number, FTEs	Type of employment gender, age rural or urban
		Staff turnover rate	Average months in employment	Type of employment gender, age rural or urban
		Percentage of employees who are satisfied with their job	%	Type of employment Gender, age Rural or urban

		Distance travelled to work	Km per person per year [or more or less than, say, 10km]	Type of employment Gender, age Rural or urban
	Volunteering in forest management	Numbers of volunteers actively participating in forest based activities	Absolute number, FTEs	Type of employment gender, age rural or urban local or non-local
2. Harvesting (NTFPs)	NTFP production and revenue	Quantity and/or value of NTFPs harvested per year	Euro Tonnes, kg, m3, etc	Type of product Harvest, wholesale or retail value
	Participation in NTFP collection	Number of people collecting NTFPs	Absolute number, %	Type of product Commercial vs subsistence Type of person
	Benefits derived from NTFP collection	Proportion of NTFP collectors deriving different kinds of benefits from NTFP collection	%, qualitative	Type of product Type of benefit (economic, social, cultural, etc) Type of person
	Access and rights to NTFPs	Extent to which ownership and use rights are perceived to be fair	%, qualitative	Type of product Type of rights
3. Governance	Public involvement in forestry decision-making	Percentage of the population involved in, or consulted about, forestry plans	%, number of days	Level of involvement (low, medium, high) Gender, age, income
	Social inclusion	Percentage of population involved in, or consulted about, forestry plans from excluded groups	Absolute number, %	Type of excluded group (socio-economic, ethnicity or language, disability, age)
		Proportion of visitors from excluded groups	Absolute number, %	Type of excluded group (socio-economic, ethnicity or language, disability, age)
	Awareness among forest managers	Percentage of forest managers who are aware of social and cultural values held by (local) stakeholders	%, qualitative	Level of awareness Nature of awareness
	Public attitudes towards forests and forest management	Relative importance attached to different forest-related functions, services and values	%, qualitative	Type of function, service or value (Economic, environmental and social)
		Public satisfaction with forestry	%, qualitative	Type of social group Level of satisfaction Aspect of forestry (policy, management, etc)

4. Community	Community involvement in forest management	Numbers of hectares of woodland actively managed by community groups	Hectares	Type of group (i.e. level of community participation)
		Numbers of groups and total membership	Absolute number	Type of group Level of involvement Gender, age, income
		Satisfaction with community forestry initiatives	Level of satisfaction	Gender, age, income Type of group
	Rights of local communities [social justice]	Extent to which forest management is perceived to be fair by local and forest-dependent people	%, qualitative	Type of community Type of rights Type of product
	Community well being	Community liveability	%, qualitative, aggregate	Type of community
		Community resilience	%, qualitative, aggregate	Type of community
		Changes in social capital (social networks, trust and reciprocity) due to involvement in forest management	%, qualitative, aggregate	Type of community
	Local employment and training	Number of local and forest-dependent people employed, and trained in forestry sector	Absolute number, %	Type of employment Gender, age, income Rural or urban
	Local attitudes towards local forests	Investment in local forests by local people	Hours, Euro	Type of investment Type of social group
		Relative importance attached to different forest-related functions, services and values of local forests	%, qualitative	Type of perception Type of social group
5. Recreation and tourism	Recreation resources	Expenditure on recreation	Euro	Type of investment
		Area of forest where recreation is a significant management objective	Hectares	Level of management or investment (high, med, low)
	Access to recreation	Area of forest where public has a right of access for recreation	Hectares	
		Area of forest where public has a right of access for particular recreation activities	Hectares, %	Type of activity
		Proportion of population with accessible forest within (say) 4km.	%	

		Number of inhabitants per recreation establishment		Type of establishment
	Level of informal recreation	Number of visits (and visitors) to forests	Absolute number	Type of activity distance travelled (local vs non-local) Income [i.e. a measure of social inclusion]
		Proportion of adult population who visited woodland in previous 12 months	%	Type of activity Distance travelled (local vs non-local) Income [ie social inclusion]
	Level of formal recreation	Number of organised forest based recreation activities, and number of participants	Absolute number	Type of activity (inc active vs passive participation), e.g. walking, car rallies, mountain bike races, pony trekking, nature watching
	Social interaction	Number of groups visiting forests	Absolute number	Family and/or non-family Size of group
	Value of recreation and tourism	Non-market value of visits to forests	Euro	Ownership type Type of person
	Quality of visit experience	Percent of adult population satisfied with forest recreation provision	%, qualitative	Type of visit Type of person Level of satisfaction
6. Education and learning	Expenditure on education and learning	Level of expenditure on education	Euro	Type of education
		Expenditure on public awareness	Euro	
	Extension and outreach	Proportion of time spent on forestry extension and outreach	Hours	Type of activity
	Education facilities and institutions	Number of education centres/institutes/settings using woodlands for learning	Absolute number	Type and size of centre Type of participant (age group, education level)
	Beneficiaries of education and learning	Number of participants in education and learning activities in woodlands	Absolute number	Type of activity (ie those listed above) Age Income [i.e. measure of social inclusion]
	Quality of learning experience	Percentage of participants who were satisfied with education and learning activities in woodlands	%, qualitative	Type of activity Type of person Level of satisfaction

	Public awareness of forests and forestry	Percentage of population who believe that forest area in Europe is decreasing or increasing	%	Age (children vs adults)
7. Health and well-being	Physical activity	Number of hours spent on physical activity in forests	hours	Type of activity
		Percentage of population involved in organised forest based health activities	%	Type of activity Gender, age, income
		Number of organised forest based health activities	Absolute number	Type of activity
	Mental well-being	Percentage of population who visit forests to reduce stress	%	Type of person
	Quality of health related experience	Satisfaction with forests as a place to do exercise and reduce stress	%, qualitative	Type of person Type of activity Level of satisfaction
	Value of health benefits	Economic savings to government	Euro	
8. Landscape and aesthetic	Expenditure on enhancing landscape with forest and trees	Level of expenditure on forests and trees to enhance landscape	Euro	Type of improvement
	Contribution of forests and trees to landscape	Percentage of population who benefit from seeing forests from home, work or while travelling	%	Type of person Home, work, travel
		Changes in property prices due to changes in tree cover	Euro, qualitative	Type of tree cover change
		Changes in visitor numbers due to changes in tree cover	Absolute number	Type of person Type of tree cover change
		Perceived changes in landscape value due to changes in tree cover	%, qualitative	Type of landscape value Type of tree cover change Type of person
9. Culture and heritage	Expenditure on cultural resources	Expenditure to protect or enhance cultural benefits of forests		Type of cultural benefit
	Cultural and historical resources	Number of forest based cultural sites and features	Absolute number	Type of site or feature (e.g. scheduled ancient monuments, designated cultural landscapes, ancient trees, modern sculptures, etc)
	Beneficiaries of cultural resources	Numbers of visitors to forest based cultural sites and features	Absolute number	Type of site or feature Gender, age, income

		Number of forest based cultural events	Absolute number	Type of event (e.g. ceremonies (weddings, burials, baptisms, spiritual), performances and exhibitions that interpret/interact with forest)
		Numbers of participants in forest based cultural events	Absolute number	Type of event Gender, age, income
	Cultural associations with forests	Meanings associated with forests	Qualitative, %	Type of meaning, value, norm, belief, association (particular forest or forest in general; individual or group)
		Spiritual or emotional attachment to forests	Qualitative, %	Type of attachment, link or identification (particular forest or forest in general; individual or group)
		Proportion of public who are skilled in particular forest based practices, activities or knowledge	Qualitative, %	Kind of skill (silviculture, ecology, history, practical, etc)
		Number of cultural events or products which derive inspiration from forests	Qualitative, number	Kind of event or product; quality of inspiration

APPENDIX 2. GENERIC TEMPLATE: NOTES AND RELATED INDICATORS

Criterion or value	Sub-criterion or value	Indicator	Notes and related indicators
1. Employment	Level of employment	Number of persons employed in total, by type of employment	EFORWOOD 10: 'Number of persons employed in total, by type of employment' MCPFE 6.5: 'Forest sector workforce: number of persons employed and labour input in the forest sector (by gender, age, education, job characteristics)' MP 6.5.a: 'Direct and indirect employment in the forest sector and forest sector employment as a proportion of total employment' UKISF F4: 'Employment' a): total employment in forestry and the primary wood processing industries (according to job type: nurseries, establishment, harvesting, road construction, other forest, etc)' SFS 3: 'Employment in the forestry-related sector' F4P: 'Number of people employed, and FTEs, in F4P activities'
	Wages and salaries	Gross earnings in total	EFORWOOD 11: 'Wages and salaries (gross earnings) in total, by module and process classified by gender and type of employment' CIFOR I.3.2.3: 'Wages and other benefits conform to national and/or ILO standards' MP 6.5.b: 'Average wage rates and injury rates in major employment categories within the forest sector' [FAP: The balance between rural and urban salaries can also be a measure of 'cohesion'.]
	Occupational safety and health	Frequency of occupational accidents	EFORWOOD 12: 'Frequency of occupational accidents and occupational diseases in total' CIFOR I.3.2.4: 'Damages are compensated in a fair manner' CIFOR I.5.2.3: 'Forest employers follow ILO work and safety regulations and take responsibility for the forest-related health risks of workers' MCPFE 6.6: 'Occupational safety and health': frequency of occupational accidents and occupational diseases in forestry. MP 6.5.b: 'Average wage rates and injury rates in major employment categories within the forest sector' UKISF E6: 'Health and safety: all accidents resulting in at least 3 days absence from work'
		Frequency of occupational diseases	EFORWOOD 12: 'Frequency of occupational accidents and occupational diseases in total'

	Education and training	Education time per employee	EFORWOOD 13: 'Education time and training expenditure per employee in total, by module and process as % of turnover classified by gender and highest level of education' CIFOR I.6.4.4: 'Workers and staff have adequate training to implement management' SFS 3: 'Numbers of people enrolling or registering for forestry-related short courses, qualifications and Modern Apprenticeship programmes'
		Education expenditure	EFORWOOD 13: 'Education time and training expenditure per employee in total, by module and process as % of turnover classified by gender and highest level of education' EUGAP (DE) C6: 'Expenditure of forest owners for research and professional education' CCFM 6.5.3: 'Investment in forest research, timber products industry research and development, and education'
	Quality of employment	Level of skills	EFORWOOD 14: Quality of employment: number of persons employed in total, classified by skills, type of employment and equality of treatment'
		Type of employment (direct/indirect)	EFORWOOD 14: Quality of employment: number of persons employed in total, classified by skills, type of employment and equality of treatment'
		Equality of treatment	EFORWOOD 14: Quality of employment: number of persons employed in total, classified by skills, type of employment and equality of treatment'
		Staff turnover rate	SFS 3: 'Staff turnover rates in the forestry sector'
		Percentage of employees who are satisfied with their job	F4P: 'Percentage of forestry employees who are satisfied with their job'
		Distance travelled to work	UKISF F4: 'Employment': b) Percentage of forestry workers travelling less than 20 miles to their place of employment in GB F4P: 'Average distance travelled to work' [under 'contribution to the economy', a proxy for leakage of wages from local economy: see 'community development', below]
	Volunteering in forest management	Numbers of volunteers actively participating in forest based activities	UKISF E4: 'Active participation in voluntary activities related to local woodlands' (proposed) SFS 5: 'Number of formal 'volunteer days' associated with woodland activity' F4P: 'Number of volunteers in forestry'

2. Harvesting (NTFPs)	NTFP production and revenue	Quantity and/or value of NTFPs harvested per year	EFORWOOD 8 'Total production: production of products in total' EFORWOOD 9 'Revenue: gross and net revenue in total' MCPFE 3.3 'Non-wood goods: Value and quantity of marketed non-wood goods from forest' MP 6.1.b: 'Value and quantities of production of non-wood forest products' MP 6.1.d: 'Value of wood and non-wood products production as percentage of GDP' MP6.1.f: 'Supply and consumption/use of non-wood products' MP 2.e: 'Annual removal of non-timber forest products (e.g. fur bearers, berries, mushrooms, game) compared to the level determined to be sustainable.' [NB this relates to C2 'maintenance of productive capacity' rather than SCVs per se.] CCFM 5.1.4: 'Contribution of on-timber forest products and forest-based services to the gross domestic product' CCFM 5.1.5: 'Value of unmarketed non-timber forest products and forest based services' F4P: 'Gross Value Added of NTFPs'
	Participation in NTFP collection	Number of people collecting NTFPs	F4P: 'In the last 12 months have you gathered any [NTFPs]?' etc.
	Benefits derived from NTFP collection	Proportion of NTFP collectors deriving different kinds of benefits from NTFP collection	
	Access and rights to NTFPs	Extent to which ownership and use rights are perceived to be fair	CIFOR I.3.1.1: 'Ownership and use rights to resources (inter and intra-generational) are clear and respect pre-existing claims' CIFOR I.3.1.2: 'Rules and norms of resource use are monitored and successfully enforced' CIFOR I.3.1.3: 'Means of conflict resolution function without violence' CIFOR I.3.1.4: 'Access to forest resources is perceived locally to be fair' CIFOR I.3.1.5: 'Local people feel secure about access to resources CIFOR I.3.2.1: 'Mechanisms for sharing benefits are seen as fair by local communities' CIFOR V.6.4.3.2: 'NTFPs and their uses are identified' MP 6.5.d: 'Area and percent of forest land used for subsistence purposes'

3. Governance	Public involvement in forestry decision-making	Percentage of the population involved in, or consulted about, forestry plans	CIFOR I.4.1.2: 'Local stakeholders meet with satisfactory frequency, representation of local diversity, and quality of interaction' CIFOR I.4.1.3: 'Contributions made by all stakeholders are mutually respected and valued at a generally satisfactory level' CIFOR I.6.3.2: 'Management takes place with appropriate involvement of the stakeholders and takes into account all the components and functions of the forest, such as timber production, NTFP, ecology and well-being of local populations. CIFOR V.6.3.2.1: 'There is evidence of inclusion of local population in the management plan design' CIFOR V.6.4.8.1: 'Number of official complaints, court cases, etc. [re. I.6.4.8 'Absence of significant off-site impacts such as on down stream water quality/quantity, infrastructure, etc] EUGAP (FR) C6: 'Public participation: number of man-days of non-foresters involved in forestry decisions' (proposed) EUGAP (DK) C6: 'Public participation: number of citizens influencing state forest management plans and forest politics through NGOs' (proposed) EUGAP (SW) C6: 'Number of man hours spent by NGOs on forestry' (proposed) CCFM 6.1.1: 'Extent of consultation with Aboriginals in forest management planning and in the development of policies and legislation related to forest management' CCFM 6.4.1: 'Proportion of participants who are satisfied with public involvement processes in forest management [in Canada]' UKISF: 'Involvement of local people in decision making for local woodlands' (proposed) UKISF: 'The extent and quality of local consultation (e.g. on forest management plans)' (proposed) WFW 1.3: 'Have you every been consulted about plans for creating, managing or using woodlands in your area?' WFW 1.3: 'Do you feel that you have influenced (would be able to influence) decisions about creating, managing or using woodlands in your area?' F4P: 'Numbers of people involved in, or consulted about, forestry plans'
	Awareness of forest managers	Percentage of forest managers who are aware of social and cultural values held by (local) stakeholders	CIFOR I.5.3.1: 'Forest managers can explain links between relevant human cultures and the local forest'
	Social inclusion	Percentage of population involved in, or consulted about, forestry plans from excluded groups	

		Proportion of visitors from excluded groups	
	Public attitudes towards forests and forest management	Relative importance attached to different forest-related functions, services and values	EFORWOOD WCI: Undeveloped qualitative indicator 'Consumer attitudes'
		Public satisfaction with forestry	
4. Community	Community involvement in forest management	Numbers of hectares of woodland actively managed by community groups	CCFM 6.1.2: 'Area of forest land owned by Aboriginal peoples' SFS 4: 'Number and area of land parcels sold or leased under the National Forest Land Scheme' F4P: 'Hectares of management influence of Community Woodland Groups'
		Numbers of groups	SFS 4: 'Number of community-group partnerships involved in owning or managing woodland' F4P: 'Numbers of people involved in Community Woodland Groups and number of Groups'
		Total membership of groups	F4P: 'Numbers of people involved in Community Woodland Groups and number of Groups'
		Satisfaction with community forestry initiatives	SFS 4: 'Independent satisfaction rating of community partnerships no the national forest estate'

	Rights of local communities [social justice]	Extent to which forest management is perceived to be fair by local and forest-dependent people	CIFOR I.3.1.1: 'Ownership and use rights to resources (inter and intra-generational) are clear and respect pre-existing claims' CIFOR I.3.1.2: 'Rules and norms of resource use are monitored and successfully enforced' CIFOR I.3.1.3: 'Means of conflict resolution function without violence' CIFOR I.3.1.4: 'Access to forest resources is perceived locally to be fair' [by small timber operators and NTFP users] CIFOR I.3.1.5: 'Local people feel secure about access to resources' CIFOR I.3.2.1: 'Mechanisms for sharing benefits are seen as fair by local communities' CIFOR I.3.2.2: 'Opportunities exist for local and forest-dependent people to receive employment and training from forest companies' CIFOR I.3.2.3: 'Wages and other benefits conform to national and/or ILO standards CIFOR I.3.2.4: 'Damages are compensated in a fair manner' CIFOR C.4.3: 'Agreement exists on rights and responsibilities of relevant stakeholders' CIFOR I.4.3.1: 'Level of conflict is acceptable to stakeholders' CIFOR I.6.1.1: 'Documentary evidence of the agreements with local communities under which management is entitled to manage the forest exists' CIFOR I.6.1.2: 'Information on the identity, location and population of all indigenous and traditional peoples living in the vicinity of the management area or claiming customary rights to the management area exists' CCFM 6.2.1: 'Area of forested Crown Land with traditional land use studies' CCFM 6.4.2: 'Rate of compliance with sustainable forest management laws and regulations'
	Community well being	Community liveability	USCIP 'Community liveability: the community's ability to met people's basic needs'
		Community resilience	MP 6.5.c: 'Viability and adaptability to changing economic conditions, of forest dependent communities, including indigenous communities' CCFM: 'Economic diversity index of forest-based communities' USCIP: 'Community resilience: the community's ability to adapt to change'
		Changes in social capital (social networks, trust and reciprocity) due to involvement in forest management	

	Local employment and training	Number of local and forest-dependent people employed, and trained in forestry sector	CIFOR I.3.2.2: 'Opportunities exist for local and forest-dependent people to receive employment and training from forest companies' CIFOR I.3.3.2: 'Out-migration levels are low' CCFM 6.3.2: 'Education attainment levels in forest-based communities' CCFM 6.3.3: 'Employment rate in forest-based communities' CCFM 6.3.4: 'Incidence of low income in forest-based communities'
	Local attitudes towards local forests	Investment in local forests by local people	CIFOR I.3.3.1: 'People invest in their surroundings (i.e. time, effort and money)' CIFOR I.3.3.3: 'People recognise the need to balance number of people with natural resource management'
		Relative importance attached to different forest-related functions, services and values of local forests	WFW 1.1: 'Perceived benefits of local woodlands to the local community'
5. Recreation and tourism	Recreation resources	Expenditure on recreation	MP 6.2.b: 'Number and type of facilities available for general recreation and tourism, in relation to population and forest area' MP 6.3.a: 'Value of investment, including… recreation and tourism' EUGAP (DE) C6: 'Expenditures of forest owners for recreational function of forests' (proposed) EUGAP (DE) C6: 'Recreational equipment' (proposed) EUGAP (DE) C6: 'Road network and its function for recreation' (proposed) EUGAP (SW) C6: 'Metres of hiking track per inhabitant' (proposed) EUGAP (FI) C6: 'Supply of recreational services, use of recreational services' (proposed) EUGAP (FR) C6: 'Recreational equipment: length of prepared tracks per hectare' (proposed) SFS 5: 'Number and length of Core Paths in woodlands'
		Area of forest where recreation is a significant management objective	EUGAP (DE) C6: 'Proportion of forest area managed primarily for recreation' (proposed) MP 6.2.a: 'Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forest land'
	Access to recreation	Area of forest where public has a right of access for recreation	MCPFE 6.10: 'Accessibility for recreation: Area of forest where public has a right of access for recreational purposes and indication of intensity of use' UKISF E2: 'Extent of open public access' WFW 5.2A: 'Woodland with open public access'
		Area of forest where public has a right of access for particular recreation activities	EUGAP (DK) C6: 'Provision of recreation: area of forest where horse riding/mountain biking/dogs without lines are allowed' (proposed)

		Proportion of population with accessible forest within (say) 4km.	EUGAP (SW) C6: 'Proportion of forest area easily accessible to man (e.g. within 2km from densely built-up areas or within 5km from recreational centres or within 50km from prepared tracks)' UKISF E2: 'Extent of open public access' (Data source WT) SFS 5: 'Proportion of the population with accessible woodland greater than 2ha within 500m, and 9separately) greater than 20ha within 4km'
		Number of inhabitants per recreation establishment	EUGAP (SW) C6: 'Number of inhabitants per recreation establishment' (proposed)
	Level of informal recreation	Number of visits (and visitors) to forests	MP 6.2.c: 'Number of visitor days attributed to recreation and tourism, in relation to population and forest area' EUGAP (FR) C6: 'Number and satisfaction of visitors' (proposed) EUGAP (DE) C6: 'Recreational services: number of visitors for region/forest complex' UKISF: 'Visits to woodlands' GBDVS: 'Proportion of adults who made a leisure day visit from home to woodland in the past year" and "in the past few years' SFS 5: 'Number of visits to national forests' WFW 5.1A: 'Number of leisure day visits to woodlands by adults resident in Wales from home' WFW 5.2B: 'Woodland visitor characteristics' F4P: 'Number of visits and visitors to forests'
		Proportion of adult population who visited woodland in previous 12 months	SFS 5: 'Proportion of adults (16 years+) who visited woodland in previous 12 months' WFW 5.1A: 'Number of leisure day visits to woodlands by adults from home' F4P: 'Proportion of population who visited woodland in previous 12 months'
	Level of formal recreation	Number of organised forest based recreation activities, and number of participants	EUGAP (FR) C6: 'Public participation: number of visitors on organised visits in forest (public, schools)'
	Social interaction	Number of groups visiting forests	GBDVS: 'Party composition' categories: 'alone', 'two adults', 'three or more adults', 'adults and children', and 'organised party'
	Value of recreation and tourism	Non-market value of visits to forests	SFS: to be developed ['By 2008 we will have developed a cost-effective, measurable indicator that recognises forestry's direct contribution to the tourism sector' F4P: 'Non-market value of visits to forests'
	Quality of visit experience	Percent of adult population satisfied with forest recreation provision	EUGAP (FR) C6: 'number and satisfaction of visitors' (proposed) SFS 5: '% satisfaction with woodland recreation provision (through Public Opinion Survey) WFW 5.1B: 'The quality of visitor experience' [to be developed]

6. Education and learning	Expenditure on education and learning	Level of expenditure on education	MP 6.3.b: 'Level of expenditure on research and development, and education'
		Expenditure on public awareness	EUGAP (DE) C6: 'Expenditures of forest owners for public awareness' (proposed)
	Extension and outreach	Proportion of time spent on forestry extension and outreach	EUGAP (SW) C6: 'Proportion of extension service days as % of all working days' (proposed) MP 6.3.c: 'Extension and use of new and improved technologies'
	Education facilities and institutions	Number of education centres/institutes/settings using woodlands for learning	EUGAP (SW) C6: No of school forests in the project 'Forestry in School' (proposed) WFW 1.2B: No and extent of Forest Education Initiative clusters' WFW 1.2C: 'No of Forest schools' WFW 1.2D: 'No of educational settings using woodlands for learning' WFW 1.2E: 'No of further and higher education institutions training learning professionals in the use of woodlands for learning' SFS 4: 'No of Schools involved in woodland-based learning activities' SFS 4: 'No of schools providing vocational courses that include forestry-related skills'
	Beneficiaries of education and learning	Number of participants in education and learning activities in woodlands	CIFOR I.6.5.5: 'Results derived from monitoring and research… are incorporated into the implementation and revision of the management plan' [ie a measure of benefits/outputs of research] EUGAP (FR) C6: 'Number of training days for forest owners, workers, specialists' (proposed) SFS 4: 'percentage of adults who attended an organised learning activity or event linked with Scottish woodlands in the previous 12 months' WFW 1.2A: 'Proportion of households with a member who had attended a woodland learning activity, eg school trip, guided walk' F4P: 'Numbers of population involved in F4P organised learning activities'
	Quality of learning experience	Percentage of participants who were satisfied with education and learning activities in woodlands	
	Awareness of forests and forestry	Percentage of population who believe that forest area in Europe is decreasing or increasing	UKISF E3: 'Public awareness' a) people who had heard or read about British forests, woods and trees in the media in the last 12 months' UKISF E3: 'Public awareness' b) public perception of the change in area of conifer and broadleaved woodland in Britain over the last 20 years' SFS 4: 'Percentage of adults who have heard or read about Scottish woodlands n the previous 12 months' F4P: 'Percentage of population that understand forest land cover change' CIFOR I.3.3.3: 'People recognise the need to balance number of people with natural resource use'

7. Health and well-being	Physical activity	Number of hours spent on physical activity in forests	GBDVS: 'Average time spent at destination' and 'Main activity' SFS 5: [Health indicators to be developed] WFW: 'Perceived benefits of local woodlands to local community'
		Percentage of population involved in organised forest based health activities	F4P: 'Numbers involved in organised forest based health activities'
		Number of organised forest based health activities	
	Mental well-being	Percentage of population who visit forests to reduce stress	F4P: 'Percentage of population who think woods are places to reduce stress and anxiety'
	Quality of health related experience	Satisfaction with forests as a place to do exercise and reduce stress	
	Value of health benefits	Economic savings to government	F4P: 'Economic savings to National Health Service' and 'Economic value of avoided mortality and morbidity'
8. Landscape and aesthetic	Expenditure on enhancing landscape with forests and trees	Level of expenditure on forests and trees to enhance landscape	
	Contribution of forests and trees to landscape	Percentage of population who benefit from seeing forests from home, work or while travelling	F4P: 'Value of forest landscapes'
		Changes in property prices due to changes in tree cover	
		Changes in visitor numbers due to changes in tree cover	
		Perceived changes in landscape value due to changes in tree cover	

9. Culture and heritage	Expenditure on cultural resources	Expenditure to protect or enhance cultural benefits of forests	EUGAP (DE) C6: 'Expenditure of the forest owners for cultural values' (proposed) WFW 4.2A: 'Area of woodland in designed and historic landscapes under a long-term management plan'
	Cultural and historical resources	Number of forest based cultural sites and features	MCPFE 6.11: 'Cultural and spiritual values: number of sites within forest and other wooded land designated as having cultural or spiritual values' MP 6.4.a: 'Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values' EUGAP (DK) C6: 'Area managed by old forest management practices' (e.g. coppice, selective cutting and grazing) (proposed) EUGAP (FR) C6: 'Cultural sites, including remarkable trees; number of cultural information signs in forest; area covered by landscape analyses; traditional uses of wood (annual volumes, value)' EUGAP (SW) C6: 'Number of cultural sites, and cultural landscapes, where the preservation and accessibility of the cultural values has been significantly improved minus those where these features have considerably deteriorated as a % of total number of sites' (proposed) [NB measures changes to site quality] EUGAP (DE) C6:'Natural and cultural monuments' (proposed) F4P: 'Number of forest based cultural events, activities and sites' UKISF E5: 'Number of Scheduled Ancient Monuments (SAMs)' UKISF E5: 'Other cultural and heritage sites in woodland (including woodland itself)' (proposed)
	Beneficiaries of cultural resources	Numbers of visitors to forest based cultural sites and features	F4P: 'Number of people visiting/attending forest-based cultural events, activities and sites'
		Number of forest based cultural events	F4P: 'Number of forest based cultural events, activities and sites'
		Numbers of participants in forest based cultural events	F4P: 'Number of people visiting/attending forest-based cultural events, activities and sites'
	Cultural associations with forests	Meanings associated with forests	
		Spiritual or emotional attachment to forests	CIFOR I.3.3.6: 'People maintain spiritual or emotional links to the land'
		Proportion of public who are skilled in particular forest based practices, activities or knowledge	

		Number of cultural events or products which derive inspiration from forests	

KEY

CCFM	Canadian Council of Forest Ministers, Criteria and Indicators 2003
CIFOR	CIFOR C&I Generic Template
EUGAP	Gap-Analysis (Sollander, E. 2001) Country contributions from: DK Denmark, FI Finland, FR France, DE Germany, SW Sweden
F4P	Evaluation of the Contribution of Forestry for People in Scotland
MCPFE	Ministerial conference for the protection of forests in Europe
MP	Montreal Process 1999
SFS	Scottish Forestry Strategy
UKISF	UK Indicators of Sustainable Forestry
USCIP	Community Indicator Project, Roundtable on Sustainable Forests, USA
WCI	EFORWOOD Whole Chain Indicators (draft set 4)
WFW	Woodlands for Wales

APPENDIX 3. EFORWOOD 'module-specific indicators' for Social and Cultural Values associated with European Forests: a) Proposed

Criterion or sub criterion	Specific indicator of M2	Full text	Notes and related indicators
Employment	Employment	Number of persons employed classified by gender, age class and education	EFORWOOD WCI (set 4) 10
	Wages and salaries	Wages and salaries (gross earnings) classified by gender and type of employment	EFORWOOD WCI (set 4) 11
	Occupational safety and health	Frequency of occupational accidents and occupational diseases	EFORWOOD WCI (set 4) 12
	Education and training	Education time and training expenditure per employee as % of turnover classified by gender	EFORWOOD WCI (set 4) 13
Governance	Public participation	Percentage of the population involved in, or consulted about, forestry plans	EFORWOOD WCI (set 4) 27 [undeveloped] Governance and capacity building [See: CIFOR I4, CIFOR I6, CCFM 6.1.1, CCFM 6.4.1]
Recreation	Recreational use of forests	a) Number of forest visits per year OR	EFORWOOD WCI (set 4) 31 [undeveloped] [See also: MP 6.2.c: Number of visitor days attributed to recreation and tourism, in relation to population and forest area]
		b) Area of forest where public has a right of access for recreational purposes, and indication of intensity of use	MCPFE 6.10: Accessibility for recreation
Culture	Cultural sites and features	Number of sites within forest and other wooded land designated as having cultural or spiritual values [and number of visits]	MCPFE 6.11: Cultural and spiritual values [See also: MP 6.4.a: Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values, and WFW 4.2A: Area of woodland in designed and historic landscapes under a long-term management plan]

B) Under consideration

Criterion or sub criterion	Specific indicator of M2	Full text	Comments
Employment	Quality of employment	[Undeveloped qualitative indicator]	EFORWOOD WCI (set 4) 14 [wp1.1 proposed this becomes a qualitative indicator]
NTFPs	NTFP production and revenue	Value and quantity of marketed non-wood goods from forest, by type of product	MCPFE 3.3: Non-wood goods EFORWOOD WCI (set 4) 8: Total production: production of products in total EFORWOOD WCI (set 4) 9: Revenue: gross and net revenue in total (moved to 'under consideration') [See also: MP 6.1.b, MP 6.1.d, MP6.1.f, MP 2.e, CCFM 5.1.4, CCFM 5.1.5]
Governance	Consumer attitudes	[Undeveloped qualitative indicator]	EFORWOOD WCI (set 4) 32 May include: public attitudes towards the relative importance of economic, social and environmental benefits of forests and trees
Community	Community participation	Numbers of community groups actively managing forests and/or number of participants and/or hectares managed	[See also: CCFM 6.1.2: 'Area of forest land owned by Aboriginal peoples' SFS 4: 'Number of community-group partnerships involved in owning or managing woodland' SFS 4: 'Number and area of land parcels sold or leased under the National Forest Land Scheme']
Recreation and tourism	Recreational use of forests [continued]	Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forest land	MP 6.2.a
		Value of marketed services in forest and other wooded land	MCPFE 3.4 [See also: EFORWOOD WCI (set 4) 8 and 9]
		Number and type of facilities available for general recreation and tourism, in relation to population and forest area	MP 6.2.b: [See also: MP6.3a: Value of investment, including… recreation and tourism]
Education and learning	Forest use for learning	Number of education establishments and/or settings using forests for learning, and number of participants	WFW 1.2D: 'No of educational settings using woodlands for learning' [see also: SFS 4: 'No of Schools involved in woodland-based learning activities']
Health and well-being	Physical activity	Number of days spent on physical activity in forests	SFS 5: [Health indicators to be developed]

Landscape	Landscape attractiveness	[Undeveloped qualitative indicator]	May include: value of forest landscapes; percentage of population who benefit from seeing forests from home, work or while travelling
Culture	Cultural associations	[Undeveloped qualitative indicator]	May include: meanings associated with forests; spiritual or emotional attachment to forests; proportion of public who are skilled in particular forest based practices, activities or knowledge; number of cultural events or products which derive inspiration from forests

Notes on Appendix 3

See Appendix 2 for acronyms.

Employment
The four employment indicators are the same as the WCI (set 4) indicators.

Harvesting (NTFPs)
It is not clear whether harvesting of NTFPs is a social or an economic criterion. The DoW mentions them in WP2.3. Similarly 'value of marketed services' (MCPFE 3.4) is currently under 'economic' in the draft M2 specific indicator table, but could also belong under 'social' as a measure of recreation (and is therefore included here as one of the indicators under consideration).

Governance
EFORWOOD WCI 27 is still under consideration for the WCIs and has not been developed yet. Meanwhile, an indicator is proposed. Data may not be available, or not in a consistent form.

Recreation
EFORWOOD WCI 31 is still under consideration for the WCIs and has not been developed yet. The best indicator for recreation would probably be 'number of forest visits per year' if data is available. MCPFE 6.10 would probably be the next best, if it included an 'indication of intensity of use', as stated in the full text. Otherwise it would not be a good measure of social benefits, and would also not be particularly sensitive to changes in forest management.

Culture
The cultural indicator proposed is MCPFE 6.11. However it is possibly only worth using if it includes 'number of visits' or some other 'indication of intensity of use' (analogous to 6.10). Examples of cultural sites and features (as defined by MCPFE and others) are scheduled ancient monuments, sites of historical events, sites of ceremonies or customs, sites relating to legend, literature and art events, individual trees (giant, ancient or unusual), arboretum, valuable landscape sites or designated cultural landscapes, World Heritage sites, modern sculptures, etc.