

ECOSYSTEM SERVICES
THE ANSWER TO COMMUNICATING THE BENEFITS OF FORESTRY?
Institute of Chartered Foresters South East Region AGM

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19th November 2009

Meeting notes

Introduction to Ecosystem Services.

Keith Kirby, Natural England.

Keith explored 'what have woods ever done for us?' He explained that as well as timber production woodlands provide a wide range of (goods and) services. The evolution of the concept of ecosystem services goes back to the late 1960s and the idea of non-market benefits – i.e. benefits that are not captured in conventional monetary markets. Frequently these benefits are delivered to those other than the owner of the property delivering the benefit; e.g. tourism businesses in the local community. There is a tension, therefore, between private goods and public benefit.

The Global Millennium Ecosystem Assessment developed a standard typology of benefits. As a response to this, the UK decided there was a need to understand what ecosystem services are present/possible in the UK and so DEFRA commissioned a national ecosystem assessment. The purpose of the National Ecosystem Assessment is to value services that are currently 'free'; it is expected that where valuable services are highlighted this will afford them better protection. In the assessment report there will be a chapter on Forestry which will explore what services UK woodlands deliver, trends in their provision and trade-offs. The lead author for the chapter is Dr Chris Quine at Forest Research.

Keith explained the process by which ecosystem services can translate into benefits for service providers (e.g. woodland owners). Basically this involved identifying services and quantifying their delivery, identifying the beneficiaries of delivery, estimating the value of services to them, and then developing mechanisms for transferring value back to the service provider.

Finally he raised some important questions, for example how do we value services – is money always the best measure and what mechanisms might be used to translate theoretical pounds into real money for service providers?

CARBON: Payments for carbon sequestration and substitution by UK forests.

Mark Broadmeadow, Forestry Commission, England.

Mark started by outlining the policy context for payments for carbon sequestration and substitution, describing commitments within the Climate Change Act, Renewable Energy Strategy and UK Low Carbon Transition Plan. He explained that if government commitments to reduce greenhouse gas emissions are not met, then government will need to purchase carbon credits – which are potentially expensive. As a consequence it is very appealing if forestry can offer relatively cheap methods of reducing the amount of greenhouse gases released into the atmosphere. The UK Low Carbon Transition Plan recognises the current and potential role of forestry in mitigating climate change and the cost effectiveness in doing so. It supports a drive for more woodland creation. It also recognises there are many co-benefits of woodland creation. However, up front costs are high and abatement is delivered over the longer term. This may, however, be appealing as forestry will be delivering carbon savings at just a time when the cost of carbon credits is high (the cost of carbon credits is predicted to rise over time).

Mark explained that carbon off-set schemes are not currently possible in the UK (as double counting would result), but instead explained how organisations could contribute and benefit from projects that are expected to help the UK reduce carbon emissions. The Code of Good Practice for Forest Carbon Management Projects has recently been produced by the Forestry

Commission to guide such initiatives. RDPE was cited as an example of how woodland owners could access money for woodland creation and harvesting equipment. The need to reduce GHG emissions within the agricultural sector, alongside other environmental objectives, may also provide funding for woodland creation, as may opportunities through local authority controlled planning and development. Moving outside woodland creation, it was pointed out that the renewable energy agenda, particularly the forthcoming Renewable Heat Incentive, is likely to provide a boost to forestry sector, in large part due to the cost-effectiveness of biomass energy compared to many other abatement measures.

SOCIAL: Payments for health and wellbeing.

Liz O'Brien, Forest Research

Liz explained that the concept of well-being as understood by DEFRA and other government departments is 'a positive physical, social and mental state...that individuals have a sense of purpose, that they feel able to achieve important personal goals and participate in society'. Whilst the role of a healthy and attractive environment in promoting well-being (alongside, for example, supportive personal relationships and strong and inclusive communities) is recognised amongst policy makers, the significant contribution of the natural environment in delivering exactly this kind of living environment is often not considered. Awareness is, however, slowly rising and the new Department of Health Strategy – 'Be Active, Be Healthy' – does highlight the importance of green spaces and physical activity in a natural environment as a contributor to well-being.

Woodland owners can provide a range of cultural services that lead to potential well-being, although these vary depending on their objectives and motivations. A number of ways in which these services can be valued was outlined:

- *grants* to deliver key services such as Woodland Improvement Grants – WIGs aimed at creating, enhancing and sustaining public benefits. Specific relevant WIGs are challenge funds such as the 'Woodland and Health' WIG in the West Midlands and the 'Forest School' WIG in East of England. Additionally there is the 'Access to Nature Fund' managed by Natural England, the 'Ecominds' grant run by MIND and LEADER grant funding for forestry, rural heritage and tourism projects in South East England.
- *contracts* for delivering services such as those developed at Hill Holt Wood in Lincolnshire, a community woodland and social enterprise
- *charging for services* provided such as the Sculpture Park in Churt, Surrey, CASS Sculpture Foundation, Goodwood, Sussex and mountain bike trials at Coed Llandegla, Wales.

Partnership work to provide support for new opportunities for funding and new ways of doing things was seen to be important. An example is working with community groups and the third sector. It is important that in doing so, woodland owners work to add to the body of evidence of how services and benefits contribute to key government policies.

Finally, Liz added a word of caution about monetary valuation of forestry, saying there are limits to what can be meaningfully valued in economic terms such as cultural and spiritual values, and also explained the need to consider ethical and justice issues about what is of value and to whom, as well as how benefits are distributed.

ENVIRONMENT: Payments for Biodiversity.

Nadia Barsoum, Forest Research.

Nadia highlighted different woodland biodiversity 'goods' and their varying quality and values e.g. timber (softwood and hardwood) and non-timber goods (such as medicines and cosmetics, herbs, mushrooms, wildfowl). She also highlighted woodland biodiversity 'services' such as the provision of habitats for wildlife, decomposition and nutrient cycling services, the pollination services of bats, bees and other animals, removal of atmospheric pollutants by trees, genetic biodiversity and its importance in the viability of populations, including resistance to disease, . This was followed by a discussion about who owns and who is responsible for these goods and services, particularly through the case of mushroom

gathering for commercial purposes in the New Forest. Again the question of whether it was possible to put a monetary value on certain services, in this instance biodiversity services, was raised. Nadia listed a number of criteria that are typically used when assessing the nature conservation (or biodiversity) value of a woodland. These include, size, species diversity, naturalness, rarity, fragility, typicalness, long recorded history, contiguity with other reserves, potential value and intrinsic appeal.

A case study from Kent (Denge Woods) was used to illustrate how a number of flagship species of conservation interest (i.e the Pearl bordered fritillary and Duke of Burgundy butterflies) were successfully used to focus conservation and funding initiatives to benefit forest biodiversity. Not only were flagship species a very effective means of raising the profile of Denge Woods as a forest of particular interest from the biodiversity conservation point of view, but these flagship species also created a clear incentive for managing and integrating nearby woodlands for similar purposes, thereby ultimately enhancing the size and scale of the resource.

It was concluded that in order to maximise payments for biodiversity there was a need to raise awareness among owners of woodland goods and services within their local area and to also engender an awareness and involvement of the public in related decision-making about these goods and services. Forums where private and public woodland owners could meet the public could be a useful means of doing this. The usefulness of using flagship species to engage support and the importance of start-up grant aid to provide leverage for further financial support were also emphasised. WIGs for the Biodiversity Action Plan, red squirrels and SSSIs, as well as the Woodland Creation Grant, the Woodland Regeneration Grant and the Woodland Management Grant were mentioned as possible sources of funding to maintain and develop biodiversity goods and services.

WATER: Payment for Flood prevention and Water Quality.

Tom Nisbet, Forest Research.

Tom outlined flood prevention and water quality as being the key ecosystem services woodlands provide in relation to water. He cited the case of the River Cary in Somerset where the establishment of 130 ha of floodplain woodland had raised flood storage by 71% and delayed the flood peak by 140 minutes. He also described how woodland planting can be very effective at reducing nitrate levels in ground water and explained how shade is expected to become increasingly important for reducing thermal stress to freshwater life. In the New Forest, for example, woodland prevented summer temperatures in stream water exceeding critical limits for fish. However, a number of trade-offs of using woodland to tackle water management issues were highlighted. These included reduced net rainfall due to high interception loss, increased transpiration loss and reduced groundwater recharge with short rotation coppice crops such as willow and poplar.

A number of case studies of payments for water-related ecosystem services were provided, for example the New York City Catskill Watershed Management Programme. Here rather than face the cost of constructing and maintaining new water treatment facilities a local public payment scheme was administered by a non-profit organisation. The scheme involved a mixture of land acquisition and either compensation or property transfer, and the development of new markets for non-timber forest products and timber product certification. The scheme was initiated with government money and is now funded by tax included in New York water users' bills. Common features of the schemes cited were that; woodland planting was usually the favoured land use (e.g. in terms of cost effectiveness), cooperation between all the main stakeholders was critical to their success; they raised environmental awareness amongst the public, they delivered multiple benefits and major improvements in water quality.

To what extent are the water related services of woodlands being realised in the UK? Tom concluded that in the UK country forestry strategies reflect the potential of woodlands to deliver Water Framework Directive objectives, and the Forestry Commission England Woodland Creation Grant increasingly reflects water benefits in regional scoring systems. Locational premiums are being developed to raise the value of the woodland creation grant to encourage woodland planting where water benefits are potentially greatest but these are

limited to a one-off payment. Indeed, despite increasing policy support for woodland expansion for water benefits, woodland planting remains limited by insufficient financial incentives and wider land use constraints.

Discussion:

In the discussion we explored:

The importance of scale when considering benefits of forest ecosystem services. The importance of taking into account the global benefits of forest ecosystem services is necessary when considering the UK uses/benefits of these services; e.g. the tourism benefits that UK woodlands provide in encouraging people to take UK-based holidays rather than travel overseas and the increased utilisation of UK grown timber reducing the need to import timber. It was pointed out that we possibly do not know enough about people's travel behaviour to know if overseas visits were being substituted by woodland related visits in the UK. Also, that great care needed to be taken to ensure that actions regarded as positive in the UK did not lead to negative effects overseas e.g. displaced agricultural production in the UK leading to deforestation in the tropics.

Whether woodlands used in river basin management would cause woodland debris to accumulate and block culverts and bridges etc. It was explained that care would be taken to avoid sites where there were culverts and other passages prone to blockage. Also the woodland could be designed in such a way to trap debris and prevent it from moving downstream.

The difficulty of valuing and comparing ecosystem services provided under different silvicultural systems. It is hard to combine all elements of ecosystem services in a meaningful way. That is, it is not meaningful to translate all benefits into monetary values – for example some of the social and cultural values of woodlands. Also it was discussed that it was not possible to say that one category of silvicultural practice (i.e. continuous cover forestry) was better than another for delivery of ecosystem services as each has a different set of benefits and dis-benefits e.g. for biodiversity different species need/prefer different habitat conditions.

The difficulty of completing a valuation of biodiversity services under changing environmental conditions. We don't know exactly how the climate will change, or how other significant environmental variables will evolve and, therefore, what species will be favoured over others.

Is there a danger that certain ecosystem services will always be less valued in monetary terms, than others and as such that they are less likely to be realised/maintained than those that are given a higher monetary value, for example is there a danger that the carbon agenda could be negative for other forest ecosystem services such as biodiversity? There is the need for regulation (for example, the Forest Carbon Code) to prevent this happening. It was also pointed out that the failure to halt declines in biodiversity by 2010 under the Convention on Biological Diversity has revealed an overall failure of existing biodiversity protection measures. The valuation and protection of forest ecosystems in terms of 'services' rendered (including biodiversity services) is seen in fact by many conservationists as a new mechanism for supporting their agenda.

A key challenge is the integration of multiple ecosystem services. It was suggested that the Water Framework Directive did not look beyond the water sector for tools available to help deliver its objectives, e.g. it did not look at how forestry sector grants could contribute. It was explained that Forestry Commission England and DEFRA are discussing a spatial plan for woodland creation (e.g. creation of native woodlands for biodiversity benefits as well as carbon sequestration benefits) so integration is starting to happen. Currently grant aid is directed at one or two rather than a whole suite of forest ecosystem services. Encouraging the valuation and protection of multiple services through grant aid is needed.

The way forward to help realise the potential of ecosystem services and the role of woodland owners. The Millennium Ecosystem Assessment was a starting point particularly in highlighting the many varying ecosystem services that woodlands provide. The concept provides for a more accessible and holistic focus for woodland management for multiple purposes. Woodland owners should try to recognise which ecosystem services their woods are providing and be explicit about these. There are many funding streams available which they could potentially tap into to promote management for ecosystem services, e.g. using woodlands to promote public health and well-being, biodiversity, carbon sequestration, flood relief, improving air and water quality.

The role of the natural environment in delivery of these and multiple other benefits is not, however, very widely recognised, therefore woodland owners need to use their woodlands and proposals for funding to raise the profile and understanding of its role. They should try to make sure the evidence they provide and generate through their funded activities is as strong as possible, especially when seeking grant aid. This will help raise awareness and understanding of the role of woodlands in delivering ecosystem services which can be utilised to create a stronger policy and delivery framework for woodland-based ecosystem services.

The forest research community needs to also work towards better understanding the societal and environmental benefits of forest ecosystems. In addition, there is a need for this community to work more closely with forest managers, grant-awarding authorities and policy makers to:

- raise awareness and understanding amongst forest managers of the diversity of possible valued forest ecosystem services
- b) improve the valuation of forest ecosystem services including the risk (and costs) of a loss of these services where there are changes to forestry practice, or there is a landuse conversion
- c) ensure that there is particular recognition (e.g. through grant aid) of the enhancement by forest managers of multiple forest ecosystem services.