Ecosystem Services in European State Forests

Case Studies

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This document supports the Eustafor Booklet “Ecosystem Services in European Forests” published June 2011.

In producing the booklet, the working group also collated a number of cases illustrating how Ecosystem Services are being delivered and funded in different member states. Some of these cases form part of the booklet itself but there were too many to include all of them there so they are produced here to enable this valuable information to be shared.

There are many interesting ways in which ecosystem services are being delivered across the forest holdings of Eustafor Members and each case, whether it has been a trial, or a real success, or perhaps not so successful, offers useful insights into how State Forests might develop and use this concept to further their objectives and create new funding.

We hope this will be useful reading. Each case has contact details if you wish to find out more and please also read the main booklet if you have not yet had the opportunity to do so. It can be downloaded from www.eustafor.eu/publications.

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Country	**Austria**
Case Name	**Approaching Protection Forests Management**
Services Delivered	**Protective services**
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Österreichische Bundesforste AG (ÖBf AG) manages 146,400 hectares of protective forest (i.e. 28 % of the forest holding) to secure the protective function of those forests in the long term. This service meets a fundamental principle of the company, which is to protect and improve the natural resources and biodiversity entrusted to ÖBf AG.

When considering the management of these protective forests, it is important to consider the questions of how to deal with over-aged timber stands and the damage caused by wildlife. Naturally, the forest ecosystem is generally capable of handling problems like these itself until it becomes too old and moves into the terminal phase. However, at this stage, the forest's capacity to act as "property protection forest" and meet society's demands cannot be maintained permanently.

The definition of a forest's "protective effects" according to forest law includes both the protection of the forest site or location (location protection forest), and the protection of property or infrastructure (property protection forest) against natural dangers (e.g. erosion, avalanches, landslides, rock fall).

The legal definition of this is important as it also establishes that the ecosystem services provided in the Austrian alpine area are a legal matter. This then leads to the question of the value (social values) of the forest management services which must be provided in the interests of public protection. These services have to be paid for in order to secure the protection and, therefore, represent a significant value of the organization (business value). The underlying hypothesis is that if the forest management service is not provided by the organisation, the expected and necessary protective services will not be provided in this manner, which further means that an adequate guarantee of this ecosystem service will be at risk.

The protection forest strategy of the Österreichische Bundesforste AG
The objective of a sustainable, long-term protective capacity is approached through a strategy, from which further concrete measures can be derived. In the following case study, the protection forest strategy of the ÖBf AG is set out:

The strategic aim of the ÖBf protection forest cultivation is to sustain the protective functions of forests, whose structural improvement poses the major challenge (e.g. obsolescent forest land in many areas, expensive structural maintenance measures, damage caused by game).
Of particular importance is the regeneration of the protective forest and impediments to this, like damage caused by wildlife or grazing in forest pastures should be given priority treatment. Where possible, the regeneration of protection forest should be effected naturally by species suited to the site. Region-economical measures such as this require special attention in everyday management and they are reflected in almost 100 annual protection forest projects at present, where stakeholder interests are also actively involved and co-ordinated (hunting, tourism, environmental protection and so on).

The following components form the basis for establishing a protection forest strategy:
- in-house records about protective forests
- initiating of measures for the securing of the protective function (region-economical projects)
- implementation of measures,
- coordination with the authorities' forestry office or ministerial unit for the obstruction of torrents and avalanches.

The protection forest strategy refers to the four categories of protective forests included in the forest law.

1. Location protection forest in return (economically viable)
2. Property protection forest in return (" ")
3. Location protection forest out of return (not economically viable)
4. Property protection forest out of return (" " ")

This differentiation allows for a range of concrete, strategic components for the respective protective forest categories, which are shown below.

Location protection forest in return
These cover about 57,000 hectares. Location protection forest is managed under normal woodland cultivation but a special focus is placed on the maintenance of the protective function, especially over the method of regeneration. The natural regeneration of protection forest is of much greater importance than for normal forests and long regeneration periods are accepted to enable it to happen. Special attention is paid to keep the regeneration in line with the legal assignment of the location through the ÖBf's careful mapping. The operational measures are managed via the annual objectives.

Property protection forest in return
These cover about 5,700 hectares. The aim is basically to ban any cutting or forest management in such forests (known as 'ban forests'). Any required measures and demands for compensation are controlled via Orders and the ÖBf AG is obliged to enforce them.

In property protection forests without banning, treatments are planned and coordinated with the relevant authority and the beneficiaries. Where a special project plan is required, the ÖBf AG creates the project and the costs are paid by public means or by the beneficiaries. Measures are fixed only after agreement by the authority and the beneficiaries. If a compensation claim is made where forestry activity is prevented, the beneficiaries pay the equivalent of the achievable profit from a wood harvest.

Location protection forest out of return
These cover about 68,000 hectares. The aim is to preserve a permanently forested area that does not require measures to provide an ongoing protective function. An estimated 18,000 hectares are in this condition at the moment

Any necessary measures are carried out in line with the "Austrian protection forest strategy". The work is enforced in the form of region-economical projects, managed by the ÖBf AG as a service that must be paid for. Region-economical projects already in progress are continued, or intensified as required.

Property protection forest out of return
These cover about 11,000 hectares. As with forests in return, the aim is to create ban forests. This is considered necessary especially on the estimated 8,000 hectares where the protective function can currently only be guaranteed through additional measures.

Agreement on the financing of the measures is a pre-requisite and if banning seems either impossible or too time-consuming, treatment via region-economical projects is enforced and the project management is done by the ÖBf AG as a service that must be paid for. Region-economical projects in progress are continued, or intensified as required.

From these strategic aims, further concrete structural measures will be derived, which are to be moved up in terms of the value demonstration of ecosystem services:

Structural measures
In some property protection forests, location protection might be necessary in parts and economic forest conditions may also be relevant. A number of factors must be considered in

each case. In protection forest projects, the structural measures are determined in the course of the region-economical project planning.

Because of the various locations and functions which have to be fulfilled by a protective forest, the measures can vary greatly. A protective forest against rock fall requires different tree species and treatments than a protective forest against avalanches, erosion or landslides. Basically, the protective function of a forest is best secured for the long term, if all stages of development of a forest, from regeneration to decay, occur in small, well distributed areas. Due to the often rather difficult extraction services and insufficient fragmentation of sites, the ideal condition is not always achieved.

Afforestation
The natural regeneration of location protection forests is generally significantly more problematic than for economic forests and long regeneration periods have to be expected. This regeneration is however, possible almost everywhere where there are no hindering influences (e.g. damage caused by wildlife or cattle and livestock). The reduction or elimination of such influences therefore, is the basis for the success of regeneration measures in protective forests. Reforestation by expansion of favorable small-scale forest stands will be needed especially in very old stands or where seeding is poor. Small rises in the round or uphill of stumps and fallen trees are, for example, beneficial places for planting as they will develop certain eco-system structures that are advantageous for protective forests. The regeneration period might also be significantly shortened by thoughtful planting.

Thicket management
Thicket management is necessary if the required protective function would not otherwise be achieved, such as when inappropriate species are dominant or the stocking is extremely dense or is lacking part of the eco-system. The thicket management has to meet the objectives of the desired protective function.

Thinning
Thinning is hardly necessary in a location protection forest, but it is required in denser property protection forests. Early intervention to avoid destabilising the forest is particularly important and the selection of the trees to be retained is influenced by the relevant protection objectives rather than timber production, however in some cases, structural thinning is also done. Early thinnings aim to loosen the stand irregularly to create an opportunity for early natural regeneration as well as forming small groups of trees with stable edges.

Final Harvesting
The final harvesting aims to leave a permanent stocking to reduce regeneration periods and avoid smooth slope planes. In some cases, trees are cross-cut and are left in situ to reduce the downhill pressure of snow and allow for regeneration on the decaying trunk. Sometimes the loose canopy of mature trees forests is not harvested when the existing regeneration would be put at risk, and if regeneration does not occur in light stands, small clear cuts will be done. In difficult harvesting areas (long distance cable car), the size of the area cut may be increased a little to reduce net costs, although the protective function must not be endangered by doing this. Location, wind direction, aspect, snow depths etc. are all considered and the size of clear cuts is varied. In a protection forest against avalanches or rock fall, long interventions in the slope line are avoided, for example.

A conscious and sensitive cultivation of protective forests is the central ecosystem services in Europe's alpine areas, but besides the forestry operations, the sustainable management of protective forests will only be guaranteed if adequate financing is secured. This makes it necessary for an increased awareness and discussion of these protective ecosystems services (also in terms of a value-oriented approach) as this particular aspect was not even known of in several specialist forums about ecosystem services.

The conscious consideration of the ecosystem services secured by sustainable woodland management is therefore of significant importance in order to record the value of this service as part of the overall value of a national forestry organisation, rather than the mere economical assessment of such a company (e.g. discounted cash flow method).

It is this total value that the national forestry organisation produces, through its responsibility as the country's natural resource manager (and usually the largest) for the society in general and the beneficiaries in particular. A more conscious consideration and valuating of these non-self-securing services seems more than necessary in the course of the discussion of ecosystem services.

Country	**Czech Republic**	
Case Name	**Conservation of rare and endangered forest species**	
Services Delivered	**Biodiversity**	
Contact	**Josef Svoboda**	**svoboda@lesycr.cz**

Overview of Case
The conservation and care of rare and endangered species of forest trees and shrubs has been implemented since 2000 and is one of the provisions in the Sustainable Forest Management (SFM) Programme of the Czech State Forest Enterprise (LČR s.p.). This programme continues to support increasing populations of rare and endangered tree species, such as yew, wild service, bird cherry etc. and indirectly supports the wildlife and other organisms that depend on these tree species.

The programme involves a range of measures:
- Recording the location of selected species, their protection and natural regeneration.
- Securing generative reproductive materials and cultivating of "wild" site specific populations.
- Defining a list of recommended shrubs to be introduced into the forest composition.
- Planting these on suitable sites (e.g. at the margins of stands).
- Carefully implementing a programme of conservation and reproduction of individual species.
- Preserving old, dead and rotting trees at suitable locations in the stands as important niches for endangered and protected organisms

How was the co-operation of the business and the ecosystem services supplier initiated?
LČR s.p. worked with the Czech Union for Nature Conservation (ČSOP) to undertake the inventory of habitats for endangered species of forest trees and shrubs.

What are the objectives of the parties that are being served by the co-operation?
The ČSOP is a non-governmental organisation and their co-operation with LČR s.p. allowed both parties to meet their objectives. A contract was made to guide the co-operation.

What ecosystem services are being paid for and how have they been valued?
The main service is a supporting service for biodiversity through the protection of rare species. LČR s.p. values the programme on an actual cost basis. Forest management is not constrained by this conservation programme however so the costs cannot be reclaimed from the state.

What funding mechanisms have been used to make payments for the ESS?
Every year LČR s.p. voluntarily sets aside about €2.6 million for this programme to ensure it meets its public interest targets in the conservation of biodiversity.

Which factors supported success (such as political, legal, business or cultural factors)?
The EU Habitats Directive (Natura 2000) supports the programme and the forestry policy of LČR s.p allows investment of their own resources in this programme to meet their obligations. The Government of the Czech Republic considers state forests to be important public assets with important economic, ecological and social dimensions, and they have stated that forest management must aim towards sustainable development of the productive and non-productive functions of the forest.

Conclusion
The main point here is that because of scale and ownership of the land, state forests will always have a major role to play in national and international conservation initiatives, and that it can be done as part of forest management on a cost basis only, so ensuring value for money.

Country	**Czech Republic**
Case Name	**Water Management**
Services Delivered	**Fresh water, water quality, nutrient cycling, soil formation, flood regulation, aesthetic, educational, recreational.**
Contact	**Josef Svoboda** **svoboda@lesycr.cz**

Overview of Case
Lesy ČR is the state forest management organisation in the Czech Republic and it was founded under the legislation which provided for state enterprises "in order to satisfy major social, strategic, and public interests".

In this case, Lesy ČR have been engaged in managing water catchments along some 30,000 km of watershed since 1992 and have been engaged in the 'Provision of Public Interest Aims Programme 2000' since 1999

What are the objectives of the parties that are being served by the co-operation?
The programme of sustainable forest management - to create optimal relations between all forest functions and the market environment and at the same time to ensure permanent production of quality timber while respecting and developing the environmental functions of the forest

What ESS are being paid for and how have they been valued?
A) water management - management of small watersheds in the forest to retain water and
B) provision of public interests aims in the forest

The values are based on costs only

What funding mechanisms have been used to make payments for the ESS?
A) water management and provision of public Interest aims are financed from the enterprises own funds (LČR)
B) partly from state subsidies of the Czech Republic and partly from the operational programmes "Environment" and "Rural development" - EU funds

Conclusion
The remit to create optimal relations between all forest functions and the market environment is a good statement of national intent, to secure ecosystem services from state forest lands. In this case the collection and retention of freshwater, and managing the watersheds to protect and enhance quality and yield is clearly seen as a forest function. The funding of this work comes from the Lesy ČR state enterprise, which is backed by a broad legislative remit for social, strategic and public interests.

Once forest ecosystem services are recognised in this way as having "social, strategic and public interest", particularly in the provision of commodities like fresh water then the role of forests becomes very important indeed.

Country	**England**	
Case Name	**Relocation of Reptiles**	
Services Delivered	**Biodiversity**	
Contact	**Iain Skinner**	**Iain.skinner@forestry.gsi.gov.uk**

Overview of Case
The South East of England around London has been under increasing pressure for urban development and house building for many years. Environmental and land use planning regulations require that the impacts of development on nature are avoided or mitigated wherever possible. For the last ten years the South East of England Forest District has been offering Forestry Commission land to provide alternative habitat for reptiles living in areas due to be developed for housing. The relocation has been on a range of scales, from a few animals relocated into a small area to several hundred animals placed over several hectares of suitable habitat.

How was the co-operation of the business and the ecosystem services supplier initiated?
The presence of protected reptiles on land to be developed requires a solution to remove the conflict so co-operation on the solution is financially beneficial to both parties. Initial requests are made to the Forest District Officers by a land developer or their consultants.

What are the objectives of the parties that are being served by the co-operation?
A Government priority is to provide additional new private and social housing in England. This is implemented through the development planning control system and the normal commercial activity of private development companies. Where wildlife needs conflict with the development of the land, the relocation and protection of reptiles permits the development to take place.

What Ecosystem Services are being paid for and how have they been valued?
The main services are the protection of biodiversity and local ecosystems through the maintenance of areas of habitat suitable for reptiles. The services are valued on the basis of the "opportunity cost" of reduced commercial forestry plus a profit element to assist with the costs of the forest estate overall. Other services are the contribution to landscapes from the habitat management and the contribution to better quality of life for people who profit from the development and for those who benefit from the new housing provided.

What funding mechanisms have been used to make payments for the Ecosystem Services?
In this case, the developer pays for the reptiles to be caught and relocated. This is a simple business to business arrangement.

Which factors supported success (such as political, legal, business or cultural factors)?
The Forest District has the land available in the locality. The knowledge about the animals and their habitat is available. The staff and others involved are enthused to make the relocation work to protect the reptiles at the same time as supporting the need to build new houses.

What barriers to success were there and how was each removed or worked around?
Operationally – finding the appropriate habitat and getting preparation works done
Financially – ensuring commercial levels of payment are obtained.
Organisationally – fitting the requirements of this to the business practice.

Conclusion
A case that demonstrates a useful way to use state forest land as habitat and sell that service to support local development.

Country	**England**	
Case Name	**Northamptonshire Carbon Sink**	
Services Delivered	**Carbon capture, Climate Regulation, Flood Regulation, Water Quality**	
Contact	**Andy Hall**	**andy.hall@forestry.gsi.gov.uk**

Overview of Case
The North Northamptonshire Carbon Sink Forestry Programme is a proposed delivery mechanism for the Northamptonshire Green Infrastructure Network within the River Nene Regional Park. The project was to create new accessible woodlands from 0.25ha and larger to complement the major housing growth proposed in the Milton Keynes South Midlands Growth Area. The new woodlands would be created by a variety of different delivery partners (private landowners, Forestry Commission, Woodland Trust etc) using funds from the Community Infrastructure Fund. The objectives of the tree planting would be many - but essentially to mitigate against climate change through a) direct carbon sequestration and b) using woodlands to reduce river flood flows and mitigate against extreme temperatures. Tree planting under the scheme would include town centre tree planting, road and rail corridor schemes and rural schemes.

The newly created woodlands would be utilised as appropriate for public access, education and to encourage healthy lifestyles - in tandem with the existing green space network (including existing woodlands). Woodland layout and design would be optimised to reduce flood flows and maximise storm water storage; whilst urban plantings would be used to mitigate extreme summer temperatures on the urban environment.

How was the co-operation of the business and the ecosystem services supplier initiated?
The Milton Keynes South Midlands Growth Area was sub-divided into growth zones. This scheme was developed as an extension of the Northamptonshire Green Infrastructure Network by the mutual cooperation of the River Nene Regional Park, The Forestry Commission, the North Northamptonshire Development Company (NNDC) and the North Northamptonshire Joint Planning Unit (JPU).

What are the objectives of the parties that are being served by the co-operation?
The objectives of the NNDC and the JPU are essentially to oversee a step-change in urban development (housing supply, employment opportunities and infrastructure needs). To deliver co-ordinated growth, NNDC and the JPU embraced the concept of green infrastructure and were seeking to address climate change and carbon reduction issues as well.

The Regional Park's objectives are to secure a vibrant green infrastructure network that protects and enhances existing assets for wildlife, people and place, and create new assets to ensure the continued vibrancy of the county's wildlife and public open space assets.

What Ecosystem Services are being paid for and how have they been valued?
The Community Infrastructure Funding was to have been paid for new tree & woodland planting / creation to capture carbon. The other benefits derived from woodland creation / tree planting were deemed by the project to be welcome side benefits - but not the basis for the funding per se. The value of the carbon capture was derived from a working knowledge of the actual costs of tree planting and woodland establishment.

What funding mechanisms have been used to make payments for the Ecosystem Services?
The project was designed to be funded by the Community Infrastructure Fund. However the future of this funding mechanism is now in doubt.

Which factors supported success (such as political, legal, business or cultural factors)?

The widespread support from all partners to tree planting as 'a good thing' contributed to the quick building of consensus that the North Northamptonshire Carbon Sink Forestry Programme was a programme worthy of support from politicians, local authority officers, local businesses and the general public.

What barriers to success were there and how was each removed or worked around?
The project's future is in doubt due to uncertain funding and actual delivery has not started. In due course the credentials and ‘independence’ of the River Nene Regional Park and the Forestry Commission will be key to steer the project and overcome barriers.

Country	**England**
Case Name	**Waterside Community Ranger Project**
Services Delivered	**Education, recreation and tourism**
Contact	**Libby Burke** libby.burke@forestry.gsi.gov.uk

Overview of Case
The Waterside Community Ranger project is led and hosted by Forestry Commission with financial support from ExxonMobil and the New Forest National Park Authority.

The Project aims to:
1. Enable a healthy and vibrant Southampton waterside community
2. Decrease antisocial activity and behaviours by providing opportunities for individuals from the Waterside Communities to develop an increased understanding and sense of pride in the New Forest through participating in environmental related activities.
3. Provide opportunities for ExxonMobil employees and linked schools to participate in environmental activities alongside members of the Waterside Community.

The Project works alongside existing activities of other local organisations including the Hampshire Fire and Rescue Service, Hampshire Police and local charitable organisations.

How was the co-operation of the business and the ecosystem services supplier initiated?
The co-operation arose from the long term relationship between Forestry Commission as the major land manager in the area and ExxonMobil who are one of the largest employers in the area.

Initially ExxonMobil were approached to sponsorship forest activity near one of their largest sites. The relationship developed over subsequent years.

What are the objectives of the parties that are being served by the co-operation?
For the Forestry Commission the cooperation has increased our engagement with local communities and reduced antisocial activity and damage on land we manage.

For ExxonMobil the co-operation delivers their corporate social responsibility commitments and contributes to their reputation.

What Ecosystem Services are being paid for and how have they been valued?
Educational and social benefits. Involvement in nature and volunteering
No formal valuation methodology is used.

What funding mechanisms have been used to make payments for the Ecosystem Services?
Direct financial contribution to the Forestry Commission who are running the project.

Which factors supported success (such as political, legal, business or cultural factors)?
The mutual aims of business and state forests to create conditions that reduced social problems in the locality

What barriers to success were there and how was each removed or worked around?
The Forestry Commission and partners needed to take an inclusive approach in order to gain the trust, interest and respect from the community. Some parts of the communities, particularly those more likely to cause anti-social behaviour problems on the Waterside are difficult to reach and educate. Before work could begin, youth groups were contacted to facilitate regular contact between these sections of the community and authorities such as the Fire Brigade and Police. The Waterside Ranger used the youth groups and outreach programmes in the area, alongside contact with the emergency services to implement a carefully planned programme of education

and fun activities to gradually built up a positive relationship, enabling better access to the target groups of people.

Reliance on one person is a potential risk as the Waterside Community Ranger is a very specific role and success relies on good relationships built up over time. The Waterside Ranger passed on contacts and skills to other Forestry Commission Ranger staff wherever possible and the whole team has become more involved and able to help out when required.

Conclusion

Success in the delivery of socially focussed ecosystem services requires the beneficiaries to understand what is being offered and how it affects them. Investing in this communication, engagement and education can take a very long time.

Long term relationships with major employers who have a desire to show green credentials and wish to give something back to the communities that work for them are a potential source of finance and support for ecosystem service projects.

Country	**Finland**
Case Name	**Scouting facility in the Evo Hiking Area**
Services Delivered	**Aesthetic, Spiritual, Educational, Recreational**
Contact	**Jere Rauhala** Jere.Rauhala@metsa.fi

Overview of Case
Metsähallitus manages all state owned forests within the Evo Hiking Area, which is one of the largest continuously forested areas in southern Finland. It comprises the state-owned Hiking Area established in1994, nature reserves, the state owned teaching forest of HAMK University of Applied Sciences and the recreational forest of the town of Hämeenlinna.

A project began in 2009 to build a permanent scouting area to increase the awareness of forests and nature amongst young people, and to add to the number of activities already in place within the region. This includes nature trails, wilderness trekking, canoeing and rowing, ski trekking, fishing, rock climbing, dogsled riding, orienteering and hunting.

The project was managed by partnership between Metsähallitus and Finlands Scouter, and was resourced by the state and local Metsähallitus timber sales and voluntary work.

How was the co-operation of the business and the ecosystem services supplier initiated?
The idea of a permanent scouting area came originally from the Finnish prime Minister, who decided to have a permanent scouting area rather build a temporary one every summer.

What are the objectives of the parties that are being served by the co-operation?
- Better opportunities and facilities for camping
- More activities in the Evo Hiking Area and surrounding region
- Increase young people's forest knowledge and experiences
- Promote well-being of children and young people
- Users in the area will be scouters, students, hikers, associations.

What ESS are being paid for and how have they been valued?
Health and enjoyment benefits, tourism and landscape. The value is not measured but the potential scale of the value is indicated by the estimated annual number of overnight stays in the area, reaching up to 90,000.

What funding mechanisms have been used to make payments for the ESS?
Grants from National Government and Local Government, and donations from Scouting associations, businesses and timber sales, totalling € 970,000.
- Ministry of Agriculture and Forestry € 350,000
- Finlands Scouter € 350 000, supported by the Ministry of Education
- The town of Hämeenlinna
- Metsähallitus timber sales
- Stora Enso (paper, packaging and wood products company)
- Metsäliitto (forest owners co-operative)
- Voluntary work

Which factors supported success (such as political, legal, business or cultural factors)?
- Strong political initiative and will across Ministries
- Willingness for businesses and local people to support the Government initiative.
- Finding a suitable location with the Evo Hiking Area.
- Successful financing.

What barriers to success were there and how was each removed or worked around?

The initial difficulty was in agreeing the combination in financing between the partners. Decision-making also took a few years. Good communications, time and continued political will overcame these.

Conclusion

This case demonstrates the strength of political agendas to focus effort and resources on specific beneficial projects, but a key point is that the state-owned forest land was the asset that made the project possible. It highlights how national, local, commercial and voluntary interests can all find benefits from collaborative approaches but also that time and persistence may be required to succeed before a project can start on the ground.

Country	**France**
Case Name	**Wetland restoration & Royal fern (*Osmunda regalis L.*)**
Services Delivered	**Biodiversity, rare species protection,**
Contact	**Thomas Bouix** **Thomas.bouix@onf.fr**

Overview of Case
This project is part of a compensation plan related to the building of a national high speed railway (LGV Rhine-Rhone) by the French Railway Network organisation, RFF. In constructing the railway, 125 ha of wetland were destroyed and RFF bought an equivalent area of wetlands to conserve them and they have also initiated other restoration projects including this one.

What are the objectives?
A few decades ago, land in the project area was drained to allow conifer planting where natural alder stands existed before. The dryer land damaged the natural habitat and the economic forestry benefits were poor, so the aim of this project is to restore the original ecosystem and in doing so, increase local stakeholder's awareness of the need to develop natural capital for future generations.

Tree cover is necessary for the desired natural habitat, but conifers have a negative effect and some open spaces are needed to support the populations of the royal fern. ONF is organising the actions which include ecological engineering to restore a more natural hydrology and ponds, and the removal of conifers and creating some clearings. Amphibian populations are also being monitored as indicators of species and ecosystem recovery.

What funding mechanisms have been used to make payments for the ESS?
This project is mainly directly financed by RFF but also in a small part by municipalities where they own the lands. ONF, as the state forestry organisation, is in charge of the management support, including inventory, technical specifications and field work and the finance pays for the work and ONF's costs.

Which factors supported success (such as political, legal, business or cultural factors)?
There is a legal obligation on any developer to properly compensate for any negative effects their development may create. Better understanding of this compensation process has also helped local stakeholders accept the restoration changes.

What barriers to success were there and how was each removed or worked around?
The main difficulties encountered during the implementation of this project included the lack of definitive knowledge on how to evaluate the functionality and services of a particular ecosystem, and also the lack of rules to govern the degree of compensation for a given loss. In this case a 1 to 1 area ratio was used.

Conclusion
This case highlighted several things. The first is that communication with stakeholders to ensure the ecosystem services and future benefits are understood is important. Secondly, it is important to monitor indicators such as flora and fauna to check it is delivering what was intended, and the costs of this need to be included in the project costs. Finally, there is great value in being sure about the legal frameworks, and setting national implementation guidance to assess the efficiency and additionality of ecosystem services compensation schemes.

Country	**France**	
Case Name	**Experimental carbon sink in a French forest**	
Services Delivered	**Carbon sequestration**	
Contact	**Marianne Rubio**	**marianne.rubio@onf.fr**

Context

France has 15.7 million ha of forest covering 29 % of the country's land area. A further 8 million ha are found in the overseas territories, mainly in French Guyana. About two-thirds of the forest is composed of broadleaved species, predominantly oaks (36%) but also beech, chestnut, hornbeam and ash are common. The most common conifers are pines, spruces, Silver fir and Douglas fir. Total tree cover is growing in France by about 30,000 ha a year mainly due to spontaneous regeneration on abandoned agricultural land, and partly because of new planting.

There are three types of owners: the State (Ministry of Agriculture and Forestry) owns 1.5 million ha (10 % of the total forest area); towns and villages own forests covering 2.5 million ha (16 %); and private forests cover 11.7 million ha. The commercial timber harvest is less than half of the net annual increment, estimated to be 100 millions m3.

Within France, the European Emissions Trading Scheme (ETS) quota for permits covers less than 30% of greenhouse gas emissions. It exclusively concerns the industrial, energy production sector. Airlines are planned to be included by 2012.

The 2004 'Plan Climat' (Climate plan), updated in 2007, sets out the Governments actions to reach at least the Kyoto Protocol's objectives. The plan includes all mitigation measures to reduce emissions by 54 Million tonnes equivalent (Mte) CO2 per year until 2010. For forestry, the main action is to develop the use of biomass as biofuel and wood-energy, but also promote timber for construction.

The domestic project system

This is mentioned here as it is a way to decrease carbon emissions or to enhance the effect of the carbon sink.

In 2005, the Ministry of Economy and Finance and the Ministry of Ecology and Sustainable Development requested that the Caisse des Dépôts[1] evaluate the feasibility of setting up a domestic project system in France. A mechanism based on Joint Implementation (JI), as defined by article 6 of the Kyoto Protocol, was finally selected and defined in a bill published in 2007. Carbon reductions are recorded between 1st January 2008 and 31st December 2012. The mechanism states that an emission-reducing project, carried out in an industrialised country (Annex 1 of the Kyoto Protocol) with the participation of a partner from another industrialised country, may, from 2008, generate Emission Reduction Units (ERUs) which are tradable on the international market, except for the forestry sector (due to the European 'Linking Directive'). The principal sectors concerned by the domestic project system are transport, agriculture, construction, waste processing, and industrial plants which are not covered by the quota system. The eligibility criteria for the forestry sector will be determined in a future bill.

Following international and European commitments (Rio de Janeiro in 1992, Lisbon in 1998 and Vienna in 2003), the French government set up a National Forest Programme (PFN). The programme for the period of 2006-2015 includes climate change as a major issue. It proposes to enhance the contribution of the forestry and wood-based sectors to climate change mitigation and to develop wood energy and wood as environment-friendly material.

1 The Caisse des Dépôts group is a public group, a long term investor serving general interest and the economic development of the country.

In July 2007, in line with the National Forest Programme, the 'Grenelle de l'Environnement' process (formerly the 'Assises de la Forêt') set more specific objectives for the forestry and wood-based sectors. Those objectives included to:

- Increase annual harvest volumes - to reach 81 million m3 per year in 2020.
- Promote the local use of wood (renewable energy).
- identify silvicultural options which improve the carbon balance in forests
- Impose certification (e.g. FSC, PEFC) for imported wood.
- Promote wood as an environment-friendly construction material.

The Carbon Forestry Project

The 'carbon forestry project' aims to identify additional silvicultural activities that have potential to add 'carbon value' in different contexts. The project includes activities around biodiversity and the sustainable management of natural resources. The objectives are:

- Strengthening knowledge about the carbon balance of forest management.
- Identifying silvicultural options which improve the carbon balance in forests.
- Establishing 'carbon sinks' methodologies that could be used as a basis for remuneration through 'carbon values

Project description

The project was initiated in 2006 by the Association France Forêts, a group of public (Office National des Forêts) and private forestry management organisations to try to find the answer to how 'practices in forestry and wood-based sector could optimise carbon storage and result in reduced greenhouse gas emissions'. Work is still in progress (2009). ONF (Office National des Forets) selected ten pilot projects representing the most common forestry management types in France and made on-site measurements such as diameters and heights of trees. The INRA-AgroParisTech's Laboratory for the Study of Forestry and Wood Resources was asked to translate existing models on growth into stand-level carbon sequestration data (Robert et al, 2008).

One of these pilots is a reforestation project involving the use of Afforestation/Reforestation methodologies approved by the Executive Board of the Clean Development Mechanism (CDM)[2]. ONF have created an experimental plantation of 10 ha (around 15,000 trees, common oak and other broadleaved species) in the public forest of Trois Fontaines, in Marne. The plantation was financed by a private group, The Petit Forestier, involved in sustainable development. The experiment

Results

This reforestation pilot project provided information that was used to:
a.) Develop methodologies for afforestation / reforestation projects and
b.) Test carbon measurement protocols in the field, based on simulations of regular high forests of common oak (Quercus robur)

The French National Institute for Agricultural Research (INRA) demonstrated that growing naturally regenerated forests on agricultural soil or grass lands enabled carbon storage whatever the forestry management. **Depending on edaphic conditions and climate, this reforestation project could sequester around 200 tonnes of carbon per hectare after 180 years.**

[2] http://cdm.unfccc.int/methodologies/ARmethodologies/index.html

Another conclusion of this study was that the quantity of carbon stored in biomass was higher on high fertility soils and in denser tree stands, and the quantity stored in harvested wood products is relatively small in comparison. However, it was shown that two factors could positively increase the carbon sink capacity in harvested wood products. The first was to increase the harvested volume and the second was the extension of the average lifetime of harvested wood products.

The silvicultural management that increases the carbon sink potential of wood products are therefore those that produce large quantities of high quality wood, destined for the construction or secondary processing sectors. For example, in even-aged oak high forests, the management practices that best do this are:

- On low fertility soils: producing timber of a large diameter (>70cm, similar to current management practices);
- On high fertility soils: producing timber of medium diameter (approx. 50 cm).

This highlights that one possibility to use forests to sequester CO2 could be through the use of smaller diameter timber from shorter rotations.

The computer modelling was not able to account for risks due to extreme weather events like storms or droughts, nor that of climate drift, however it is a longer-term aim to include these risks in future models.

Limits

The domestic projects system for carbon credits is an initiative coordinated by the Caisse des Dépôts, which guarantees the purchase of all of the credits generated, but does not create a delivery obligation. The group set the purchase price conditions in advance, and these have been valid for the entire 2008-2012 period. The selected projects are currently finalising their accreditation applications. The forestry sector was excluded from the first round because eligibility criteria has not been decided. The process for the forestry sector is not defined either because of uncertainty around the forest carbon inventory (the deforestation rate in French Guyana could be higher than expected) and because forestry is excluded from the EU ETS. Hence it has been difficult to roll-out the carbon forestry project across France.

Country	**France**	
Case Name	**Evaluation of the protective function of forests**	
Services Delivered	**Protective services**	
Contact	**Thomas Bouix**	**thomas.bouix@onf.fr**

Context
Forests can play a significant role in **protection against natural hazards and risks** in mountain areas. There are two categories of protection – active and passive. Active protection prevents the hazardous event from occurring, for example in the 'departure zone' where avalanches and rock falls start, forests stabilise the snow layers and prevent rocks from moving thanks to the root system. Passive protection reduces the impact of the hazardous event, for instance, forests located in the transit zone of a rock fall slow, stop or divert the movement and so offer a passive protection (Renaud et al., 1994).

The sustainability of this hazard control by forests depends on forest stability. An older forest is less stable and so a forest's protective efficiency decreases over time. Foresters must therefore adapt the silviculture to maintain or increase the protective role of these forests. In France, the Guide de Sylviculture de Montagne (ONF, Cemagref,CPRF Rhône-Alpes, 2006) sets out guidelines based on a natural cycle, for mountain protection and production forests in the northern Alps. To apply the guidelines effectively within the financial constraints, it is important to map the protection forests and to define priority areas for forest silvicultural interventions.

Two Interreg Projects, called "Interreg Forêt de Protection" (IFP) started in 2008. One Franco-Italian (€2 million with an important part dedicated to research issues), and a second Franco-Swiss (€2.3 million with an important part focused on the zoning work) which are strongly linked thought international training, the same web site and economic study. There are 35 pilot sites; 3 in Switzerland, 7 in Italy, and 25 in France. Europe is funding 59% of the work

The aim of these projects is to take the protective function of forests into account in the protection strategy. The objectives are to determine intervention priorities for land owners, to improve tools giving technical and economic advice and to increase knowledge and workers' qualifications. The main actions are;
1. Mapping the protection forests.
2. Pilot projects (see below)
3. Research on forest stability (regarding climate change and forest management).

ONF have a convention with the Laboratoire d'Economie Forestière, joint research unit of the Paris Institute of Technology for Life, Food and Environmental Science (AgroParisTech). It is in charge of the economic evaluation part (Cahen. M, 2010; Dupiré S, 2011) and aims to compare investment and maintenance costs resulting from civil engineering works and the protective function of forests against snow avalanches and rock falls in mountain forests.

The Grignon pilot project
An area of 6.4 ha owned by the local authority and private owners, located in the Department Savoie of the Rhône Alpes region. The project owner is Arlysère, a group of municipalities (www.arlysere.fr) and ONF manages the project for them.

The hazard is mainly rock falls on slopes from 40° to 50°, putting at risk 10 buildings and 36 residents, as well as 240m of main road used by 4500 cars and 10 buses each day.

The silvicultural scenario
To improve or retain the level of protection provided by the forest, the silvicultural interventions proposed for the next 100 years would aim to regenerate small clearings and increase the diameter of the trees. The cost is evaluated at € 135 /ha/year.

The global scenario (silvicultural plus engineering solution)
The study shows that **a combination** of forest management, adapted to the protective function, and civil engineering is the most efficient long term approach. This scenario would cost € 6,510 each year (over the next 100 years) which means around € 1000 /ha/year.

Estimated values
Using a cost-efficiency method to compare a civil engineering solution with the forest management solution, we obtain a value for the protective functions of forest of € 41,915 /ha

Using a risk analysis however, the value of the ecosystem service of the protective forests is €88,590 /ha.

Limits
The economic evaluation of the different protective methods must be very carefully done.
On this site, the risk analysis approach gives a bigger value than the substitution approach due to the relatively high stakes.

Outlook
- Strengthening knowledge about forest management and identifying silvicultural options which improve the best protection options.
- Methodologies to help authorities to determine the priorities for intervention.
- Tested tools giving technical and economic reference.
- Establishing methodologies that could be used as a basis for remuneration.
- The difficulty is securing long-term finance. The monetary value of the forest protective function highlights the level of investment that could be made by the public authorities to improve this ecosystem service.

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Country	**Germany, Lower Saxony**
Case Name	**Krickmeere: Nature compensation area**
Services Delivered	**Natural ecological functionality, Soil formation, Climate Regulation, Disease Regulation, Aesthetic.**
Contact	**Christian Boele-Keimer or Ludwig Stegink-Hindriks** christian.boele-keimer@nlf.niedersachsen.de

Overview of Case
The Lower Saxony state forests (NLF) manage 340,000 ha forests in Northern Germany, including the 1000 ha Forest of Upjever which is part of the coastal lowland, 20 km from the North Sea. The soil is dominated by poor, formerly wet and base-buffered sand over boulder-clay or mesotrophic limestone. Landscape depressions have been effectively drained in the past to support afforestation using spruce.

In this region, large infrastructure projects such as the new harbour of Wilhemshaven and highland railways created a need for nature compensation. As agricultural land was already in high demand for new nature projects, this meant that there was a lack of land available to compensate for the loss of existing ecosystems.

NLF developed a service to match the loss of ecosystem functions caused by the new infrastructure. An area of 18ha was set aside from all forestry goals and developed by re-wetting soils, reconnecting the watershed by removing forest roads and removing conifers to recreate a natural woodland composition.

How was the co-operation of the business and the ecosystem services supplier initiated?
As land pressure in the region was high, politicians and municipalities asked other landowners to assist with the nature compensation. NLF designed their service with professional expertise specifically for the public customer, using experts in planning systems, the New Nature rules and land markets.

What are the objectives of the parties that are being served by the co-operation?
The protection of ecosystem services by replacing losses caused by necessary development. This enables large infrastructure projects to proceed legally, quickly, reliably and in a sustainable manner.

What Ecosystem Services are being paid for and how have they been valued?
Ecosystem functionality (according legal definitions in German rights)

- Biotic Biotopes, typical species composition, rare species populations
- Abiotic Surface-/ groundwater, soil types, climate
- Cultural Landscape beauty

The NLF service guarantees to create and to support the required ecological functionality and is paid €25,000 per hectare annually for that service for at least 30 years. NLF uses a set of 5 to 10 key-indicators to value the work every 5 years.

What funding mechanisms have been used to make payments for the Ecosystem Services?
Payments are based on the regional market prices for new nature projects on arable land between 1998 and 2006. In a rising land market the service may yet become undervalued.

Which factors supported success (such as political, legal, business or cultural factors)?

Political: Increasing demand for arable land increases the need for alternative (forest) land.

Legal: The public and developer's costs for planning and agricultural land were reduced making the legal nature requirements more achievable.

Business: The full service solution created by NLF was based on clear and high quality outcomes and was successful in a competitive land market.

What barriers to success were there and how was each removed or worked around?

Competition: Regional trusts offering nature compensation were already established when NLF introduced its service to the market. However each had different strengths and over time partnerships developed with the trusts and NLF to offer the best solution to the development of a region.

Conclusion

This case study shows how a State forest organisation can use new expertise to enter into a competitive market for ecosystem services and consequently drive up standards and quality overall. In this case, NLF has also started to secure longer term funding for it's land management, by focussing on the natural land cover that is needed to compensate for development rather than staying only with forest management. As in other cases, the state organisation and state owned land is the major asset to the delivery of these ecosystem services as the organisation offers continuity and there is no land purchase cost to cover.

Country	**Germany (Lower Saxony)**
Case Name	**Afforestation to Improve Water Quality**
Services Delivered	**Freshwater Quality, nutrient cycling, recreation, biodiversity, aesthetic**
Contact	**Christian Boele-Keimer** **Christian.Boele-Keimer@nlf.niedersachsen.de**

Overview of Case
The Lower Saxony state forests (NLF) manage 340,000 ha of forest in Northern Germany. In 1989 the NLF and the Oldenburg-Ostfrisischer-water-association (OOWV), one of today's largest drinking water suppliers in Lower Saxony, signed an agreement to secure high water quality in the sparsely wooded Weser-Ems Region. In this region, intensive agricultural use leads to an increasing input of nitrate, that creates high costs for drinking water treatment.

OOWV has since bought 1800 ha of agricultural land around their drinking water abstraction wells and has assigned the land to the NLF for afforestation. Over 1500 ha of new forest has not only influenced the landscape character positively, but has also had a significant positive influence on the water quality. The drinking water supplier benefits from lower costs for water treatment, the NLF benefit from the increase of their forest area. Afforestation of these areas has certain rules in order to optimise the positive impact of the new forests. For example, 90% of the planted trees are beech and oak trees, which create less input of atmospheric nitrogen than conifers.

Because of the good results over 20 years, both partners have agreed to extend the partnership for another period.

How was the co-operation of the business and the ecosystem services supplier initiated?
The desirable increase of forest area in the sparsely wooded region of Weser-Ems, and the interest for high water quality brought OOWV and NLF together in 1989.

What Ecosystem Services are being paid for and how have they been valued?
The primary service is to secure the water quality by lowering the nitrate input o the land use around the wells. The secondary service is to enhance the area of forests in this region and build up the recreation options. The NLF receives the land for free and pays for the afforestation, maintenance and management. The value is therefore deemed to be more than the price of agricultural land.

What funding mechanisms have been used to make payments for the Ecosystem Services?
Most of the afforestation is funded by income from the main forest enterprise of the NLF. Until recently the afforestation was also accepted as compensation for construction projects and much of it was paid for by private and public investors. Parts of the purchase of agricultural land were supported by public payments because of the benefits to drinking water.

Which factors supported success (such as political, legal, business or cultural factors)?
Politically, the Government of Lower Saxony, wished to see an increased afforestation, especially in the Weser-Ems region. Also there was recognition that as the use of the agricultural land intensifies, the risks to water quality for people's consumption increases and the costs of treating it also increase.

What barriers to success were there and how was each removed or worked around?
The purchase of farm land in a traditional agricultural area is one of the biggest barriers to success. Until today, large parts of the afforested area have no realigned boundaries.

Country	**Ireland**
Case Name	**Dublin Mountains Partnership**
Services Delivered	**Aesthetic, Educational, Recreational**
Contact	**Bill Murphy, william.murphy@coillte.ie**

Overview of Case
Coillte has considerable land in the Dublin Mountains just south of the capital. These lands are used for a variety of commercial activities from timber production to telecom mast installations. The Dublin Mountains are also very popular with recreational users but there have been many issues associated with unauthorised use. The Dublin Mountains Partnership was developed by Coillte to involve three municipal authorities, the National Parks Service, and recreation users in managing the use of the area.

The partnership has been in operation for three years and it's achievements to date include the establishment of the volunteer ranger programme, construction of over 6km of new trails, a new mountain bike facility, as well as comprehensive forest signage and recreational information.

How was the co-operation of the business and the ecosystem services supplier initiated?
Initially, the municipal authorities and the recreation users sought to constrain Coillte's range of activities, most notably timber harvesting. Coillte proposed a partnership approach to resource the management of recreation in the area, deliver a valuable recreation space, improve recreation experiences and recognise the legitimate commercial and other interests of all land owners. A memorandum of agreement has been signed by the six partners to give effect to the partnership.

What are the objectives of the parties that are being served by the co-operation?
The local (municipal) authorities seek to provide outdoor recreation space and facilities close to Dublin but they do not own the most suitable land. Coillte is the major land owner but uses the lands primarily for commercial timber production. The Partnership has been able to deliver against additional objectives:

- To improve the recreation resource and experience for citizens and visitors
- To provide more resources and funding to the forest owner to deliver recreation and manage the estate
- To improve the public perception of the forest owner
- To reduce anti social behaviour and improve visitor safety and experience

What Ecosystem Services are being paid for and how have they been valued?
The provision of outdoor recreation, the education of users and the landscape protection is valued on a cost basis only (approx € 200,000 in total) through an annual agreed programme of work, primarily to manage the recreational services. Additional funds have also been sourced to provide major capital works.

What funding mechanisms have been used to make payments for the Ecosystem Services?
The partners make an annual contribution to the budget for the agreed programme. An annual report is prepared and circulated to the partner organisations.

Which factors supported success (such as political, legal, business or cultural factors)?
The local authority's development plans already identified forest land as high value for recreation and recommended co-operative approaches. Coillte's recreation policy also identified partnerships as a model for working with others to deliver on shared objectives. The scope of these policy directions permitted and encouraged the organisations to work together.

What barriers to success were there and how was each removed or worked around?
The primary barrier was the lack of trust amongst the partners because they each did not really understand the objectives and constraints of the others. The process began with the creation of a **shared vision** as a basis for agreeing a programme of work.

Conclusion
This case study demonstrates that it is possible for organisations with different agendas and objectives to share common goals around ecosystems services to benefit all. The key points are:

- Organisational policies and financial controls should be formed so as to be outward looking and flexible to permit collaborative approaches if the opportunity arises.
- It is vital to communicate about organisational objectives in order to demonstrate where opportunities for collaboration may exist.
- Partnerships benefit from a shared vision for all partners.

Country	**Ireland**
Case Name	**The provision of recreational services for the Department of Community, Rural and Gaeltacht Affairs.**
Services Delivered	**Recreation**
Contact	**Bill Murphy, william.murphy@coillte.ie**

Overview of Case
Coillte is pivotal to the provision of outdoor recreation in Ireland. There has been increased interest in outdoor recreation in Ireland headed by the Dept. of Community, Rural and Gaeltacht Affairs through its outdoor recreation division. Coillte now has a service level agreement to provide recreation services for the department on an annual basis. Following the initial pilot stage of the programme 2008 – 2010 Coillte are currently negotiating a three year programme 2011 – 2013 for the provision of services in its forests.

How was the co-operation of the business and the ecosystem services supplier initiated?
The Minister for Community, Rural and Gaeltacht Affairs established a forum to develop a countryside recreation strategy that would be the basis for an improved provision of outdoor recreation in Ireland[3]. As part of the process, each organisation with an interest in outdoor recreation was asked to make submissions on their role and the direction they wished the process to take. Coillte's submission included reference to the public good value of Coillte's contribution and the economic activity generated by forest recreation in rural communities.

Taking on board the Coillte submission, the Minister requested a meeting with Coillte to discuss the work of Coillte in the provision of recreation as a public good which he saw as a *public service obligation* given that Coillte had a requirement under law to manage the forests on a commercial basis.

With the acceptance that
a) recreation had a real and measurable value and
b) Coillte made a real contribution to the provision of outdoor recreation, it was agreed that the department would compensate Coillte for the costs associated with the provision of public recreation on its estate.

What are the objectives of the parties that are being served by the co-operation?
The Dept. of Community, Rural and Gaeltacht Affairs requires that trails, way marking and other facilities are maintained and open to the public.
Coillte receives funding to provide these services (which were previously funded through the companies own resources) and also receives significant public support which supports the company's *licence to operate*.

[3] Ireland has no access to the countryside or everyman's right legislation and at this time access to lands for recreation was/is a contentious issue.

What Ecosystem Services are being paid for and how have they been valued?
The provision of public recreation.
Coillte's recreation policy[4] published in 2005 established that recreation in forests delivered important public goods that benefited society and had a real economic value. To coincide with the policy review, Coillte Recreation Team, in conjunction with the National Trails Office of the Irish Sports Council, commissioned a report in 2004 on the *Economic Value of Trails and Forest Recreation in Ireland* . This economic study established the public good value / economic value of forest recreation to users and the economic activity generated [5]by visitors in adjoining towns and villages as part of their visits to forests.

The values were calculated using primary data collected from both users and non- users and using methods such as choice experiments and contingent valuation models.

What funding mechanisms have been used to make payments for the Ecosystem Services?
The Dept. of Community, Rural and Gaeltacht Affairs makes an annual payment to Coillte based on the costs associated with the provision of the service – including a management costs.

Which factors supported success (such as political, legal, business or cultural factors)?
Ireland has no access legislation for outdoor recreation. Coillte's *Recreation Policy –Healthy Forests; Healthy Nation* set out clearly the organisations role and policy on the provision of forest recreation in a national context. Concurrently the Dept. of Community, Rural and Gaeltacht Affairs was developing a countryside recreation strategy. Coillte were in a position to clearly position it's role as central to the countryside recreation strategy and one which delivered positive public benefits but also was a significant cost to the provider – Coillte.

What barriers to success were there and how was each removed or worked around?
The primary barrier was state agencies not seeing Coillte as part of the recreation solution or not understanding our role and policy. The policy allowed all Coillte personnel to clearly understand our role, responsibility and constraints and to spread this understanding to all other organisations with whom we came in contact with.

[4]Coillte and its predecessor the Forest Service, maintained an open access policy for recreation on its estate. This was reviewed and updated in 2005 with the publication of a new policy on recreation - *Recreation policy- healthy forests, healthy nation.*

[5] The value of a visit and the expenditure by users measured in Euro.

Country	**Norway**	
Case Name	**Forest Roads and Hiking**	
ESS Delivered	**Aesthetic, Educational, Recreational**	
Contact	**Nils Lygre**	**nils.lygre@statskog.no**

Overview of Case
The state owned company Statskog owns only a few forests near big cities, and the forest around Raudlivatnet Lake south of Bergen is one of these. In 2007, Statskog approached the Bergen Recreational Board and Municipality of Os to help develop out-door recreation in the area just south of Bergen. The intention was to provide a parking place and a forest road as a base for hiking and other leisure activities. This involved bringing 3km of forest road, built in the 1980s for commercial timber operations, back into useable condition.

Parking facilities were established in Hatlelio at the start of the hike and a small booklet has been produced to inform the people of Bergen and Os of the facility. The forest road takes you to an old farm-house owned by the municipality and which can be reached by wheelchair. Trails into the surrounding forest and mountains lead from there. Fishing in the river and bathing in the lake are also popular.

How was the co-operation of the business and the ecosystem services supplier initiated?
The project was proposed by Statskog in 2007 under its objective to increase the possibilities for recreation on state owned land. The Municipality of Os and the city of Bergen were approached for support. The road improvement was accompanied by car parking facilities as well as thinning and re-shaping of the forest edge beside the road to improve visual amenity, and new recreational facilities, including a refurbished farmhouse owned by the Municipality at the end of the road.

What are the objectives of the parties that are being served by the co-operation?
- Increase access to, and facilities for, hiking and other out-door recreational activities.
- Increased knowledge of the history and culture of the area to strengthen local identity.
- Increase the knowledge of the forest as a source of use of wood for boat building and crafts such as wooden shoes.
- Resurface 3km of forest road and bring it back into useable condition.

What ESS are being paid for and how have they been valued?
Access to nature, health and outdoor exercise opportunities has been increased through the funding of forest road maintenance and associated developments. The project has been funded on a cost basis.

What funding mechanisms have been used to make payments for the ESS?
Statskog have an agreement with Ministry of Food and Agriculture to provide social and ecosystem services from state owned forest land. The Ministry pays Statskog about €2 million as grant and approximately one third of this goes into various recreational projects. The capital project in Os is mainly financed by these Ministry funds with the Bergen Recreational Board being responsible for maintenance.

Which factors supported success (such as political, legal, business or cultural factors)?
Statskog has developed a long-term co-operation with the Municipality and the Recreational Board and as the objectives of all partners were consistent, they were enthusiastic about the aims of the proposal.

Conclusion

This case shows how forest infrastructure work can be used to benefit the forest owner and deliver the facilities for ESS. While the road improvement may have happened in any case, linking it to recreational infrastructure development ensured the work gave a much greater delivery of ESS. The proximity to populations is also important to help justify the regional support.

A key point in the success of this project appears to be the co-operation and division of funding. The state forest land and Government capital has been used to make the facility in the first place but ownership of buildings and maintenance of facilities has been accepted by local bodies. This means that the main funding is not diminished by ongoing costs each year.

Country	**Norway**
Case Name	**Storjord Recreation**
Services Delivered	**Aesthetic, Educational, Recreational**
Contact	**Jim Kristensen, jim.kristensen@statskog.no**

Overview of Case
The Forestry Commission in Norway was established in 1860 and part of it is now reorganised into the state owned company Statskog. The Storjord region has been recognised as a useful resource from as early as 1865 when the forester's house 'Skogvoktergården' was built as a shelter. In 1880 further amenities were added including a tree nursery, a building for extracting seeds from pine cones, and an arboretum with more than 30 different tree species. Skogvoktergården is now often used as a conference centre for meetings and other functions because of its surroundings and the wonderful experience it offers.

Since June 2004 Statskog has been working in cooperation with the Ministry of Environment to develop key areas within the Storjord region to increase cultural heritage and improve recreation and leisure facilities. The project has provided both local communities and tourists with numerous trails, educational pathways, hiking routes, picnic areas, shelters, and a fisherman's wharf.

By making the area more accessible to all, Statskog seeks to increase community health and address quality of life issues. The latest project aims to establish facilities for less-able people, so that everyone can experience the unique nature of this area.

How was the co-operation of the business and the ecosystem services supplier initiated?
Statskog initiated a recreational plan for the Salten region in cooperation with other stakeholders and the municipality of Saltdal, which included the restoration of Skogvoktergården at the same time. In 2004 the area was once again developed for recreational purposes, this time in co-operation with the Regional Environmental Authorities, who were planning to open a National Park Centre in Storjord in 2005.

What are the objectives of the parties that are being served by the co-operation?
The objectives were to provide improved and commercial recreational facilities, and more activities and tourism within the area, as well as to inform and educate visitors on how nature can be used sustainably. Lately, the objectives have expanded to include health and improved quality of life experiences for less able visitors.

What ESS are being paid for and how have they been valued?
The project is funded by the Ministry of Food and Agriculture and is based on actual costs. Earlier developments were funded by Regional Environmental Authorities to support the National Park initiative. The latest project for facilities for handicapped people will be financed by Regional Health Care Authorities in recognition of the quality of life and health benefits.

What funding mechanisms have been used to make payments for the ESS?
Funding has been based on grants for refurbished and new facilities. A yearly budget is provided for implementing agreed annual programmes of work. The ecosystem services have not been valued directly.

Which factors supported success (such as political, legal, business or cultural factors)?
Initial support for this project came from the commercial interest that the facilities provided for the area, including cabins for overnight stays, hotel beds, a restaurant, caravan sites and the National Park Centre.

Political co-operation is assured under an agreement between Statskog and the Ministry of Agriculture to use state-owned forest land for social services. The latest development on facilities to make the area more accessible to the handicapped is a national pilot project, which again has political support.

The main road from southern Norway to northern Norway passes through this area so many more visitors now stop and stay for a night or two and take time to experience the facilities. The area also now attracts people from nearby cities and towns who spend their weekends and holidays here. More people means a better commercial return and a better return for society on the social investments.

Conclusion

This case shows how State owned forest land can become the focus for continuing development. Once the initial commercial interest was developed in Storjord, environmental and social investment has also come forward to capitalise further on the facilities created.

The formal political co-operation between Ministries has laid the foundation and provided confidence for Regional funding to be applied too, making the social investments cheaper and less risky.

The ability for state forests to host pilots for initiatives is a key point too. By using existing land and facilities, Governments do not need to buy land and buildings and so can reduce their cost.

Country	**Norway**
Case Name	**Websites for accessing Ecosystem Services**
Services Delivered	**Aesthetic, Recreation, Education**
Contact	**Per Olav Tyldum per.olav.tyldum@inatur.no**
	Nils Aal Nils.aal@statskog.no (for www.Godtur.no)

Overview of Case 1 **www.Inatur.no**

Inatur.no is a website for information and purchase of goods and services related to fresh water fishing, hunting and out-door recreation.

The idea is that if for instance, someone decides late on Saturday night that he and his friends will go fishing on Sunday morning, they can use the Inatur site to find out where to catch the type of fish they want, and where to buy a fishing license etc. Previously licenses had to be bought in shops, post offices or petrol stations but last minute weekend purchases were more difficult. Inatur started in 2003 and has developed so now you can also buy licenses via mobile phone

How was the co-operation of the business and the ecosystem services supplier initiated?

Statskog invited both sellers and buyers of these products (the forest owners association, the hunters and fishermen's association, outdoor recreation organisations etc) to establish the Company Inatur Norge.

What are the objectives of the parties that are being served by the co-operation?

Inatur Norge is a company owned by five organisations and developed on a commercial basis mainly with finance from by Statskog. The objectives are to give the hunters and fishermen and users of all kinds of recreation facilities easier access to these goods and services, not only through information, but also through internet trade. The commercial interest for statskog lies in the increase in income from those products that has been a result of the establishment of easier access through the site, and the reduced costs for the administration of selling these services.

How have the services been funded and valued?

Those forest owners selling their goods and services through Inatur, pay 10% of their total internet turnover to finance the Company. Statskog has to a large extent financed the development of the technological platform for this internet site.

Which factors supported success (such as political, legal, business or cultural factors)?

The main success factor overall is probably that this project started as a non-profit concept and all stakeholders were invited into the company as owners for a small price. Today the Company has a more commercial profile in their strategies.

What barriers to success were there and how was each removed or worked around?

The technological platform has always been the main obstacle and the company is still developing the next generation platform. It also took some time before the forest owners became familiar with this new technology as a mean to market and sell their products.

Overview of Case 2 **www.Godtur.no**

www.Godtur.no is a website established by Statskog in order to inspire and help people to use the unique hiking opportunities etc in the Norwegian nature and landscape. The website gives free access to:

- Unique map systems and maps all over Norway. You can print them out for free.
- Hiking opportunities all over Norway.

- You can describe and publish your own hiking experiences.
- Description of your own hiking expeditions in terms of GPS positions.
- Weather forecasts.
- Information about snow conditions.
- Fishing opportunities in 37.000 lakes.
- Information about facilities for outdoor swimming and bathing from the Norwegian National Board of Recreation.
- Information about facilitations like open cabins to be used for free, bridges across rivers and streams, fishing opportunities, sights etc.

Statskog cooperates with the National Board of recreation, The National Fishers and Hunters Association and FeFo (The public land owner in Finnmark that owns 96% of the land area)

How was the co-operation of the business and the ecosystem services supplier initiated?
Statskog builds and offers a wide range of installations like open cabins, fireplaces, bridges, etc. to make our Recreation areas more accessible. Statskog initiated the web site as a non-commercial counterpart to **Inatur** for those primarily interested in hiking and recreation activities other than hunting and fishing.

What are the objectives of the parties that are being served by the co-operation?
The main objective is to inspire people to take part in outdoor recreation activities using modern internet communication. A primary service is to provide quality maps for the whole of Norway – maps that one can print directly from a home printer.

What Ecosystem Services are being paid for and how have they been valued?
The recreational services are financed by Statskog, primarily as a part of Statskog's facilitation programme for recreation, and also by the Ministry of Food and Agriculture.

What funding mechanisms have been used to make payments for the Ecosystem Services?
No external funding other than from the Ministry of Food and Agriculture.

Which factors supported success (such as political, legal, business or cultural factors)?
Success was ensured by offering the developed solution to other organisations like the National Board of Recreation. This cooperation led to more information being available and this enhanced the development of the website.

What barriers to success were there and how was each removed or worked around?
There were no specific barriers to the establishing and developing the websites. The number of visitors to the site would have been higher if it was not for the fact that a similar solution was established on the web offering similar type of information only one year after Statskogs site.

Conclusion
The use of the internet to provide information that allows people to access forests for recreational and educational purposes, allows visitors to quickly find out what is available, check out the facilities and locality in advance and make better plans and so improve their experience.

The use of internet commerce to connect many forest owners with the general public and provide the platform for convenient financial transactions is a great way of creating a functional market, reducing costs to keep prices down and encourage private development of facilities and recreational opportunities.

Country	**Poland**
Case Name	**Angler services**
Services Delivered	**Recreation and Tourism**
Contact	**Adam Pogorzelski A.Pogorzelski@lasy.gov.pl and Sebastian.Klisz@gdansk.lasy.gov.pl**

Overview of Case
The State Forest Districts have for many years, taken part in the country-wide Small Water Retention Programme. Consequently the forests have been enriched with many small reservoirs which serve many purposes such as supporting wildlife, regulating the water balance in soils and helping to protect against forest fire.

However, the water bodies also became highly regarded by local people for their attractiveness and good potential for recreational fishing, for which people were willing to pay. Consequently Forest Districts started working with local angling associations and stocking the water bodies with fish. The market is now growing steadily and there is a need to regulate the numbers of anglers to ensure the natural values of the water features are not compromised.

How was the co-operation of the business and the ecosystem services supplier initiated?
Local communities expressed interest in developing angling facilities in forest water bodies and approached the Forest Districts.

What are the objectives of the parties that are being served by the co-operation?
The Forest Districts receive an alternative source of income and the anglers receive the opportunity to enjoy recreational time in the forest beside the water.

What ESS are being paid for and how have they been valued?
Biodiversity values and the protection of soils and fresh water are important ESS delivered by this initiative along with the leisure, sport and tourism opportunities for people.

They are funded by a Licensing system where angling passes are issued by local Forest Districts. The value has been established by the market through the Willingness-To-Pay (WTP) method.

What funding mechanisms have been used to make payments for the ESS?
People pay individually for their angling licence.

Which factors supported success (such as political, legal, business or cultural factors)?
The political initiative for the Small Water Retention Programme made the diversity in the forest that created the opportunity. Local interest and a cultural desire for outdoor activities, including fishing, supported the establishment of a market.

What barriers to success were there and how was each removed or worked around?
The Forest Law regulations were unclear on this issue however the matter was resolved by a separate agreement between the provider and the consumers.

Conclusion
This case demonstrates how a wider initiative to provide water reservoirs for largely public benefits, has been extended in the forest environment to utilise the water feature in a sustainable way and provide a private good that has a marketable value.

Country	**Poland**
Case Name	**Nature Reserves**
Services Delivered	**Recreation, Tourism, Aesthetic, Education**
Contact	**Adam Pogorzelski A.Pogorzelski@lasy.gov.pl and Sebastian.Klisz@gdansk.lasy.gov.pl**

Overview of Case

Nature Reserves are valuable assets protecting the habitats of many rare species of flora and fauna. The State Forest Holding looks after 1229 nature reserves covering 121 277 hectares, which is about 80% of all Nature Reserves in the country. 66 of these sites (3,000 ha) are 'strict reserves' where management intervention is very limited.

In recent years, there has been an increase in tourism interest in visiting Nature Reserves. In response Forest Districts held a public auction to sell, to private firms, the rights to manage Nature Reserves and take entrance fees from visitors.

The project was eventually closed as the costs of management were found to be higher than the income from visitors so the commercial case was not established.

Conclusion

Although the fees were set at levels that visitors were willing to pay, the overall costs could not be supported. This illustrates that to a member of the public, the perceived value of a nature visit in monetary terms, can be below the real cost of providing the facility. This shows the inherent problem of trying to charge for a non-market benefit. Visitors will often expect to pay for tangible benefits such as car parking, souvenirs, information and refreshments, but do not expect to pay directly for the 'public goods' which attract them to the place initially.

Country	**Poland**	
Case Name	**Tourism Services**	
ESS Delivered	**Recreation and Tourism**	
Contact	**Adam Pogorzelski**	**A.Pogorzelski@lasy.gov.pl**
	and	**Sebastian.Klisz@gdansk.lasy.gov.pl**

Overview of Case
Despite a reorganisation and privatisation of some parts, the State Forestry Holding is still one of the largest state-owned commercial organisations and it has an excellent educational and training infrastructure of buildings and facilities which were under-utilised.

At the same time, society's desire to be more in contact with nature has created a new nature-tourism market. This increasing demand for market-quality facilities for nature tourism has influenced decisions on forest management priorities, and investment was made in the existing infrastructure to facilitate tourist access and accommodation. In 2008 the State Forestry Holding had developed a capacity to offer and charge for four and half thousand overnight stays throughout the country.

How was the co-operation of the business and the ecosystem services supplier initiated?
The co-operation is based on a supply and demand market. The initiative came from the State Forest Holding being aware of the tourism demand and realising how it might use its infrastructure assets to meet that demand.

What are the objectives of the parties that are being served by the co-operation?
The State Forest Holding utilises its assets better and makes an income to help with their costs. The tourists want to In addition, the tourists have the opportunity to learn more and experience forests, wildlife and outdoor activities in many more places, whilst helping to fund these Ecosystem Services through the rental of accommodation.

What ESS are being paid for and how have they been valued?
The main ecosystem services are the leisure and recreation benefits for people, but these are based on the existence of the biodiversity and semi-natural ecosystems found in the forests produced by Sustainable forest management. This contributes to visitor's well being and quality of life. By renting accommodation and paying to stay in the forests, the tourists are paying towards the costs of the sustainable forest management and the maintenance of the ecosystem services they enjoy. Paying a market rate for accommodation is a realistic valuation for the services they receive.

What funding mechanisms have been used to make payments for the ESS?
People pay individually for their accommodation and facilities at market rates.

Which factors supported success (such as political, legal, business or cultural factors)?
The main factors were the new societal demand focused on ecosystem services (such as nature tourism, outdoor sports, sightseeing, eco-education) and the ability of the State Forest Holding to change the use of some of its assets to meet that demand.

What barriers to success were there and how was each removed or worked around?
Funding issues were handled by increasing the priority for these investments within the budget plan.

Conclusion
This case shows how State forest organisations can capitalise on opportunities because they have the assets and the scale to be effective, and they can also draw together investment funds from within sustainable forest management budgets.

Country	**Poland**	
Case Name	**Freshwater Distribution**	
ESS Delivered	**Freshwater quality**	
Contact	**Adam Pogorzelski**	**A.Pogorzelski@lasy.gov.pl**
	and	**Sebastian.Klisz@gdansk.lasy.gov.pl**

Overview of Case
Within the National Forest Holding, 1,414,000 ha of the forest land (20%) provide protective land cover for watersheds. These forests have modified management regimes to increase the rotation length, limit clear cutting and adapt the species composition. The intention is to protect the soil structure to better absorb and retain water to replenish the water table. Because of this, well-afforested regions are better supplied with springs and the run off is relatively consistent across the area and over the year.

Because the managed forests are able to regulate the water flow through this natural process, areas where fresh water springs occur can be leased to private businesses to extract and market the clean water for beverages and drink production.

How was the co-operation of the business and the ecosystem services supplier initiated?
Local entrepreneurial businesses initiated the contact through their commercial interest in marketing the clean naturally occurring water.

What are the objectives of the parties that are being served by the co-operation?
The State Forest Holding receives an income to help offset the sustainable forest management costs of the areas protecting the watershed.

What ESS are being paid for and how have they been valued?
Fresh water provision, flood regulation, soil protection and biodiversity services are provided by the forest management regime. The valuation is based on the commercial market value of the fresh water and is applied as a lease agreement on the land.

What funding mechanisms have been used to make payments for the ESS?
Private businesses pay a rent at the market rate under the lease agreements.

Which factors supported success (such as political, legal, business or cultural factors)?
The political and legal position allowed the State Forests to make the leases and sell the water to businesses and there is a ready market for the water.

What barriers to success were there and how was each removed or worked around?
The Forest Law regulations were unclear on this issue however the matter was resolved by the lease agreements.

Conclusion
This is a good example of sustainable forest management practices providing a regulating ecosystem service which produces a consistent and high quality output in the form of fresh water. Some of the water is then able to be sold as a private good through a lease, meaning that it becomes directly marketable and brings sustainable income for the management of the forest.

Country	**Scotland**
Case Name	**Scottish Forest Alliance**
Services Delivered	**Climate, Aesthetic, Spiritual, Educational, Recreational and Tourism, Biodiversity**
Contact	**Alan Stevenson Alan.Stephenson@foresty.gsi.gov.uk**

Overview of Case
The SFA is a woodland conservation project that brings together a global private sector company (BP), a state forest service (Forestry Commission Scotland (FCS)) and two non-governmental organisations; the Woodland Trust Scotland (WTS) and the Royal Society for the Protection of Birds (RSPB).

The aim is to create 10,000 hectares of new woodland in14 sites across Scotland to enhance biodiversity, encourage community involvement with woodlands and forests and further research into carbon sequestration. BP has pledged £10 million over 10 years and this has attracted further funding of £11 million from non-SFA sources

Key performance indicator results, as at 2009, included:

Area of tree cover created	8,414 hectares
New footpaths created and maintained under SFA:	58,940 metres
Employment over project period:	52,737 days
Average number of visitors exposed to SFA project each year:	445,248
Community meetings:	236
Volunteer days:	4,390
Student visits:	6,114
Non-SFA funding to date:	£11.7 million
SFA funding to date:	£5.7 million

The SFA found sites that were suitable for the SFA project aims, either from their own holding or other land to purchase or lease. BP funded the biodiversity surveys, carbon baseline surveys and associated future surveys, and the woodland establishment.

The significant backing from BP allowed the SFA to raise additional funding from other sources. This money contributed to community projects, recreation, and additional biodiversity work. Although the project started as a carbon sequestration project it quickly became a project about sustainable forest management based on the extension and linking together of native woodlands. Further information on the project can be found at www.scottishforestalliance.org.uk

How was the co-operation of the business and the ecosystem services supplier initiated?
BP were interested in carbon sequestration through establishing new woodland. FCS, RSPB and WTS approached BP separately and the collaboration was established based on a 200 year agreement with individual site-based contracts. This was managed by a steering group of the four parties plus two independent members.

What are the objectives of the parties that are being served by the co-operation?
The SFA objectives contribute directly towards five of the seven key themes of the Scottish Forestry Strategy 2006. For all parties, the objective is to research, evaluate and demonstrate the contribution of sustainable forest to carbon sequestration. The methodology supports the regeneration and expansion of native woodlands and contributes to UK targets for forest and woodland biodiversity, which in turn provides social and economic benefits for local communities and the country's population.

What Ecosystem Services are being paid for and how have they been valued?
The services are expressed in the objectives above. Under the 200 year agreement, the site contracts included the establishment and maintenance of the new woodlands including beyond the period of the SFA project. The services are valued / based on agreed costs.

The agreements did not include the calculation of carbon sequestration by the land managers. This is done by The Edinburgh Centre for Carbon Management and the potential carbon sequestration of each site was one factor in the selection for project funding. Key performance indicators are monitored annually.

What funding mechanisms have been used to make payments for the Ecosystem Services?
Allocation of the BP funding relied on a scoring matrix based on the potential to meet sustainable forest management objectives and attract additional funding from elsewhere. The SFA steering Group decided what proportion of costs would be funded. BP paid the agreed funds directly to the organisation managing the site.

Which factors supported success (such as political, legal, business or cultural factors)?
- The collaborative approach to use the combined talents and resources of the four different organisations and their staffs.
- The exchange of business processes between organisations and learning from each other.
- The green credentials associated with the project and associated publicity and promotional
- The socio-economic benefits to local communities

What barriers to success were there and how was each removed or worked around?
- The range of partners meant that there was a potential for each to further their own specific interests rather than the project objectives. This was avoided by use of a steering group and an agreed scoring matrix for assessing potential sites.
- It was difficult to source new land for woodland planting. This was made easier by the collaboration which widened the pool of knowledge and brought in more options.
- The technical issues of measuring carbon sequestration, measuring biodiversity gains and creating and monitoring more complete ecosystems rather than just new areas of planted trees. These were overcome by bringing in other experts and researchers for advice and assistance.

Conclusion
The involvement of a very large private company, which has a desire to establish green credentials and also further research into the mitigation of the effects of its own industry on the environment, has generated a significant funding stream. Corporate Social Responsibility may be a significant source of ecosystem service funding for state and public forests in the coming decade. The 200 year agreement in this example is also very long and so properly recognises the longer term sustainable cycle of forests and has created a sense of stability and permanence to attract other funding.

Country	**Scotland**
Case Name	**7Stanes Mountain Bike Trail Centres**
Services Delivered	**Recreation**
Contact	**Colin Williamson** **Colin.Williamson@forestry.gsi.gov.uk**

Overview of Case
The 7stanes is a series of 7 mountain bike trail centres spread across south Scotland. The idea was to attract visitors, to help the recovery of the rural economy following an outbreak of Foot and Mouth Disease in March 2001.

£3.6million of public money was raised from local and national public bodies and the European Regional Development Fund. Over six year about 400 km of cycle trails were built or adapted for all ages and skill levels. Also facilities at some of the start points were built or improved and a major international promotional programme was undertaken.

Scottish mountain biking was given world class status in 2005 and 2006 by the International Mountain Bike Association and the 7stanes was part of that success and has won a number of other awards too. An independent evaluation concluded that the 7stanes had attracted 400,000 riders from all over the UK and overseas; had created over 200 jobs since 2002 and was bringing in over £9 million to the local economy every year.

The7stanes continues to grow and a further £1million is being invested by 2011 to maintain the trails and continue to market and promote the world class facilities. Further details on the 7stanes project can be found on the following website www.7stanes.gov.uk.

How was the co-operation of the business and the ecosystem services supplier initiated?
The Foot and Mouth disease outbreak affected the major rural activity of the area and visitor and tourist numbers fell also. FC Scotland had been seeing a growing interest in mountain biking and promoted the idea of building some mountain bike centres across southern Scotland to help with the economic recovery of the region. Two local councils and the national agencies for tourism, rural development, and heritage, all agreed this was an appropriate way to assist the recovery of the tourism sector in small, rural communities and to help local businesses.

What are the objectives of the parties that are being served by the co-operation?
The objectives of each partner are different but all together, the collaboration was to develop and maintain the south of Scotland as a world-class mountain bike destination while supporting tourism and rural businesses, and bringing health, wealth and enjoyment into the natural forest environment. This includes sustainable economic recovery and growth, building a quality reputation, working with businesses, promoting Scotland internationally, working with schools and communities, and improving the nation's health

What Ecosystem Services are being paid for and how have they been valued?
The 7stanes was independently evaluated in 2008. Key findings were:
400,000 visitors to the 7stanes (4 times the number in 2001)
203 local jobs created
£9.3 million being brought into the local economy
80% of visitors from beyond the local area
75% of visitors rated the trails as "very good"

What funding mechanisms have been used to make payments for the Ecosystem Services?

Public sector and state forest partners contributed £1.9 million up to 2008 and this attracted a further £1.7 million from European funds. FC Scotland has lead the project and managed the partner's contributions and the draw down of funding from the EU Development Fund.

Which factors supported success (such as political, legal, business or cultural factors)?

- The local and national government desire for rural economic recovery following the Foot and Mouth Disease outbreak.
- The determination of local business and communities to rebuild trade and increase visitor numbers
- The major growth in the popularity of mountain biking across the world and in Europe in particular
- The aim of building world class facilities to attract visitors from much further away
- A well prepared marketing strategy that was aimed at a broad range of potential users
- Recognition from independent mountain bike organisations and users of the quality and range of trails provided

What barriers to success were there and how was each removed or worked around?

- The major investment required to match the vision. To meet this, a wide partnership of public bodies that each had an interest in supporting the economy was useful for funds and in securing European Regional Development Funding
- There was a need for new skills to design, build and maintain trails to international standards. This was met by outing together a small dedicated team and developing their skills. This also developed the skills of contractors building the trails
- Maintaining the public sector funding throughout the project was also difficult. This was assisted by the regular evaluation of the impacts of the project to demonstart each partner's objectives were being met.
- Growing a reputation in a competitive national and international market was necessary. This was achieved by promoting the benefits that there were 7 trail centres for all ages, for families as well as elite riders, for all skill levels and these were open all year round.

Country	**Sweden**
Case Name	**Carbon Credit Trials**
ESS Delivered	**Climate Regulation by carbon sequestration**
Contact	**Olof Johansson** **Olof.johansson@sveaskog.se**

Overview of Case
Sveaskog is trialling a study of methods to measure, report and verify carbon sequestration in forests and soils. The aim is to increase knowledge, demonstrate the potential for climate compensation in boreal forests and provide a factual basis and a proposal for a trading system. The project seeks to make a real, voluntary transaction for forest carbon.

In an area of about 40,000 hectares in Sveaskog's forest holdings in Övertorneå, northern Sweden, forest management is directed towards maximising carbon uptake. This is through different silvicultural measures like improved nutrient status, denser stands and use of improved plant material. The simple theory is that by increasing forest growth rates we will grow more green biomass, thus taking more carbon from the atmosphere. The additional CO_2 uptake is to be sold in the market as credits for climate compensation.

How was the co-operation of the business and the ecosystem services supplier initiated?
Sveaskog initiated the project and participants include the Swedish University of Agricultural Science (establishment of baseline, measurements), Price Waterhouse Coopers (verification and development of a trading system) and the mining company LKAB (the buyer of the climate compensation). Academic resources were later brought into the trial project.

What are the objectives of the parties that are being served by the co-operation?
Mainly to develop and demonstrate a system for climate compensation in northern forests through the development and trading of forest carbon.

What ESS are being paid for and how have they been valued?
The most relevant ESS is the sequestration of atmospheric carbon, valued according to current market price for carbon. This contributes to wider ecosystem processes that help regulate climate.

What funding mechanisms have been used to make payments for the ESS?
This is a business to business deal with no public funding.

Which factors supported success (such as political, legal, business or cultural factors)?
Success depends on the perception and acceptance of a trade in forest carbon. The limited project will probably succeed since it is based on voluntary agreements. The effect in the long run is highly dependent on political decisions and how forest carbon can be accounted for in the national and European contexts.

What barriers to success were there and how was each removed or worked around?
The big issues are technical ones around measurements and establishment of a baseline for carbon uptake, and also verifying the additionality. These were resolved with support and technical expertise from scientific and certification bodies (Price Waterhouse Coopers).

Conclusions
A good example of a topical trial to investigate the feasibility and acceptability of a trading system in a new forest service 'carbon sequestration'. This uses a key strength of the forest ecosystem - its ability to form biomass and store carbon for long periods and keep it stored for many years after felling if the timber is used in house construction for example. The use of credible quality assurance partners in PWC raises the confidence of potential buyers of carbon credits.

EUSTAFOR
in short

EUSTAFOR represents commercially oriented state forest companies, enterprises and agencies that have sustainable wood production as a major concern. It currently has 27 members.

The members represent 27% of the EU forest area, including 12.6 million hectares of protected areas and most member organisations are certified to FSC or PEFC standards (or both). The annual production is about 115 million m^3 of round timber and together the organisations employ more than 100,000 people.

The goal of EUSTAFOR is to promote the common interests and sustainable development of state forests in the EU. The Association supports and strengthens state forest organisations in Europe to maintain and enhance economically viable, socially beneficial, culturally valuable and ecologically responsible sustainable forest management.

Our main objectives are:

- To analyse and investigate the existing framework conditions within EU, in order to create the preconditions for sustainable management of state forests;
- To facilitate and expand an exchange of ideas and contacts between the state forest organisations of Europe;
- To keep its members regularly informed on topics and issues that concern the whole of Europe.