



Ecosystem Approach & Land Use Workshop Report

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Banchory Lodge Hotel, Banchory

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This document reports on the Regional Land Use Pilot and the Ecosystem Approach workshop. This activity followed the launch of the Dee Catchment Partnership Business Plan (<http://www.theriverdee.org/>). The report reflects the views of the authors and not necessarily those of the Dee Catchment Partnership, Aberdeenshire Council or James Hutton Institute.

Acknowledgments

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Summary

The aim of the workshop was to consider what an Ecosystem Approach can do for land use in Aberdeenshire. The Ecosystem Approach underpins the Scottish Land Use Strategy which is being implemented in two Regional Land Use Pilot (RLUP) projects, one of which is Aberdeenshire. This workshop followed on from the Launch of the Dee Catchment Partnership Business Plan 2013–16. The DCP is a recognised example of catchment scale planning and the RLUP will draw on this initiative. 35 people from public, private, academic and non-government organisations attended this workshop, including presenters and facilitating staff from the James Hutton Institute. This mix of backgrounds is very appropriate because Stakeholder engagement is one of the key principles for the implementation of the Ecosystem Approach (EcA).

Three speakers presented the main concepts:

1. Keith Connal (Scottish Government) introduced the Scottish Land Use Strategy (LUS):
 - Scotland's Land Use Strategy provides guidance on achieving sustainable land use that continues to deliver the benefits society depends on;
 - It sets a new vision for 2050 and is composed of 3 objectives linked to the economy, the environment and communities. It will be achieved through the delivery of 13 proposals and is based on 10 principles for sustainable land use;
 - The LUS will be 'down-scaled' through the Regional Land Use Pilot projects. These will produce a regional land use framework by the end of 2014 to guide land use decisions for the future based on the Ecosystem Approach.
2. Irina Birnie (Aberdeenshire Council) introduced the Regional Land Use Pilot project (RLUP):
 - Aberdeenshire has been chosen because it has many diverse demands for the services land provides, as well as the existence of strong partnerships, such as the DCP, that can help deliver this strategy;
 - The project is divided in three stages: i) mapping ecosystem services and policies to be completed by autumn 2013, ii) an identification of constraints and opportunities affecting ecosystem service delivery to be completed by spring 2014, and iii) the production of a land use framework for decision making by the end of 2014;
 - The potential outcomes of the regional framework are to reduce the number of overlapping policies and strategies, leading to more co-ordinated working between government agencies and to clearer policy targets adapted to the regional context.
3. Justin Irvine (James Hutton Institute) introduced the concepts of Ecosystem Approach and Ecosystem services:
 - The Ecosystem Approach, a strategy for the integrated management of the environment that promotes conservation and sustainable use in an equitable way and that fully recognises people as an integral part of ecosystems, is increasingly embedded in many policies and specifically in the Land Use Strategy;
 - Ecosystem services provide the benefits we derive from nature (drinking water; timber; etc.). Assessing the ecosystem services is a very important component of an Ecosystem Approach because it can identify the state of the services and the pressures on them.

However, delivering an EcA requires that we understand how ecosystems provide these services and involve people in their management.

- The James Hutton Institute is currently working in tandem with Aberdeenshire Council on how best to apply an Ecosystem Approach and how to overcome any barriers to its implementation.

The participants then divided into three break-out groups and discussed the concept of ecosystem services, the EcA and the Regional Land Use Pilot project. The main themes that emerged from the discussions were:

- Participants commented that technical language could be a barrier to the implementation of the land use strategy as the terms are quite new and might not be understood by land managers.
- Participants were familiar with water related services as these are the focus of many collaborative initiatives (DCP) and there are associated targets derived from policies such as WFD. The benefits from woodland were also recognised but the demand for woodland expansion needs to be considered in the context of competing land uses. Cultural services were well recognised but they are difficult to measure and value.
- Challenges for the implementation of RLUP included the geographic scale at which the RLUP should be applied and the uncertainties about the future due to climate change. Participants wanted future incentive schemes to take into account local circumstances and more clarity on the role of land managers for the RLUP.
- The implementation of the RLUP using the Ecosystem Approach has some potential advantages such as the recognition of decision making at the appropriate scale involving the relevant stakeholders.

The next steps for the RLUP pilot are:

- Stage 1: Baseline mapping to illustrate assets and issues arising - should be achieved by autumn 2013;
- Stage 2: The identification of constraints and opportunities - should be delivered by spring 2014
- Stage 3: Production of the draft Regional framework – should be submitted late 2014
- Strategic Environmental Assessment of the RLUP as it develops

Next steps for the James Hutton Institute research are:

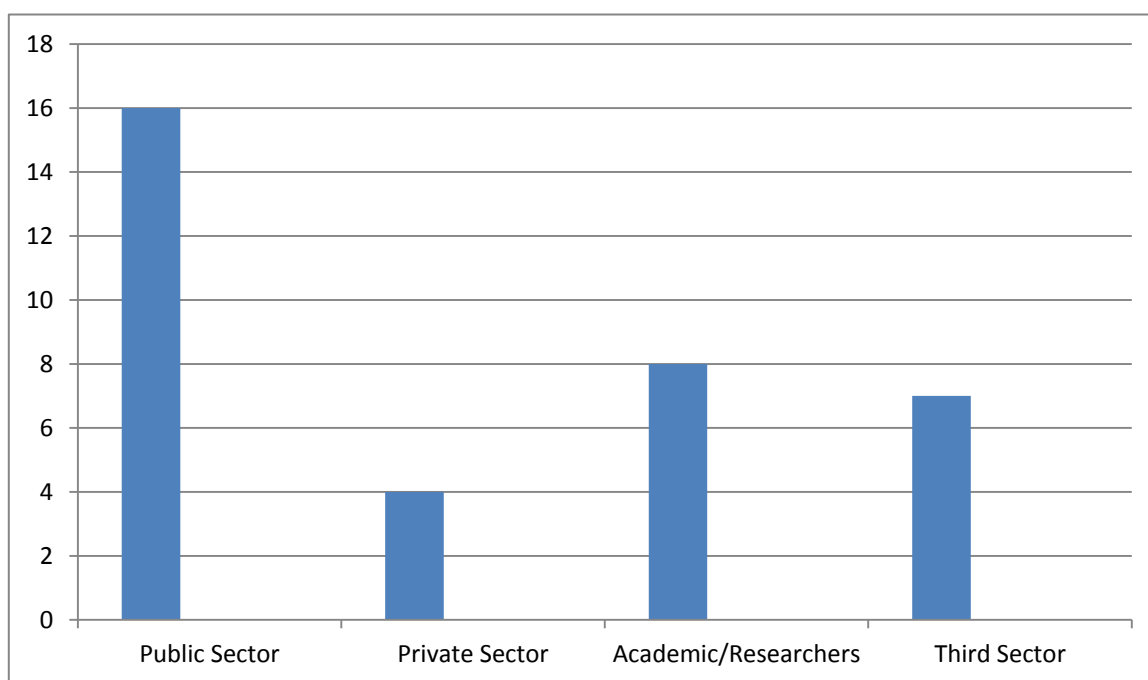
- Ecosystem Services workshop in autumn 2013: This will be based on a geographic area such as the upper Dee catchment inside the Cairngorm National Park. The goal is to understand how land use delivers ecosystem services and the decision making processes and influences that drive the current land use configuration. A second contrasting area will be chosen in the light of the RLUP stage 1 result.
- Scenarios workshop in spring 2014: the goal is to understand how the decision makers may change their land use configuration in responses to drivers of change (such as environmental impacts of changing climate and demographic patterns) These scenarios will be used to explore the consequences for ecosystem services delivery and how this affects both public and private benefits derived from land management.

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Context

The workshop was held on 28th June 2013 at Banchory Lodge Hotel, Banchory. It followed the launch of Dee Catchment Partnership Business Plan. The focus was “What can an Ecosystem Approach do for Land Use in Aberdeenshire?” The material generated and collected during the event has been analysed and summarised in order to produce this report. In total, 35 people attended the event, including presenters and facilitating staff from James Hutton Institute (JHI). The backgrounds of the attendees are various as summarised below.



This mix of background is really important in the context of the Regional Land Use Pilot project as stakeholder engagement is one of the keystones for the implementation of this project. In addition, it highlights one of the Ecosystem Approach Principles that advocates the involvement of all relevant stakeholders in the process.

This report provides a relatively detailed summary of the information gathered and information about how the information was collected, including gaps in information and/or difficulty in interpreting the material.

What can an Ecosystem Approach do for Land Use in Aberdeenshire?

Introduction to the workshop, Kirsty Blackstock James Hutton Institute

The workshop is the start of a conversation with a range of land and water based organisations in Aberdeenshire about implementing the Regional Land Use Pilot (RLUP) which sets out to apply the principles of the Scottish Land Use Strategy (LUS) based on the Ecosystem Approach. The event was combined with the launch of Dee Catchment Partnership Business Plan to make more efficient use of participant's time and because of the obvious relevance of collaborative organisations such as the DCP to an EcA in Aberdeenshire and their requests to learn more

about the Ecosystem Approach and Ecosystem Services. The event was an opportunity to share information about James Hutton Institute's research and the Regional Land Use Pilot project and to begin to develop a common understanding of what the Ecosystem Approach and Ecosystem Services would mean for managing land and making decision that are resilient to future changes. The format for the afternoon was to provide the background information on the RLUP and the EcA and then discuss and debate about the idea of an Ecosystem Approach and its role in rural land use decision making. She concluded the introduction by noting that the outputs of the event will be used by James Hutton Institute to both support its research and help implement the RLUP.

Introducing the Land Use Strategy: Keith Connal, Scottish Government



Figure 1: The plenary discussion

Scotland's Land Use Strategy is derived from the Climate Change (Scotland) Act. 2009. In 2011, after an extensive stakeholder engagement the LUS was published and laid before the Scottish Parliament. In addition, the Climate Change (Scotland) Act requires the Scottish Government revise the LUS at intervals of not more than every 5 years. The LUS provides a context for decision-making on land use for the public sector and the hope is that the private sector will also recognise and consider the 10 Principles for Sustainable Land Use when

taking significant decisions affecting land use. The Land Use Strategy is a Vision for 2050. It is composed of 3 objectives that relate to the 3 pillars of sustainable development i.e. economic prosperity, environmental quality and community development. These objectives set the long term direction of travel and will be met through 13 proposals for action. All the components of the LUS need to work together to deliver the LUS. However, the success does not rely on ticking off the actions, which are listed under each Proposal in the Action Plan, but it hinges on changing the way we work, plan and respond to the challenges facing land use in Scotland. The LUS gives us the opportunity to think more strategically with regards to the potential of Scotland's land and its use now and in the future. The LUS fits into a wider context with some other major elements of delivery, notably the LUS Delivery Evaluation Project, which the Dee Catchment Partnership is part of, or the National Planning Framework 3 and Scottish Planning Policy that should contribute to its delivery. To investigate how the LUS can be applied at a regional level, pilot projects have been instigated that set out to test and evaluate the practicality of preparing regional land use decision making frameworks. The objective is to facilitate the delivery of policies, strategies and objectives in relation to integrated land use by providing a framework to guide decisions about land use, particularly with regards to decisions that facilitate change such as incentives and grants. The production of the framework should be achieved by using an ecosystem approach in order to ensure that land use is considered in a collective and integrated way so that conflicting or competing uses of land are minimised and land use configurations that optimise the delivery of benefits to society are maximised. The Regional Land Use Pilots (RLUPS) are being led by local authorities and cover their whole geographic area. The delivery of the Pilots will be achieved through 3 stages that stretch to autumn 2014. This makes the timescale very challenging, but responds to the need for evidence from the pilots to inform the first review of the LUS in 2016. The first stage corresponds to a

baseline mapping, which consists of both policy and resources/asset mapping. The combination of these maps will be analysed to as required in the stage 2 to identify constraints and opportunities in how the natural resources deliver policy objectives and where policies are constraining the delivery of services and benefits. Finally, the information generated during the first two initial stages will be used to develop a framework, which will subject to a separate consultation. Stakeholder engagement was a keystone for the success of the pilots and that existing strong partnerships such as Dee Catchment Partnership represented major opportunities to build on. In addition, a Strategic Environmental Assessment of the RLUPs is required and has to be undertaken in tandem with the development of the framework to facilitate the implementation of an iterative process. Finally an independent evaluation of the pilots will be conducted with the aim at evaluating their role at a regional scale and identifying their strengths and weaknesses. Keith concluded that this discussion about the RLUP process is highly relevant to the Scottish Government's Strategic Research Programme on Ecosystem Services, which James Hutton Institute is leading. Collaboration Aberdeenshire Council and James Hutton Institute is already underway and should bring significant benefits for the pilot.

Introducing the Regional Land Use Pilot: Irina Birnie, Aberdeenshire Council

The Regional Land Use Pilot process was explained in more detail. Aberdeenshire has been chosen to implement a regional framework because it has a number of interesting features and activities that can sometimes be competing or conflicting. For instance, there is a great deal of prime agricultural land that stands alongside a high number of designated sites and a National Park. This can lead to a range of trade-offs between the different benefits the Aberdeenshire ecosystems provide in different settings. A regional framework that helps with decision in relation to the public and private goods and benefits ecosystems provide could help decision-making for sustainable land management. Aberdeenshire is also an area where many strong partnerships have emerged that could help deliver the RLUP. Whilst the LUS could be considered another administrative layer adding to many others, policy instruments in place in this region. there is hope that the RLUP framework will help facilitate or guide decisions to optimise the use of land and help resolve competition or conflicts relating to land use now and into the future in an integrated way and thereby reduce the need for many of the more sectoral or single issue policies land use for the This project will be led by Aberdeenshire Council, with a senior Council official as project executive. The project board is composed of Aberdeenshire Council staff and various organisations to ensure the involvement of main sectors in the project. Stakeholder engagement is crucial in this process as it is one of the principles of the Ecosystem Approach, thus stakeholders will be encouraged to participate to the process by joining steering groups for each of the three stages. Not all the stakeholders will want to, or be able to, take part in all 3 stages, so there may be different stakeholders at each stage bringing various inputs to the process. The project has just begun (April 1st), and it will start the first phase as soon as the mapping and the data considerations will have been identified. So far, many internal and external meetings have already been organised, the governance agreed and the project officer appointed. However the GIS Resource is still under consideration. The first stage will be delivered in tandem with James Hutton Institute and includes reviewing the relevant plans and programmes for the LUS and identifying further stakeholder engagement opportunities. In parallel, the iterative process of Strategic Environmental Assessment will keep being conducted. The approach for the second stage (the identification of constraints and opportunities), is still be decided and any feedback or comments are welcome from the workshop participants.

Finally, the RLUP should be seen as an opportunity to help deal with the uncertainties brought by the multiple policy targets and drivers and harmonize them into a coherent framework. The potential outcomes of this framework would be to reduce the number of policies and strategies that are overlapping each other, leading to more co-ordinated working between government agencies and above all to clearer targets adapted to a regional context and that would be supported by grants and financial incentives on the long-term.

Questions and comments about the Land Use Strategy and the RLUP:

- **Is the built environment represented on Project Board?**

The built environment sector has indeed been invited to an early stage meeting and is represented by Historic Scotland. However, it would perhaps be pertinent to invite other representative stakeholders of this sector, such as “Homes for Scotland” to later meetings on this topic to ensure to engage with all relevant stakeholders. Though, it is important to note that the board cannot represent everyone, but the board will help to steer the project with more input from stakeholders at each stage of the project.

- **To what extent will the project managers look beyond land use, to consider how aspects such as institutional architecture affect delivery? If we take the example of Udney Trust, we can see that community ownership affects uptake of renewables.**

The project managers will engage with existing community planning partnerships to ensure community engagement. Local Authorities were chosen as they have partnership arrangements and connections with communities. However, we have to be realistic about who can be reached out to within the constraints of timescales and resources.

- **Does the regional framework represent the endpoint of the Land Use Strategy? What is exactly the framework?**

The regional framework should be an informative map based tool that should facilitate the decision-making processes by allowing stakeholders to visualize the different conflicts related to land use in their location. This can be illustrated by various land aspirations such as livestock farming versus forestry. The policy and resources/asset mapping will bring the information necessary to shape this tool and help relevant stakeholders identify preferred land uses in an area. It is important to note that this tool will not be prescriptive, but should act as a guideline for land management decisions.

- **Will maps allow measures to be identified?**

The primary purpose of the tool is not identify measures that need to be or could be implemented, but rather to show overlapping policies’ targets and allow the stakeholders to think about the trade-offs at stake in these conflicting areas. However, the map tool could contain “attributes boxes” that may allow measures to be identified.

- **What assumptions will be used about Climate Change and its effects?**

The Scottish government published a report, on the 27th June 2013, on “Low Carbon Scotland: Meeting our Emissions Reduction Targets 2013-2027: the Second Report on Proposals and Policies”, to help meet climate change targets, especially to tackle carbon emissions. In addition, thinking about future scenarios can help anticipate issues and may assist the design of the

regional land use framework. Hopefully, James Hutton Institute's work should be of great help as it is currently working with future scenarios that aim at identifying and exploring a range of management options and their consequences on ecosystem services, as well as the trade-offs they involve. Furthermore, the analysis of the various policy drivers' interactions will give a useful insight of what the land can deliver and where and thus help make relevant decisions over land management.

The Ecosystem Approach and Ecosystem Services: Justin Irvine, James Hutton Institute

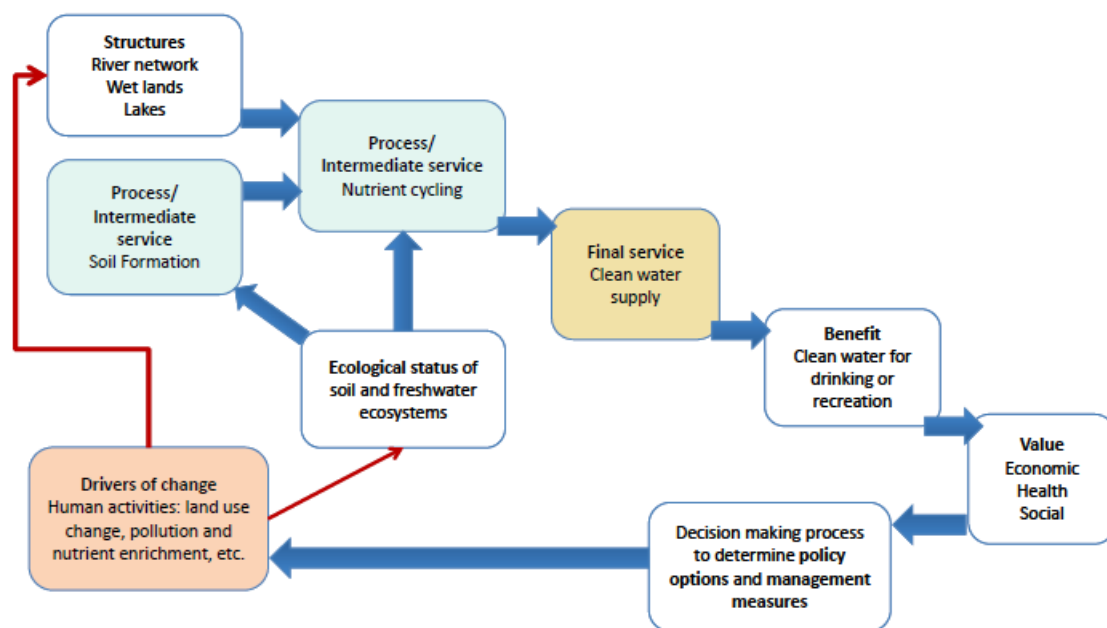


Figure 2: Presentation of the concept of an Ecosystem Approach by Justin Irvine

The Ecosystem Approach (EcA) is a strategy for the integrated management of the environment that promotes conservation and sustainable use in an equitable way and that fully recognises people as an integral part of ecosystems. Thus, the EcA can be considered as a holistic approach where the key word is system. This strategy is increasingly embedded in many policies, whether from European Union, or United-Kingdom or from the Scottish Government. It is supported by 12 Principles that involve: taking account of how nature

works; considering unintended effects of activities and decisions as well as limits and feedback loops; taking into consideration the economic context; acknowledging that change is inevitable; making trade-offs or balancing decisions; working at the appropriate temporal and spatial scale and engaging with all relevant people. These principles can be grouped into three main principles that underpin the Land Use Strategy. First, to understand how nature works requires us to understand how land management decisions affect ecosystem processes. For example, how management activities impact on soil health and the other pressures that affect it. However, it is very difficult to anticipate the consequences of land management because the pressures occur at a range of all spatial and temporal scales. There, there is a need for an adaptive approach, responsive to change implying that there is a need to monitor the health of the ecosystem functions and the state of the resources that land management and its benefits depend on. Second the strategy advocates taking into account the multiple benefits nature provides which implicitly involves integrating the management of our needs with a wider social and economic context and adopting an integrated and holistic approach. Third, the LUS promotes collaborative work between those who are affected by the way land is managed i.e. all those who benefit from or are affected by the delivery of the services the land provides recognising that there are public and private benefits which may need to be reconciled. One of the LUS proposals encourages the use of an Ecosystem Approach to decision making over land management and the assessment of Ecosystem Services from an area is an important part of an Ecosystem Approach. Ecosystem Services provide the benefits we derive from the natural world, such as water, game species or renewable energy. They have been classified into 4 categories in the Millennium Ecosystem Assessment: supporting; regulating; provisioning and cultural services. These services deliver benefits, which in turn contribute to human well-being. There is a cascade from the structure and functions of ecosystems to the delivery of human benefits. These benefits can be valued, sometimes monetized, and this value influence the

decisions we make over land management, which in turn affect the drivers of change that impact the delivery of ecosystem services and benefits.



UK National Ecosystem Assessment, Technical Report, 2011

Figure 3: Application of the ecosystem services cascade framework to water purification

The drivers of change are multiple and of various nature (demographic, socio-political or linked to climate change for instance). These drivers could influence land managers' behaviour and affect the delivery of ecosystem services and benefits. Ecosystem Service Assessment is the determination of the state and the amount of natural capital and the trade-offs that exist between delivering different ecosystem services in different situations over time or between land use units... However, delivering the objectives Eca need more than Ecosystem Service Assessment. Equally important is the engagement and inclusion of all the relevant stakeholders and collaboration between them. Thus, if the Ecosystem Approach to land management and decision making is adopted, this will help deliver the Land Use Strategy. However, a lot of uncertainty remains regarding how best to operationalize an Eca. The James Hutton Institute is currently researching the Eca, methods and tools to help deliver it and the barriers to its implementation. Its research will complement the RLUP project by carrying out in-depth analysis in two case study areas in Aberdeenshire, in order to engage local stakeholders at all the stages of the project.

Questions and comments on how to implement an ecosystem approach

- **The world as we know it is experiencing a big change and most of the things are speeding up – Will the Ecosystem Approach be resilient to this rapidly changing context?**

The Ecosystem Approach, in its principles, includes thinking about future scenarios. This process helps to consider the drivers of change and how management needs to respond to them or how policies should be formulated to encourage management that is resilient to drivers of change such as the climate. In addition there is research in how to deal with external shocks to the system such as economic recession or changes in world trade. In this way the Eca is a

mechanism to help deal with uncertainty of the future. An EcA promotes an adaptive approach to management advocating that decisions should change in response to evidence from monitoring the system as well as building in management actions that increase the resilience of ecosystems to external shocks and demands that may well be unforeseen. .

- **How frequently do you need to revisit scenarios? Is that process speeding up to?**

An adaptive and responsive management of ecosystems requires revisiting scenarios in order to be more reactive and resilient to change. However, we are still developing and testing scenario evaluation tools that will be of practical use. Regular consideration of future scenarios should be carried out whenever there is a perceived change in the drivers of change but guidance on this has yet to be developed...

- **James Hutton Institute's work is not the Regional Land Use Pilot project, so what is exactly the relationship between the two projects?**

Aberdeenshire Council and the James Hutton Institute (JHI) are working in tandem on the Ecosystem Approach to try to understand how best apply it to the RLUP. Whilst the RLUP project will focus on the whole of the Aberdeenshire, the JHI research will focus on two local level case studies, one in the Upper Dee Catchment and the other that has not yet been defined. This will provide some more detailed information to complement the regional analysis. Both projects have a mapping dimension that should help illustrate the current opportunities and the conflicts. In addition both projects will assess how policies drive ecosystem service delivery. The JHI work will work with stakeholders on the ground in the two detailed case study areas to investigate how the decision making processes affect land use configuration and the ecosystem services that result and look at how policy levers can influence this. , Therefore, the RLUP's work and James Hutton Institute's work should be complementary.

- **Would it be better for James Hutton Institute work to finish first?**

The two projects work well in tandem, and the outputs from the research will be fed into the RLUP thus there is a benefit in them working coincidentally. James Hutton Institute may be able to undertake further refinements based on the RLUP results since its project runs until March 2016.

Break out group discussions

After the presentations the participants were split into three groups and asked to discuss the following questions:

- What does your organisation do?
- Which ecosystem services does your organisation protect, manage and/or depend on?
What benefits arise from these?
- What are the main challenges facing your sector at the moment?
- How might Regional Land Use Pilot projects and the Ecosystem Approach help you respond to these challenges?

The discussions were free-ranging and not all of these questions were answered as set out or discussed equally among the groups. This allowed people to express their opinion on topics they felt concerned about rather than sticking strictly to the questions. The analysis was complicated because the discussions addressed such a wide range of topics. The information generated will contribute to JHI research and to help guide the implementation of the RLUP. The break out groups' discussions lasted for an hour and the groups were composed of 6 to 8 people, excluding the facilitator and the note taker (scribe). The scribe recorded the main points of the discussion in relation to the questions on a flip chart and the participants had the opportunity to check and correct anything recorded. The 3 groups were made up of the following individuals.

Table 1: Organisation of the break out groups

Group 1. Focus on water and land interests	Group 2. Focus on land management	Group 3. Focus on wider aspects of land use
Facilitator: Kirsty Blackstock	Facilitator: Justin Irvine	Facilitator: Kerry Waylen
<i>Note-taker: Katina Tam</i>	<i>Note-taker: Laurie Barant</i>	<i>Note-taker: Anja Byg</i>
Lorna Paterson	Derek MacDonald	Craig Stewart
Allan Garvie	Irina Birnie	Gavin Clark
Linda Mathieson	Hamish Trench	David Carmichael
Marc Stutter	Simon Power	Bill Slee
Susan Cooksley	Stewart Johnson	Nicki Hall
John Barr	Scott Petrie	Alison Espie
Keith Connal	Hywel Maggs	
	Gerald Banks	

To start with each individual introduced themselves to the group stating their name, organisation and their position. Then, attendees discussed the concepts of ecosystem services and the RLUP implementation. The following report represents a synthesis of the discussion from all three groups according to a set of topics that emerged from the analysis. These include:

- Terminology
- Organisational links to ecosystem services
- Challenges and questions regarding the implementation of RLUP
- Implementation of the Regional Land Use Pilot project

- Regional Land Use Pilot project and the Ecosystem Approach

Terminology



Figure 4: Break out group focussed on wider aspects of land use

All participants had heard about the terms related to the Ecosystem Approach and Ecosystem Services although due to their relative newness, they are not part of popular vocabulary and as such unlikely land managers such as farmers might not understand them. However, many land managers already manage for multiple objectives and apply principles of management that comply with much of the Ecosystem Approach already so it was felt that the concepts could be communicated to farmers

and land manager in the working environment if much of the jargon was avoided. Some people also argued that “Ecosystem Services” is a very malleable term, which is used by people in the field in a very flexible way. They tend to interpret it as it fits their own thinking and this potentially dilutes the impact of the concept. However, the term “Ecosystem Services” will become embedded into policy, thus people will undoubtedly become more and more familiar with this concept.

The relationship between the stakeholders and the ecosystem services

As the different groups preferred to focus on the other questions, the information generated does not really allow the various ES to be related to the different organisations and sectors. However, the Group 1 participants mainly focussed in the ecosystem services and benefits linked to water and forests and Group 2 mainly focussed on cultural ecosystem services.

The typology of the Ecosystem Services also confused people and they found difficult to disentangle the different kinds of Ecosystem Services as the categories overlap with each other, for instance, regulating services and supporting services reflecting perhaps the role of supporting services underpinning regulating provisioning and cultural services and the need to avoid double accounting. Some also wondered if all Ecosystem Services that were mentioned in the United-Kingdom National Ecosystem Assessment counted. For instance, the concept of cultural services has been found very hard to “get to grips with” by stakeholders. Therefore it was suggested that they might be delivered as a consequence of managing for provisioning and regulating services because it is difficult to manage for them directly or set targets for something that cannot be quantified or assessed. This discussion is mainly due to the difficulty of quantifying CES. However, they recognise that it would create opposition if it is left out as for the more “cultural” or “historic” organisations, the environment and the culture are connected and they help protect these services to promote people’s enjoyment. Finally, it appears that it is sometimes tricky to pinpoint the services we affect or depend on as some of them, like regulating services, are only noticed when they disappear.

One of the key ecosystem services that was identified during the discussion is natural flood management, which represents an important challenge for the organisations such as the Scottish Environment Protection Agency (SEPA). First, it is necessary to identify which areas of the catchment are suitable for flood water storage and then, the challenge is the trade-off

between using riparian land for restoration and natural flood management against the fact that it was often the most productive arable land for food production. Questions such as “Should we favour the benefits that arise for communities downstream to the detriment to farmers’ livelihood?” emerged.

Water extraction is also an important concern for the future as the population in Aberdeenshire is predicted to increase by 18%. There does not seem to be any intention to build further reservoirs, but participants felt that there should be more planning to anticipate the future demand that will emerge from further industrial and housing development. Indeed, even if all the leakages are sorted and the efficiency of the system is improved, it is likely that Aberdeen will need some compensatory flows from elsewhere in the future. The points about NFM and water supply highlight the multi-functional and multi-purpose character of the River Dee.

People were aware of the benefits provided by habitats such as woodlands. Indeed, Government targets related to forestry were considered as very relevant in order to improve the quality of environment in urban contexts for instance. Woodlands can deliver multiple benefits, such as recreational opportunities, habitats for wildlife or carbon sequestration, and offer an interesting marketing potential. Such benefits should arise from the ‘Green Nexus’ corridor that is referenced in the Aberdeenshire Strategic Plan. Grampian Forest Forum represents an ideal territory for thinking about the provision of Ecosystem Services, for example, they would like to allow forestry on land designated for future urban development. Indeed, using selective planting and cropping has the potential to increase amenity of urban development, particularly whilst building housing in phases. Forestry perfectly illustrates the need to select the appropriate spatial and temporal scales for policy implementation – for woodland expansion, as the motto could be: “The right tree at the right place and at the right time”. Many opportunities and benefits could emerge from these policies if they are properly implemented. For instance, farmers would probably take the opportunity to plant woodland corridors in order to separate access takers from their stock if sufficient incentives were provided e.g. opportunities under future CAP Ecological Focus Areas.

Natural, cultural and historic organisations, such as Historic Scotland or Scottish Natural Heritage are in charge of protecting and managing sites and biodiversity and thus contribute to the delivery of cultural ecosystem services. Some argued that these cultural sites provide enjoyment merely by existing and that knowing they are protected makes people feel better. Protected sites bring an added-value that may not be noticed in everyday life, but that can influence our well-being. The controversy about the Site of Special Scientific Interest that was partly destroyed by the Donald Trump’s golf course perfectly illustrates how these important natural or cultural areas may not be adequately weighted in current planning decisions.

Questions regarding the RLUP

Thinking about scales, uncertainties and drivers



Figure 5: Break out group focussed on land management

Participants agreed that a major barrier was the uncertainty about the future. Selecting the appropriate temporal (and spatial) scale to make decisions over presents a major challenge. There is a consensus about the need to plan for the long term, and some land managers do plan for the long-term

but in the context of great uncertainty. Land managers are indeed wondering how they are going to achieve their goals because it is difficult to predict how to progress. For instance, which trees will they need to plant to meet low carbon economy and woodland expansion policies' targets and which are appropriate to the rapidly changing context due to climate change? Climate Change is considered as the main driver by participants, and it implies a lot of uncertainty with regards to its upcoming impacts. Thus, it is necessary to develop strategies that try to take account of future uncertainties in such a way that allow adaptation resilient decision making. This could be achieved through scenario development and evaluation using the recently reviewed drivers of change that was the subject of a recent JHI- workshop attended by Scottish Government policy people as well as individuals from many land and water NGOs. However, there are many factors that could hinder the usefulness and the efficacy of these scenarios. First, there are cumulative uncertainties, which contribute to increase even more the degree of uncertainty. Then, stacking the uncertainties together, such as climate change or population growth, creates a large window of possible scenarios; so how will we select the scenarios amongst this vast array of possible trajectories? Finally, it is hard to have sufficient information to address all these uncertainties. In addition, local stakeholders have to be consulted to ground-truth these scenarios and make them meaningful to them.

The spatial scale may also be an issue for the RLUP, indeed, some argued that in Aberdeenshire, most people have a sense of belonging which is not related to the shire-level but to a more local level. Some argued that even the Dee Catchment is not an entity to which people relate and there is a need to focus on smaller stretches; whereas others thought that the Dee is an appropriate scale that has a strong identity. In addition, there is uncertainty with regards to the most adaptive scale for management, especially estate management. In fact, moving towards landscape-scale management could be hampered by the absence of a proper incentive scheme to encourage land managers to collaborate as in many cases it is not currently possible to manage at a landscape scale when incentives are linked to land-holdings and not groups of land-holdings. More work is needed to devise systems that allow and incentivise landscape scale planning and how this could be facilitated through regional bodies such as the National Park.

Thinking about institutional context and economic aspects

Decisions concerning land management often involve making trade-offs, which can in turn imply economic losses. However, these decisions do not always take into consideration the economic aspects. Moreover, land managers are increasingly obliged to make more and more trade-offs, for instance between food production and protection of birds or tourism and renewables, so there is a pressing need to develop approaches that can help find the right balance between them in order to reduce conflicts that arise from various management objectives and policies? Some argued that it is necessary to value ecosystem services and benefits, but this raises the question of the ability we have currently to put a price on more intangible values in comparison to food for instance. There are existing methods, but these are often contested and it is difficult to use them. In addition, people often have different values for the same thing.

Implementing new, coherent, adaptive and efficient incentive schemes represents one of the biggest challenges and an important concern for the participants. In particular, participants discussed the balance between 'carrots and sticks' when such schemes are designed. According to some attendees, problems with incentive schemes represent a major institutional barrier to

implementing the Ecosystem Approach. The current incentive schemes are considered as inadequate or “crazy” because they lack flexibility and do not facilitate the links across landscapes or the collaboration between stakeholders, in particular between land managers. The Scottish Rural Development Plan funding, for instance, is too short to make a difference because the cycle does not provide enough time for most of the measures to mature, such as habitat restoration. In addition, it does not provide a flexible mechanism for people that are involved in the process and is likely to have lower budget in next round. Participants also noted that policies are not joined up so accepting incentives on one scheme can bar them from access to other schemes. Furthermore, current incentive schemes are not appropriate for complex and evolving systems and do not take into consideration implications for land managers. This leads to several issues, as for the agro-forestry mechanism where the costs of fencing and harvesting green corridors and buffer strips are not sufficiently considered yet these are much higher than the costs of fencing and harvesting plantation blocks. Another contentious point is that the current focus for Natural Flood Management schemes prioritises one-off capital spend over on-going maintenance spend on on-going land management. Future schemes have to take these problems into account, particularly to tackle barriers to tenants to get involved in an agri-environment scheme.

There is also a lot of uncertainty regarding the implementation of the RLUP in relation to the new Common Agricultural Policy, which is one of the main economic drivers of land use and the future implications for land managers. In addition, participants wondered about the role of statutory development planning and its link with the RLUP and the Land Use Strategy. Joining up all different national policy targets for Aberdeenshire may be problematic because there are already conflicts arising from the Water Framework Directive Good Ecological Status Standards and current land management practices, thus it is legitimate to think about the repercussions of trying to achieve several different policy targets in one place. In addition, some argued that what we will demand from land by combining these targets will be much more than what land can give, meaning that we might have to relax or change some of these targets for Aberdeenshire. However, there is a threat of infraction proceedings and there will be economic consequences if legally binding obligations are ignored. One option discussed was the ability to lower the target in Aberdeenshire if a corresponding higher target would be met in another part of Scotland. This implies that there needs to be a link within policies between local and regional and regional and national as well as linking across policies at a particular spatial scale

What is the role of land managers?

There was some controversy concerning the role and the mind-set of land managers. Some argued that land managers’ decisions are driven by economics and food production, which means we need to persuade them that their role is also to protect and produce Ecosystem Services. These participants believed that it is important to provide them guidance and advice to help them consider the consequences of their decisions and actions. They recognise that whatever will be done, will cost them money and they will need to get rewarded for that. Conversely, others said that the time when land managers managed their land to respond to only one objective and focused only on one component, e.g. food production, is over. Land managers are already managing the land for multiple objectives and benefits and are responsive to how they interact with their neighbours.

One fundamental problem is that land managers are at the end of the line and they sometimes do not have the understanding of the context. There should be a mechanism to integrate them all along the decision-making process to raise their awareness of the policy drivers in place. Farmers are actually highly regulated and are driven by policy targets that are continuously evolving. They previously responded to the need for food production and are now required to take other things into accounts such as biodiversity and now ecosystem services. It will take time for them to get used to the new requirements and to adapt to them.

Finally, many discussions were concerned with land ownership and succession. This boiled down how to manage the land and who will manage the land when the trend is for people not to want to work on the land in rural areas. People questioned how the Ecosystem Approach will help plan in a world where skills and people are lost from rural areas, leading to wider questions about how people fit in the Ecosystem Approach and the Land Use Strategy. Possibly payment for ecosystem services might help stem rural depopulation.

Implementation of the Regional Land Use Pilot project

Dealing with scales



Figure 6: Break out group focussed on land and water interests

As highlighted previously, people relate to small scale and knowable entities, thus maybe landscape is an appropriate scale. Some said that plans need to operate on smaller scale than a catchment where the identity is stronger, while others seemed to agree about the Dee Catchment scale. The sense of identity is also a matter of time and process and depends on the timescale. Indeed, Cairngorm National Park makes more sense as a unit now than 10 years ago. In addition, as everything is connected, a catchment

scale approach might be useful to look at all the interactions. However, it is important to think about differences as not all catchments have the same potential to deliver the same balance of services. There might be catchments focused more on the delivery of energy or food and others that are biodiversity-oriented. This can allow the definition of appropriate targets for different places in Aberdeenshire that are tailored to each specific context. It is also the opportunity to adapt the targets across Scotland, for instance regarding to the woodland expansion's national target, which could be adapted to each regional context. People were enthusiastic about the regional scale, which allows more certainty and creating more locally adaptable schemes, especially incentives schemes, which are geographically targeted.

Addressing the institutional context and the economic aspects

There is currently a very favourable institutional context for the establishment of the Regional Land Use Pilot project and the Ecosystem Approach. Indeed, the Scottish Government is attempting to join up policies by implementing in tandem many policies such as the Scottish Biodiversity Strategy, the National Planning Framework, the Land Use Strategy and the Central Scotland Green Network. Moreover, promoted by a global context where the concepts of

“natural capital” and “ecosystem services” are increasingly integrated in the vocabulary of policy and management, the terms “sustainable economic growth” and “environment” are embedded in all relevant Ministers’ talks in government. The Scottish Biodiversity Strategy recognises that there is an intrinsic value of nature, such as the mental well-being induced by the environment. It advocates shifting towards a wider landscape style approach that is more multidimensional. However, programs for individual charismatic or indicator species should remain.

When asked, some participants said that the RLUP should not be prescriptive in order to encourage land managers to engage, whereas others think that it should be a combination of top-down and bottom-up approaches binding regulatory and scientific aspects with on site-specific practicalities. The Ecosystem Approach has the potential to help connect all the components to create a well-structured system. In addition, the RLUP should be a policy tool that could lead to more balanced outcomes by bringing things that are not currently valued into planning. It also has to help address issues about trade-offs by making relevant recommendations based on a cost benefit analysis of the value from ecosystem services. This should aim at revealing what is necessary to protect and where, as well as the implications of trade-offs such as food production against natural flood management; or tree planning versus clearances to ensure viable wind speeds for turbines.

The promotion of adaptive management requires the creation of flexible incentive schemes that take account local circumstances, which requires us to identify areas where there is a need for liberalization of policies. For instance, the Scottish Rural Development Plan should be extended over a longer period to generate proper outcomes for the environment, but assessments have to be planned regularly to evaluate the satisfaction of the people involved and the success of the projects. This would give the opportunity to decide whether to continue the arrangement and would allow the allocation of money to projects delivering effective outcomes. In addition to this, there needs to be a reassessment of policies to identify nationally where incentives might not work and why. Policies have to recognise that land management have to make a commercial sense because what matters above all is the viability of individual businesses.

Land managers raised the idea that landscape management scale can only be achieved through collaboration and that there should be a mechanism for enabling landlords to work with other tenants. Thus, according to them, the Land Use Strategy and in particular the RLUP should focus on identifying opportunities for collaboration, such as financial incentives. However, in return of incentives for collaboration, land managers should be providing evidence of results. Finding win-win solutions is the key. A positive point that was raised during the discussions is that there is money available, to a certain extent, to support new demands from farmers.

Regional Land Use Pilot project and the Ecosystem Approach

The Ecosystem Approach and the Regional Land Use Pilot project offer a way to think about all the uncertainties whilst making progress. However, some participants indicated that although it is important to accept imperfections in the scenarios that will be created we should develop approaches that limit scenario planning and evaluation to the ecosystem services that are regarded as priorities and where we have a good understanding and uncertainties. In addition, the EcA can help create a fairer and more equitable system where everybody is included in the decision-making and benefits. It is likely that it can help find win-win solutions although there

has to be recognition that in many cases there will not be win-wins but at least the EcA will have allowed a clear and transparent process of evaluating these trade-offs and the decisions made around them. Some participants also recognised that the Ecosystem Approach has some fundamental benefits because it recommends thinking about the system as a whole and could be useful to look for the most environmentally beneficial way to progress.

Finally, some argued that education is the keystone for the adoption of the approach and that it should influence the society in general, including children, land managers, oil workers, developers, and urban communities. The Ecosystem Approach and the Regional Land Use Pilot project can provide a way to explain how an ecosystem functions and its benefits for society. People should understand what land and water provides to us and why it is important to protect it; and all parts of society should change their behaviour to protect it, not just land managers. Finally, conservation must be more integrated in agricultural education and collaboration should be encouraged at all levels of society, including in planning to address concerns related to the agricultural sector.

Final plenary

After the break out groups' discussions, the participants gathered for a plenary discussion led by Kirsty Blackstock where information gathered during the group discussions was presented by the facilitators. Then, participants were invited to ask questions that could have arisen from the workshop and to discuss the following questions:

- Who should be involved in the RLUP stakeholder engagement groups?
- How to structure RLUP assessment?
 - ✓ Sectoral (User Groups)
 - ✓ Land Capacity (What nature can do for us)
 - ✓ Policy Drivers (What Scottish Government can influence)
 - ✓ Other?
- Where would make a good case study in contrast to Upper Dee?

Questions and comments related to the topics addressed during the workshop

- **Where is it possible to find more information about these concepts?**

There is information in the hand out that has been distributed at the beginning of the workshop and that participants are invited to take with them. This document also provides a list of links where attendees will find information on the JHI Ecosystem Services Research Theme. Further links to the Millennium Ecosystem Assessment; the Convention on Biological Diversity Ecosystem Approach; the LUS and the EcA and the UK National Ecosystem Assessment are provided in Annex 3.

- **Is the Ecosystem Approach a useful concept?**

On one hand, the Ecosystem Approach is a useful concept as it encourages thinking about nature's benefits. On the other hand, some argued that they had some difficulties with the concept that ecosystems deliver services to humans, as we human beings are part of these ecosystems. There was a concern that the concept of ecosystem services does not allow nature

to express itself or to be wild, rather than tamed for human use. Instead of speaking about re-wilding or wilderness, some prefer the term “restoring the natural function” of ecosystems. However, can we really speak about restoration of natural functions as humans intervene in this process; do we want to return to pre-industrial ‘reference conditions’?

- **Is the language a problem for the application of an Ecosystem Approach?**

Many felt it is only a matter of time before the terms are integrated into common language. Land managers may not understand them nowadays, but over time, the terms will become more understood. For instance, biodiversity was once a rare term, which was only used by specialists, but it has become commonplace. The same thing will happen with Ecosystem Services. In addition, this is not because land managers do not currently use these terms that we cannot work with them. Indeed, their aim is to make people understand the value of nature and of its benefits.

If terminology becomes a problem, alternative terms could be used for engaging with stakeholders, by using simple questions such as “what has nature ever done for us?” and “how do we make it keep doing it?” In addition, the Scottish Natural Heritage uses the terms “nature’s benefits” and “natural processes”.

- **What are the challenges to the implementation of the RLUP project?**

One of the biggest challenges is the very short timescale that requires the framework to be ready by 2015. This poses several problems, especially with regards to the lack of time to engage in multiple stakeholder engagement processes. To tackle this issue, the Regional Land Use Pilot project will link to existing groups wherever possible. Another challenge remains in initiative fatigue from stakeholders if the short timescale requires organising several meetings by the end of the project. However, there are only 2 or 3 additional stakeholder meetings planned before submitting the framework and stakeholders can choose to go to only one of them.

Another issue originates from the Common Agricultural Policy that strongly regulates the way land is managed and does not allow much freedom to organise land management. People are sceptical concerning the ability of the RLUP to induce a significant change in land management, particularly with regards to climate change. Nevertheless, the Land Use Strategy arose from a legal requirement of the Climate Change (Scotland) Act and aims to address climate change issues, to which land management is a big contributor. There is a need to keep asking the questions on how we are contributing to a reduction in climate change and how the built environment constraints or affects carbon reductions as part of land use planning.

- **How will Aberdeenshire change? How will this project help?**

There is a need to recognise that hard trade-offs cannot be avoided. It is also important to induce a wide-scale behaviour change that should be driven by the Scottish Government. If the RLUP wants to have an impact, it has to drive people to change their behaviour, and not only the farmers. However, it remains to be seen if the Regional Land Use Pilot project and the Ecosystem Approach are able to drive the change, particularly in an affluent area like Aberdeenshire, where consumers and city-dwellers do not conserve resources out of economic necessity.

How to structure the RLUP assessment?

It is very important to frame the issue in terms of “what can we do for nature” and not only on “what can nature do for us” in order to find the right balance. However, as the project will use existing groups, this implies that the approach will be sectoral to start with before having a cross-sectoral meeting. The need to address how the RLUP links with the statutory planning process was also reiterated.

Where would make a good case study in contrast to Upper Dee?

First of all, it has to be an area that people can identify with. Two propositions have arisen from the workshop:

- **Energetica Corridor:** This area could provide an interesting case study as it represents a more urban context that highly contrasts to the Dee. However, it may be necessary to wait until we are at stage 2 – identification of opportunities and constraints - to find a case study with the most appropriate conflicts and opportunities.
- **North Buchan Coast near Fordyce:** This area has a strong cultural identity and offers the opportunity to investigate a very different context facing different issues, linked to coastal areas.

What happens next?

The Regional Land Use Pilot project

The Stage 1, which corresponds to the baseline mapping to illustrate assets and issues arising, has started in collaboration with James Hutton Institute and should be achieved by autumn 2013. Meanwhile, the Strategic Environmental Assessment process will be initiated. The Stage 2 – the identification of constraints and opportunities – should be delivered spring 2014, and the draft Regional framework will be submitted late 2014.

For more information, please contact Irina Birnie (irina.birnie@aberdeenshire.gov.uk); Linda Mathieson (Linda.Mathieson@aberdeenshire.gov.uk) or James Davidson (J.Davidson@aberdeenshire.gov.uk)

James Hutton Institute's timescale

An Ecosystem Services workshop will be held in autumn 2013, focussed on the Upper Dee Catchment. It will aim to improve the understanding of the ecosystem services delivery. Participants will be involved in evaluating how current land use delivers ecosystem services and the workshop will set out to understand land manager decision making processes and the drivers that affect these decisions and how this varies with land manager type.

Then, in spring 2014, the James Hutton Institute will organise the scenarios meetings to try to understand how decision makers will change their land use configuration in responses to drivers of change and which will be the consequences for the ecosystem services delivery. For more information, please contact Justin.irvine@hutton.ac.uk

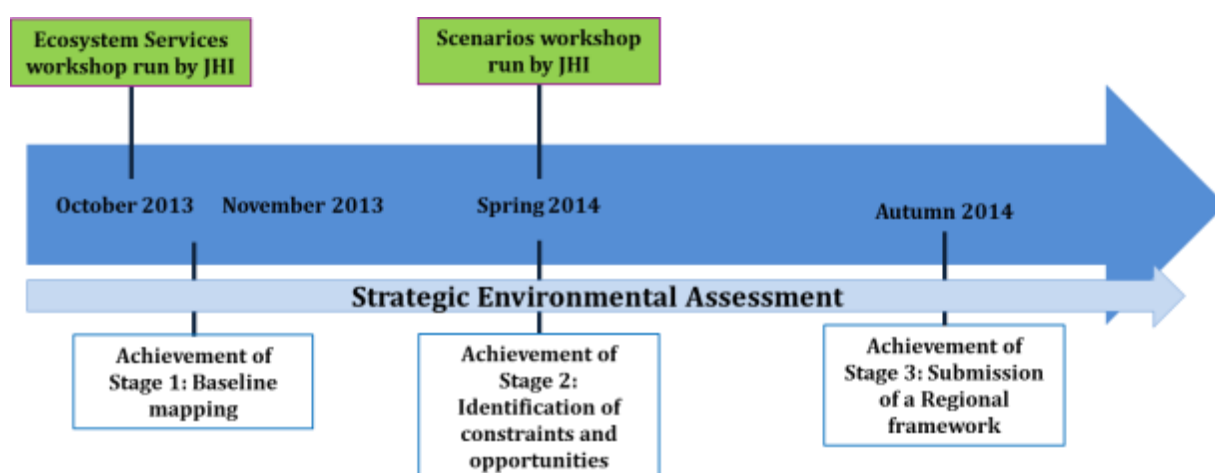


Figure 7: Timescale of the workshops

Evaluation Questionnaire Results

A total of 9 responses were received, giving a low response rate of 26%. Responses came from various organisations, including the local authority; NGO's; land manager representatives and public agencies, covering a wide range of interests from local level management to national policy development. The diversity of attendees was seen as a very positive aspect of the event.

The event was seen as useful for half the participants and very useful for the other half and has helped improve their understanding of the topic by providing a good summary of the main issues and themes. This workshop has also been very beneficial to people by providing information on the main drivers of current policy development and introducing them to wider land use issues. It allowed people to understand the structure and the governance of the project, as well as the long term aims it intends to achieve. A very positive point is that some participants are willing to disseminate the information learnt during the workshop to their colleagues, which could contribute to a better engagement at further workshops.

Even if one participant said that he was becoming more comfortable with the jargon, others raised the difficulty of communication using this specific terminology, arguing that it should be simplified in order to promote a common understanding. If other workshops are organised, it would be useful to send some information in advance to let them explore and become more familiar with the terms.

All the participants were satisfied with the structure of the workshop and the facilitating staff and one highlighted the excellent time keeping. The facilitators apparently helped bring the topic alive by giving a good introduction, well adapted to a mixed audience. In addition, the structure of the workshop promoted good interaction between everyone, according to the responses. However, a participant humorously noted that there should be less construction noise at the venue next time.

The workshop provided a good opportunity for the participants to get more information about a complex topic and particularly regarding the Ecosystem Approach, Ecosystem Services, and the

issues that are related to them, which are new concepts for many people. An attendee said that there still is more to do in order to improve people's understanding and make them become familiar with these terms. The event also helped participants appreciate how the Ecosystem Approach, which is an integrated and holistic approach to land management, is relevant. However, several participants highlighted that this is difficult to implement and that it still requires a lot of work in a very limited timescale. Indeed, the complexity of issues makes decision-making hard. Despite these difficulties, one participant is willing to pursue this approach with more vigour, which is very encouraging for the future.

The professionalism of the staff and the content of the workshop have contributed to encourage people to participate in further workshops on this topic with 100% of the respondents saying they were keen on attending other meetings. In addition, the two thirds of them would also join a working group for the Regional Land Use Pilot project if they were asked to. However, it may be necessary to remind them about it because they might not have made a final decision. Indeed, one participant asked to get back to the staff later about this. The workshop has also been a driver to encourage people to learn more about the project over coming months and has contributed to improve the likelihood of engaging farmers with this process. However, participants noted that there is a need to engage with urban dwellers and with the private sector in the future to ensure that all the interests are represented.

Finally, a participant suggested another case study area that could be interesting for the project in lowland Buchan where farmers are engaged in a wide range of rural land use including agri-environmental schemes; forestry; renewables; tourism and food production.

Appendix One: Agenda for 28th June, Banchory Lodge Hotel, Banchory



Launch of Dee Catchment Partnership Business Plan

- 11:00 Tea and Coffee on arrival
- 11:30 Welcome by Major General John Barr, Chairman, Dee Catchment Partnership
- 11:45 DCP Business Plan 2013-2016 (*Susan Cooksley, DCP*)
- 12:00 Launch (*John Barr*)
- 12:15 **Lunch**



What can an Ecosystem Approach do for Land Use in Aberdeenshire?

Purpose: The Scottish Government is piloting the development of regional land use frameworks in Aberdeenshire and the Scottish Borders, using an Ecosystems Approach. As part of the Scottish Government funded research programme, members of the James Hutton Institute have been working on the concepts of Ecosystem Approaches; Ecosystem Services; Ecosystem Assessments and their link to decision making. This workshop is an opportunity to introduce the regional land use pilot study; the concepts involved and explore how using an ecosystems approach for integrated rural land (and water) use planning can connect with existing policies and practices.

- 13:00** Introduction to workshop

Kirsty Blackstock (James Hutton Institute)

- 13:10** Introduction to the Regional Land Use Pilot

Keith Connal (Scottish Government), Irina Birnie (Aberdeenshire Council)

- 13:40** What is an ecosystem approach, ecosystem service or ecosystem assessment and why do they matter to me?

Justin Irvine (James Hutton Institute)

- 14:15** Break out groups

- 15:15** Plenary Discussion

- 16:00** End

Appendix Two: List of Attendees

(P = Participant, C = Contributor)

Name	Organisation	Type
Alison Espie	Aberdeenshire Local Outdoor Access Trust	P
Linda Mathieson	Aberdeenshire Council	P
Irina Birnie	Aberdeenshire Council	P
Derek McDonald	Aberdeenshire Council	P
Craig Stewart	Aberdeenshire Council	P
Gale Beattie	Aberdeen City Council	P
Co Ramsey Milne	Aberdeen City Council	P
Ms Chris Bain	Aberdeen Harbour Board	P
Ken Reilly	Aberdeen Harbour Board	P
Hamish Trench	Cairngorm National Park Authority	P
John Barr	Dee Catchment Partnership	P
Susan Cooksley	Dee Catchment Partnership	P
Dan Ward	Dee Catchment Partnership	P
Allan Garvie	East Grampian Coastal Partnership	P
Nicki Hall	Historic Scotland	P
Simon Power	MacRobert estate	P
G.P Banks	National Farmers Union Scotland	P
Lorna Paterson	National Farmers Union Scotland	P
Hywel Maggs	Royal Society for the Protection of Birds	P
Keith Connal	Scottish Government – Natural Resources Directorate	P
Alasdair Matheson	Scottish Environment Protection Agency	P
Julie Tuck	Scottish Environment Protection Agency	P
David Carmichael	Scottish Environment Protection Agency	P

Stewart Johnston	Scottish Government	P
Jenni Kinnaird	Scottish Government	P
Scott Petrie	Scotland Land & Estates	P
Gavin Clark	Scottish Natural Heritage	P
Bill Slee	James Hutton Institute	P
Marc Stutter	James Hutton Institute	P
Katina Tam	JHI organisers	C
Justin Irvine	JHI organisers	C
Kirsty Blackstock	JHI organisers	C
Kerry Waylen	JHI organisers	C
Laurie Barant	JHI organisers	C
Anja Byg	JHI organisers	C

Appendix Three: Further links

More information about the **Millennium Ecosystem Assessment** can be found at this address:

<http://www.unep.org/maweb/en/index.aspx>

All the information about the **UK National Ecosystem Assessment** and its concepts can be found at this address:

<http://uknea.unep-wcmc.org/EcosystemAssessmentConcepts/tabid/98/Default.aspx>

More information about the **Ecosystem Approach** and the **Convention of Biological Diversity** is available at:

<http://www.cbd.int/ecosystem/>

For further information about the **Land Use Strategy** and the **Ecosystem Approach** please refer to these links:

<http://www.scotland.gov.uk/Topics/Environment/Countryside/Landusestrategy>

<http://www.scotland.gov.uk/Topics/Environment/Countryside/Landusestrategy/ecosystemsapproach>

Links between biotic and biology and ecosystem services:

<http://www.hutton.ac.uk/research/themes/safeguarding-natural-capital/ecosystem-approach-working-group/other-es-outputs/babu>

Priority Ecosystem Services and their Indicators:

<http://www.hutton.ac.uk/sites/default/files/files/EAWG/EAWG2-Discussion-paper.pdf>

Introduction to the Ecosystem Approach and Ecosystem Services

<http://www.hutton.ac.uk/sites/default/files/files/EAWG/EAWG1-Discussion-paper.pdf>

CREW report on the value of water resources:

<http://www.crew.ac.uk/publications/value-scotlands-water-resources>

In the near future, more information will be made available on **national (Scottish) level scenarios**, available from <http://www.hutton.ac.uk/research/themes/safeguarding-natural-capital/ecosystem-approach-working-group/meetings>

In the summer; there will be a **CREW report on delivering Ecosystem Services via the Scottish Rural Development Programme** - <http://www.crew.ac.uk/news/crew-contribute-development-next-phase-scottish-rural-development-programme>

In the autumn, there will be the results of a **review of the implementation of the Ecosystem Approach within the UK** – available from <http://www.hutton.ac.uk/research/themes/safeguarding-natural-capital/ecosystem-approach-working-group/other-es-outputs>