National Assembly for Wales Environment & Sustainability Committee Inquiry into Sustainable Land Management

Submission by Cyfoeth Naturiol Cymru/Natural Resources Wales

Summary

The purpose of Natural Resources Wales is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future.

Wales faces many challenges - for its people and communities, for its economy and for its environment and wildlife. Key issues include securing energy and fuel supply, provision of jobs and income; tackling the threats of climate change and flooding; improving people's health and wellbeing. We believe that by unlocking the potential that lies within Wales' resources, by managing them and using them in a more joined up and integrated way, they can help to meet the challenges we face.

As part of meeting these challenges we will:

- Work for communities in Wales to make sure people and their homes are protected from environmental incidents like flooding and pollution. We will provide opportunities for people to learn, use and benefit from Wales' natural resources.

- Work for Wales' economy and enable the sustainable use of natural resources to support jobs & enterprise. We will help businesses and developers to understand and consider environmental impacts when they make important decisions.

- Work to maintain and improve the quality of the environment for everyone. We will help make the environment and natural resources more resilient to climate change and other pressures.

- Use our knowledge, and learn from the knowledge of others, to make Natural Resources Wales an efficient, effective and capable organisation for the people and environment of Wales

Key points arising from our written evidence to the Committee are:

- Sustainable land management (SLM) can support economic activity whilst protecting and enhancing terrestrial and aquatic ecosystems.

- SLM is best delivered through an ecosystem approach- *"a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way"*[1].

- Applying an ecosystem approach to SLM will benefit Welsh citizens and deliver a range of national and EU priorities. These include economic growth; social cohesion; reducing greenhouse gas emissions and flood risks; tackling climate change and meeting the requirements of a range of EU Directives.

- Reform of the EU's Common Agricultural Policy must result in a direct payment system that supports land managers in adopting SLM practises.

- A well funded Welsh Rural Development Plan can deliver SLM through supporting knowledge transfer, co-operation, investment, and innovation.

- The approach of using market-based Payments for Ecosystem Services (PES) to support SLM needs further development.

- Existing and future monitoring programmes should identify the current extent of SLM practises and assess progress towards the wider adoption of these over time.

[1] CBD (2004) Secretariat of the Convention on Biological Diversity, The Ecosystem Approach, (CBD Guidelines) Montreal.

1. Introduction

Sustainable land management (SLM) involves supporting economic activity whilst protecting and enhancing terrestrial and aquatic ecosystems. SLM is best delivered through an ecosystem approach- *"a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way"*[2]. Doing so ensures traditional ecosystem services are delivered in a way that protects ecosystem *resilience* – the ability of ecosystems to respond naturally to pressures such as climate change.

Applying an ecosystem approach to SLM will benefit Welsh citizens and deliver a range of national and EU priorities: economic growth, social cohesion, reducing greenhouse gas emissions and flood risk, tackling climate change, and meeting the requirements of the Habitats, Wild Birds, Water Framework, Bathing Water, Drinking Water and Nitrates Directives.

2. Response to Inquiry Questions

(i) What do we want sustainable land management in Wales to look like?

This response focuses on rural Wales, but recognises that similar principles apply within urban areas.

Sustainable land management in Wales involves the sustainable management of all land including the agricultural and forestry sectors whilst safeguarding ecosystem resilience. This is a complex challenge. For instance, any increase in production and profits will be short-lived if ecosystems are degraded through the loss of soil and nutrients. At the same time water quality, fish stocks, and related ecosystem services will be compromised.

Sustainable Forest Management (SFM) is a well established concept defined by the Ministerial Conference on the Protection of Forests in Europe (MCPFE) as *"...the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystem..."*[3]

Integrating SLM and SFM requires evaluating complex trade offs through scientific and political judgement that can lead to challenging choices between, for example, production or landscape value. The approach used in the UK National Ecosystem Assessment (UKNEA) ascribes monetary values to different ecosystem services using "willingness to pay". Other approaches such as Payments for Ecosystems Services (PES) use market based mechanisms[4].

Sustainability requires that ecosystem services are not derived at the expense of "natural capital". For example, semi-natural habitats such as peatland contribute to ecosystem

[2] CBD (2004) Secretariat of the Convention on Biological Diversity, The Ecosystem Approach, (CBD Guidelines) Montreal.

[3] http://www.mcpfe.org/eng/Commitments/Ministerial_Conferences/Helsinki_1993/

[4] Engel, S., Pagiola, S., Wunder., S (2008). Designing payments for ecosystems services in theory and practice: an overview of the issues. Ecological Economics 62, 663-674

resilience by storing carbon and water[5]. Grazing should be managed to support the delivery of these services alongside food production.

All farm and woodland businesses can reduce negative impacts and provide positive benefits across a range of ecosystem services. For example, nutrient management plans can increase profitability whilst protecting water quality, aquatic ecosystems and associate services. The key message is SLM involves supporting actions that improve economic, social and ecosystem resilience.

Natural Resources Wales seeks a regulatory, incentive and guidance framework that supports **all** land managers in the adoption of sustainable land management practises for the benefit of the economy, society and the environment.

(ii). What outcomes do we want to deliver in the short, medium and longer term?

The specific land management outcomes that NRW wishes to see are underpinned by existing Welsh Government targets and include the following:

- Restoring all WFD water bodies to Good Ecological Status by 2021;
- Bringing Sites of Special Scientific Interest (SSSI) into favourable condition by 2026;
- Achieving an annual 3% reduction in Greenhouse Gas (GHG) emissions in areas of devolved competence.

The first River Basin Management Plans (RBMP's) revealed only 33% of water bodies were at "Good Status". Approximately 14% of failures are related to agricultural activities: livestock poaching, erosion of river banks, run-off from grassland and arable fields, tracks and farm yards, and the poor slurry management. In delivering the second RBMPs for 2016-2021, we want to strengthen regulatory, financial and operational mechanisms to protect the water environment and deliver ecosystem services and benefits to Wales.

Protected sites contribute to broader ecosystem resilience. However, SSSIs were not designed as an ecological network, but as a 'portfolio' of independent sites. It is important to consider how the condition and connectivity of protected sites affect the resilience of the wider environment.

Woodland creation and management are prioritised in the Climate Change Strategy Delivery Plan for Agriculture and Land Use[6]. In 2010 the Welsh Government announced a target of creating 100,000 ha of new woodland by 2030 as one of the measures in support of this strategy. Economic estimates suggest woodland creation is a cost-effective climate change

[5] See:
http://www.moorsforthefuture.org.uk/sites/default/files/documents/MFF%20RN12%202007%20Peak%20District%20moorland%20carbon%20flux.pdf

[6]
http://www.cynnalcymru.com/sites/default/files/Climate%20Change%20Strategy%20for%20Wales.pdf

mitigation measure[7]. WFD and SLM efforts can be integrated through strategic woodland creation that improves water quality and restores aquatic ecosystems.

(iii). What are the barriers preventing us from delivering these outcomes now?

The principal barriers to the uptake of SLM that can deliver key outcomes are:

- Our economic system undervalues the role of the natural environment;
- SLM has not been sufficiently well defined and embedded at a national level;
- Land managers do not always have access to all of the information required;
- Existing mechanisms are inadequate for tackling trade-offs and synergies in the provision of ecosystem services at the national, regional and local level.

Natural Resources Wales legacy bodies, the Farming Unions and key environment partners have agreed on five priorities for SLM:

- Gaining a better understanding of all that land management delivers
- Developing policies and strategies that allow for a more of a "bottom-up" approach
- Ensuring regulation is outcome based
- Optimising the profitability of land based businesses and activity
- Building trust and confidence between stakeholder groups

Land managers operate under conflicting objectives; short term economic gains are rewarded more than ecosystem resilience, biodiversity, water quality and reducing in greenhouse gas emissions. The recent Economics of Ecosystems and Biodiversity (TEEB) project addressed these kinds of "market failures" at a European scale[8].

The Welsh countryside is managed principally for "provisioning services" (food and timber), but provides many other ecosystem services (see Appendix 1). The UK National Ecosystem Assessment (UKNEA) summarised how farmland management impacts on some of the potential ecosystem services as follows[9]:

[7] http://www.forestry.gov.uk/fr/INFD-8YAECD

[8] http://www.teebweb.org/

[9] UK National Ecosystem Assessment. Accessible at: http://uknea.unep-wcmc.org/

UK trends in ecosystem services affected by agricultural land management

Final ecosystem service	Impact of farmland on service	Comments
Crops, livestock, etc	++	Farmland is managed largely for food production
Trees, standing vegetation, peat	-	The uplands are major stores of peat, which has been subject to losses through drainage, erosion and removal.
Climate regulation	--	Strong negative score due to emissions of greenhouse gases and soil carbon
Water quality	+/-	Important to capture rain water; potential for flood risk mitigation often compromised by management
Hazard regulation	--	Negative impact on sediment losses to watercourses
Waste breakdown and detoxification	--/+	Negative score due to diffuse pollution of water courses; positive score due to potential to help manage wastes through composting, anaerobic digestion etc
Wild species diversity including microbes	--	Negative impacts: status of microbes unknown
Socially valued landscapes	++	Farm management is largely responsible for the landscapes that many people cherish

Land management actions that mitigate these impacts can reduce operational costs. For example, soil testing and nutrient management plans can help reduce application rates and improve water quality and reducing GHG emissions without reducing production[10,11].

Barriers to uptake of SLM approaches include lack of information and operational/cultural inertia. There can also be concerns over profitability (e.g. the fear that reduced fertiliser use will reduce production) or the need for capital investment and/or reductions in income. Despite this, reductions in livestock density undertaken as part of habitat restoration can sometimes be compensated by a higher sale price for the animals produced[12].

Where a net investment is required, information alone is unlikely to incentivise the majority of land managers. In recent decades these 'market failures' have been addressed through agri-environment schemes. More recently, pressure on Government funding has increased interest in the use of market based measures[13].

Effective SLM will require both improving knowledge transfer and addressing market failures. The Pontbren project has demonstrated how good stock management, including

[10] Reduce fertiliser costs with nutrient management plan". Farmers Guardian 29th May 2013
[11] Soil nutrient testing and nutrient management planning formed part of the Catchment Sensitive Farming Pilot Projects in Wales (Twrch, Llafar and Deepford Brook).
[12] Anglesey Grazing Animals Partnership. See: http://www.agap-ynysmon.co.uk/
[13] Wynne-Jones, S. Connecting payments for ecosystem services and agri-environment regulation: An Analysis of the Welsh Glastir Scheme. Journal of Rural Studies 31 (2013) 77-86.

the provision of shelterbelts that also reduce run off from upland catchments, can improve business performance[14]. This work highlights the need to combine knowledge transfer with incentive mechanisms.

(iv). How do we overcome these challenges?

SLM must make 'economic sense' as well as providing social and environment benefits. The Welsh agricultural and forestry sectors can benefit from a combination of the following measures:

(a) Smarter Regulation

Natural Resources Wales supports Welsh Government in implementing the recommendations from the recent "Working Smarter" Report. This stated *"that farmers are fearful of environmental regulations and see them as an obstacle to developing their businesses. Unfortunately, too many farmers believe that they have to choose between food production and the delivery of environmental benefits, whereas in reality good business and a healthy environment are perfectly compatible. Compliance with regulation, far from being a net cost to businesses, can often enhance and add value"*[15].

Natural Resources Wales believes SLM efforts will benefit from regulation that is outcome focussed and customer centred. Doing so will require working with individual (and groups of) businesses to communicate desired outcomes, allowing businesses flexibility in how outcomes are delivered, and penalising polluters in cases of gross negligence.

Haverfordwest Creamery provides a good example of this kind of approach. First Milk is planning to open a new water treatment plant in 2014 to deal with the effluent resulting from cheese production. This will mean discharging treated waste water into the Western Cleddau, a Special Area of Conservation (SAC) under the EC Habitats Directive. Whilst the new treatment plant will need to meet strict environmental standards, the resulting discharge will still add nutrients to the river. In order offset this, Natural Resources Wales and First Milk are developing a scheme to reduce the environmental impact of local farming practices. This will ensure that the reduction in nutrient run-off from these farms is equal to, or greater than, the nutrients discharged directly by the creamery. The scheme is also a requirement of the permit that allows the Creamery to operate.

(b) Improvements in Knowledge Transfer

The new Wales Rural Development Plan (WRDP) should support the communication and delivery of 'win-win' interventions. Environmental advice may be perceived by larger businesses as irrelevant rather than as a mechanism to deliver SLM. Both the Farming

[14] http://www.pontbrenfarmers.co.uk/
Wheater, H. and Evans, E. Land use, water management and future flood risk in Land Use Policy 26S (2009) S251–S264

[15] Working Smarter: A Report of Recommendations to the Welsh Government on Better Regulation in Farming. Gareth J Williams, December 2011. Section 10.10, page 43

Advisory Service (FAS) and Farming Connect should articulate the link between profitability and ecosystem service delivery. Appropriate and flexible advice packages already exist[16,17].

Improving support for woodland creation and management will ensure that sustainable agriculture delivers the full range of desired ecosystem services. Research shows that farmers consider advice essential for implementing woodland schemes[18].

(c) Effective Use of Incentives

CAP reform will allow up to 15% of the direct payments budget to be transferred into the WRDP. These funds can be used to support knowledge transfer, co-operation, investment and innovation in support of SLM.

Keeping the emphasis on income support will result in a more uneven trajectory of business development. Whilst some farmers may use payments to improve competitiveness through investment in SLM, others will continue with current practices even if doing so compromises long term sustainability.

(d) Introduction of Market-Based Measures

Managing most rural land for provisioning services (primarily livestock products or timber) alone traps land managers in a "boom and bust" cycle. Diversification can support flexible and innovative approaches to income generation. Whilst tourism is one route, delivering broader ecosystem service benefits through other activities can be just as important. To illustrate this, the 2007 'Wildlife Economy Wales' scoping study estimated the total economic output value of wildlife related activities in Wales to be in the order of £1.9 billion and could be supporting over 30,000 jobs in any one year[19]. Much of this output is driven by or strongly linked to public service, hospitality / retail and agriculture related activities. Best practice guidelines are available to help develop this approach[20].

(e) Effective use of Exemplars

Exemplar projects can be used to test new approaches and share key messages with land managers and policy makers.

Launched in 2008, the Cambrian Mountains Initiative (CMI) partnership aims to deliver Sustainable Integrated Rural Development [21]. It demonstrates how SLM can support traditional upland farms and communities. Local businesses are encouraged to become economically self-sustaining in ways that support the environment through enhancing soil carbon, improving water quality, and mitigate flood risks. This could deliver ecosystem

[16] Environmental Cost Benefits Datasheets for Farming Connect. Report to Countryside Council for Wales and Welsh Government by Cumulus Consultants and FWAG Cymru. http://www.cumulus-consultants.co.uk/portfolio-training.html

[17] Integrated Advice Pilot Project. Defra funded project FF0204. http://www.adas.co.uk/Home/Projects/IAP/tabid/349/Default.aspx

[18] A survey of farmers with woodland on their land. Report to Forestry Commission Wales by Wavehill Consulting. November 2009.

[19] www.environment-agency.gov.uk/static/documents/Research/wildlifewales_wb_1823119.pdf

[20] http://sd.defra.gov.uk/2013/07/payments-for-ecosystem-services-best-practice-guide/

[21] www.cambrianmountains.co.uk

services to society worth approximately £8.3 M per annum[22]. The Initiative has embedded Cambrian Mountains Lamb in the premium UK market, supported the Cambrian Mountains Lamb Producer Group, and helped develop a seasonably flexible supply chain. The CMI is also working with local businesses to establish the Cambrians as a distinctive tourism destination through a mutually agreed Destination Development Plan.

(f) Closer Integration of the Farming and Forestry

Forestry grants have been delivered through Glastir Advanced and Glastir Woodland Creation, but the current WRDP does not easily accommodate the integration of agriculture and commercial forestry.

The new WRDP can better incorporate forestry activities into Glastir through more integrated advisory services. Farming Connect is well respected by the farming sector and given that most unmanaged woodlands are located on farms, it would make sense to integrate forestry advice and advocacy into a more broadly based "Connect" programme.

(v). What are the main policy drivers and how can these be shaped to overcome the challenges?

The main policy drivers influencing land managers in Wales are:

(a) Common Agricultural Policy (CAP)

The current round of CAP reform will change the existing system of direct payments to farmers and the actions they need to undertake to receive these payments. Direct payments can help to support SLM via a new area payment system, cross compliance and the application of the new greening measures. For example, Article 31(1) of the draft Regulation on Direct Payments requires all Member States to establish "no ploughing zones" on permanent grassland within Natura 2000 sites. Using the permissive parts of the new Direct Payments Regulation to protect species rich permanent grasslands as well as those overlying carbon rich soils would impose few additional obligations over and above the existing EIA Regulations, but would be a much more effective mechanism.

A well funded WRDP can help to deliver SLM through supporting knowledge transfer, co-operation, investment and innovation. Previous research showed that the scale of the interventions needed to meet the Welsh Government's objectives for biodiversity, cultural landscapes, climate change mitigation, flood risk management, soil health, and water quality amounted to £165M per annum[23]. This is almost double the amount allocated to the current agri-environment programme, despite no adjustment for inflation since 2009.

(b) EU Biodiversity Policy

[22] http://cambrianmountains.co.uk/news/incentives-vital-for-farmers-to-provide-more-than-just-food/

[23] "Estimating the Scale of Future Environmental land Management Requirements for the UK". Cao,Y., Elliott, J., McCracken, D., Rowe, K., Whitehead, J. and Wilson L. Report to Land Use Policy Group by ADAS & Scottish Agricultural College. December 2009.

The EU Biodiversity Strategy (EUBS)[24] aims to halt the loss of biodiversity and degradation of ecosystem services by 2020. The agricultural and forestry sectors are expected to contribute through existing mechanisms such as CAP. Welsh Government leads on delivery of EUBS in Wales and will produce its own Biodiversity Strategy. An opportunity exists to engage with stakeholders and reach agreement on how to reach the 2020 target.

The Habitats & Species and Birds Directives aim to halt and reverse historic declines in biodiversity. The Directives require:

- protection of vulnerable species of birds, animals and plants wherever they occur in the EU;
- creation of a network of sites (Natura 2000) within which management is necessary to enable habitats and species to achieve "favourable conservation" status throughout their natural range.

Member States are expected to prepare 'Prioritised Action Frameworks' (PAFs) to meet Directive obligations. Natural Resources Wales, with support form EU LIFE+ funds, is developing an all-Wales programme for managing Natura 2000 sites in Wales.

The PAF programme uses stakeholder supported prioritised action plans to address relationships between the maintenance and restoration of biodiversity, and the provision of food, timber, water, recreation and other ecosystem services. The plans provide evidence to support the development of integrated policies, management practices and funding streams.

The first PAF for Wales was submitted in February 2013. The framework is being developed by Natural Resources Wales with Welsh Government and other stakeholders.

(c) Water Framework Directive (WFD)

The WFD takes a holistic approach to managing the water environment. Most water bodies are expected to meet "Good Ecological Status" (unless otherwise justified).

Natural Resources Wales is the Competent Authority for implementation of the WFD in Wales. Our work involves drafting and delivering River Basin Management Plans (RBMP's) through working in partnership with a wide range of public, private and voluntary organisations.

The RBMP process identifies measure to protect and restore the water environment. It includes actions to achieve objectives for Natura 2000 sites, Bathing Waters, Shellfish & Drinking Water Protected Areas.

SLM practise is central to the rural land based measures that are needed to bring about the outcomes required by the WFD.

[24] European Union 2011. The EU Biodiversity Strategy 'Our life insurance, our natural capital: an EU Biodiversity Strategy to 2020' http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7%5b1%5d.pdf

(d) Climate Change Policy

At least 20% of the total EU budget should be spent on climate change related actions[25]. Better targeting of the CAP and regional development funds will contribute to this investment. The 20% target provides an ideal opportunity to take an Ecosystem Approach to integrating the new WRDP and complementary EU Directive drivers to deliver SLM in Wales.

In Wales, the Climate Change Strategy has an annual emissions reduction target of 3%[26]. In 2010, the Land Use and Climate Change sub group of the Climate Change Commission explored how land management could contribute to reducing GHG emissions and enhancing carbon sequestration[27]. The most widely publicised recommendation adopted was to create an additional 100,000ha of woodland by 2030.

Welsh Government continues to support the development of sectoral adaptation plans (SAPs). The natural environment SAP is currently under development and depends on achieving synergies and minimising conflicts with other land uses. Natural Resources Wales feels a catchment-based, spatially explicit approach to identifying opportunities for land use change can deliver enhanced resilience to climate change in terms biodiversity, landscape, woodlands and water quality.

(e) Forestry Policy

Welsh Government's Woodlands for Wales strategy operates across global and European contexts[28]. The goal of increasing woodland is compromised by woodland loss due to land use change and objections to planting trees on agricultural land. Some 2340 ha of new woodland has been created since 2010[29] and Welsh Government is currently reviewing how to improve scheme uptake.

Some 42% of Welsh woodlands (128,000 ha) are currently unmanaged. Management can be incentivised through well targeted grant schemes.

(f) Environment Bill

Natural Resources Wales believes that natural resource planning should be given a statutory basis in new legislation in order to clarify its relationship with other policies, plans and strategies. This will provide a common evidence base for land management and land use planning systems. Such an approach will ensure that limits on natural resources are widely recognised in planning systems, the WRDP and all other relevant social and economic

[25] European Council (2013). Conclusions on the Multi-annual Financial Framework (paragraph 10). EUCO 37/13, 8 February 2013, Brussels. Accessible at: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/135344.pdf

[26] http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/strategy/?lang=en

[27] http://wales.gov.uk/topics/environmentcountryside/climatechange/emissions/agricultureandlanduse/?lang=en

[28] http://www.forestry.gov.uk/pdf/EnglishWfWstrategy.pdf/$FILE/EnglishWfWstrategy.pdf

[29] Forestry Statistics 31st March 2010 to 31st March 2013. New woodland figure derived from all sources including Plant! and Glastir Woodland Creation.

policies. The new system of natural resource planning should be based on the Ecosystem Approach.

Natural Resources Wales believes a statutory national strategic natural resource plan should be coupled with statutory duties for Local Authorities, National Park Authorities and public sectors. These would require that they exercise their functions in line with the aspirations of the strategic natural resource plan.

The national plan can be supported as necessary by catchment scale plans. Natural Resources Wales should be granted the flexibility to enable delivery of natural resource planning in the most effective and efficient way.

A duty should be placed on Natural Resources Wales to advise Welsh Government on the adequacy with which Local Authorities and National Park Authorities have incorporated a spatial framework and natural resource plans in their Local Development Plans. This would complement the assessment of plans currently required under the 'Strategic Environmental Assessment' (SEA) Directive. Natural Resources Wales would need additional resources to fulfil this requirement. A common narrative between the Environment and Planning Bills will help accommodate interdependencies and identify synergies.

Natural Resources Wales would welcome the opportunity to explore innovative approaches to natural resource management and regulation. Legislation should be non-prescriptive, but ensure that Welsh Government approval is required for the use of exploratory powers. Natural Resources Wales currently has narrowly defined experimental powers. An extension of these existing powers would enable Natural Resources Wales to explore the use of market mechanisms to pay for ecosystem services, as well as simplify permitting processes.

(vi). How do we define the key ecosystems and ecosystem services in a way that makes sense for Wales?

Ecosystems comprise living organisms, their non-living surroundings, and all the interactions between them[30]. Some ecosystems may correspond with individual habitats and the scale of land management activities e.g grazing of a heathland. On the other hand, many ecosystem processes, such as the water cycle, operate at larger geographical scales such as entire catchments.

There are several ecosystems classifications available for Wales[31,32]. The Wales Biodiversity Partnership (WBP) is structured around nine ecosystem groups[33]. These are supported by species expert groups for developing guidance and setting priorities for biodiversity action[34].

In the context of SLM it is convenient to consider four categories of 'ecosystem services'[35]:

---

[30] Natural Resources Wales (2013). Draft Ecosystem Approach Framework.
[31] Welsh Government (WG) (2011b). Natural Environment Framework Ecosystem Scale. Welsh Government Paper.
http://wales.gov.uk/topics/environmentcountryside/consmanagement/nef/publications/evidence/ecosystemsscale/?lang=en
[32] UK National Ecosystem Assessment (2011). The UK National Ecosystem Assessment: Synthesis of the Key Findings. UNEP-WCMC, Cambridge
[33] Coastal, Enclosed Farmland, Freshwater, Lowland Grassland & Heathland, Marine, Upland, Urban & Brownfield, Wetland, Woodland
[34] http://www.biodiversitywales.org.uk/en-GB/Ecosystems--Species-Expert-Groups
[35] Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis.

- Supporting services which include the underlying mechanics of ecosystems themselves (e.g. ecological processes, soil formation and nutrients cycling) and are necessary for the production of all other ecosystem services;
- Provisioning services such as food, fuel and water;
- Regulating services such as water purification, carbon sequestration and pollination;
- Cultural services providing a source of aesthetic, spiritual, religious, recreational or scientific enrichment;

Welsh Government and Natural Resources Wales have provided a list of relevant ecosystem services and a framework for applying the Ecosystem Approach in Wales[36].

Embedding and communicating the Ecosystem Approach is an outstanding challenge, and there is a need to improve understanding of the links between services and the benefits they provide to society.

Natural Resources Wales has produced ecosystem services maps that can help deliver the Ecosystem Approach. New information from field surveys, remote sensing data and land use surveys will be incorporated as available.

Linking SLM, ecology and economics is an important part of the Ecosystem Approach. The UK National Ecosystem Assessment[37] estimated the environment contributes £8.8 billion annually to the Welsh economy, accounts for 9% of Welsh GDP, and one in six Welsh jobs.

Exemplar projects can aid understanding of the Ecosystem Approach. The Llanelli Rainscape Project initiated by Dwr Cymru aims to reduce rainwater entering the sewerage system thereby reducing the sewerage flooding risk. Using mainly natural processes rather than traditional 'concrete interventions', this is a major scheme for Wales[38,39].

The concept of "resilience thinking" may help farmers and foresters embed the principles of the Ecosystem Approach into business planning[40].
Resilience is the ability of ecosystems to resist, absorb, or recover from disturbance. Diversity in all its forms (biological, ecological, landscape, social and economic) enhances resilience[41]. For example, the shelter belts created at Pontbren allow sheep to remain outdoors for longer in winter. At the same time they also increase rainfall infiltration into the land; reducing run-off during storms and pollution risks as well as enhancing biodiversity.

(vii). How do we develop a baseline from which to measure progress? This includes how we collect, coordinate and use data to support sustainable land management in Wales.

Island Press, Washington

[36] Natural Resources Wales (2013). Draft Ecosystem Approach Framework.

[37] UKNEA (2011). UK National Ecosystem Assessment: Technical Report Chapter 20: Status and Changes in the UK's Ecosystems and their Services to Society: Wales.

[38] http://publications.naturalengland.org.uk/publication/4084624

[39] http://www.snh.org.uk/pdfs/publications/commissioned_reports/532.pdf

[40] *Walker, B. & Salt, D. (2006) Resilience thinking: Sustaining ecosystems and people in a changing world. Island Press, Washington D.C.*

[41] *Hopkins, J.J., Allison, H.M., Walmsley, C.A., Gaywood, M. and Thurgate, G. (2007). Conserving biodiversity in a changing climate: guidance on building capacity to adapt. UK Biodiversity Partnership, Defra.*

Developing an informative baseline requires that Welsh Government and relevant stakeholders agree on desired SLM outcomes and appropriate spatial scales for assessment. These issues have been highlighted in a recent UK wide assessment of sustainable intensification[42]. Suitable variables are likely to include nitrate emissions, GHG emissions, biodiversity change, water quality and soil qulaity. The challenge of choosing the best indices for a range of analyses is being explored through the Defra Sustainable Intensification Research Platform[43].

The extent to which existing data constitute such a baseline should be assessed. Numerous governmental and non-governmental monitoring programmes provide data relevant to SLM assessment. A fundamental challenge is to collect and collate these data, and any additional data required to fill gaps, in consistent and easily accessible formats to inform SLM assessment. Meeting this challenge will require committing resources to establish and maintain data sets that can be made widely available across Wales via the web. Data confidentiality for some sources remains an issue.

New opportunities are emerging in the form of remote sensing technologies and involving land managers and the public in data collection and charting their own contributions towards achieving SLM. This latter approach was explored in the LUPG study on sustainable intensification[44].

Making the most of existing and future data requires coordinated oversight of evidence-gathering activities. At the UK level, this is supported by the UK Environmental Observation Framework (both Natural Resources Wales and Welsh Government participate in this). A parallel forum should be established in Wales.

(viii). What incentives can we provide land managers to develop sustainable practices, and in particular, are there any new sources of investment we can attract to support these?

Incentives available under the WRDP include agricultural, forestry, agri-environment and climate change schemes. These should be coupled with knowledge transfer. Farmer focus groups established during recent work on "sustainable intensification" suggested that "evidence needs to be better communicated to farmers"[45].

Loan schemes can support existing grant systems. Doing so may save resources whilst encouraging innovation and enterprise. Care will be needed to manage administrative costs and limit default rates. Loans can be incentivised to encourage timely repayment.

---

[42] Exploring the Concept of Sustainable Intensification. Report for the UK Land Use Policy Group by ADAS and Les Firbank Ecosystems. January 2013. Accessible at: http://aplus.adas.co.uk/Services/sustainability/Exploring-the-Concept-of-Sustainable-Intensification.aspx

[43] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/218813/New132.pdf

[44] Exploring the Concept of Sustainable Intensification (2013). ADAS report to Land Use Policy Group. *Op cit*

[45] Exploring the Concept of Sustainable Intensification (2013). ADAS report to LUPG. Op cit

Many rural businesses regularly borrow and will be comfortable applying for loans under the WRDP. Businesses seeking support for major capital projects should provide robust business plans. The terms and conditions of all loans should require compliance with best environmental standards.

Other EU programmes provide additional funding options. The Anglesey and Llyn fens LIFE Project has worked to re-direct spring water from land drainage systems to fenland habitats to reduce flood risk, improve water quality, sequester carbon, and improve fish and wildlife habitats. In addition, the project has helped farmers sustainably graze some 500ha of fen habitat; demonstrating how ecosystems restoration can also benefit production[46].

In responding to the Welsh Government's recent consultation on EU Structural Funds, we suggested that the 'Green Infrastructure' concept inform all major investments. The creation of a strategic network of green spaces will deliver sustainable benefits for local communities, including: flood alleviation, recreation, education, food production, community cohesion, and improve health and well-being. Many elements in the WRDP can support green infrastructure development, particularly the environmental and community measures.

Private sector investment can support EU and Welsh Government programmes. Several UK water companies have funded land management projects. Northumbrian Water's "Tees Water Colour Project" reduces treatment costs, improves water quality, and reduces carbon loss[47]. United Utilities and the RSPB have developed the Sustainable Catchment Management Programme (SCaMP)[48]. Despite recent progress, such large projects have yet to be widely embraced in Wales.

A number of market based mechanisms can support SLM and SFM programmes:

Woodland Carbon Code (WCC)

The WCC accredits woodland carbon sequestration so that forestry schemes can attract funding from corporate social responsibility (CSR) budgets. The WCC provides a model that can be extended to markets for other ecosystem services. The code includes strict sustainability criteria to ensure woodland management for carbon is not detrimental to other ecosystem services. Fifteen pilot projects were established across the UK in 2010 and there are now seven registered sites in Wales with total credits of 116ktC[49].

Peatland Carbon Code

Based on the WCC model, the IUCN is currently consulting on a code to promote investment in peatland restoration[50]. Such restoration is not formally accepted as contributing to GHG emission reductions under the Kyoto process. However, the IPCC is developing guidance for peatland restoration as part of national GHG inventory recording. These guidelines should encourage more market investment.

---

[46] http://www.angleseyandllynfens.com/

[47] See: http://www.nwl.co.uk/Teeswatercolourproject.aspx

[48] See: http://www.unitedutilities.com/?OBH=5410

[49] Woodland Carbon Code http://www.forestry.gov.uk/carboncode

[50] http://www.iucn-uk-peatlandprogramme.org/peatland-code

Forestry Stewardship Council (FSC)

The UK Woodland Assurance Standard (UKWAS) and the Programme for the Endorsement of Forest Certification UK (PEFC UK) verifies that woodlands are sustainably managed and reach FSC standards. Many users and major retailers require FSC certification that reflects sustainability across the whole supply chain. All Welsh Government Woodland Estate woodlands (as managed by Natural Resources Wales) are FSC certified.

Biodiversity offsetting

Biodiversity offsets require that environmentally damaging developments provide ecological compensation. Offsets can be undertaken on a project basis or by pooling compensation through a third party to support restoration and/or land purchase elsewhere. Projects should still look to avoid/minimise harm before offsetting is considered. There will be circumstances when offsetting is not acceptable due to the importance of the features that will be affected or the difficulty of creating a similar habitat.

Since the 1970s the aquatic resource scheme in the USA has supported over 400 wetland banks operating in a market worth more than $3 billion a year[51]. A voluntary biodiversity offsetting scheme is now underway in six planning jurisdictions in England[52].

There are also links between SLM and health and well being. In effect, 'environmental engagement' is a form of treatment through the NHS, which by improving health reduces Government expenditure[53].

(ix). How can we ensure that our sustainable land management policies maintain vibrant rural communities and attract new entrants into the land-based sector?

A geographical area based approach to WRDP delivery can improve local governance and build project capacity[54]. The Grosseto Province in Italy demonstrates how SLM can deliver added value agriculture, expand tourism and increase support for protected areas. A parallel approach in Wales could involve the development of integrated territorial strategies, each focussed on delivering WRDP measures in a given landscape or river catchment.

LEADER builds on the experience of local community groups to support innovative pilot projects. LEADER can be used to support integrated approaches to SLM. In particular, the community-led "bottom-up" approach used within LEADER contrasts strongly with the largely "top-down" approach deployed under the current Axis 1 & 2 schemes.

Supporting new entrants through skills improvement, mentoring, capital grants and support for co-operative ventures can promote business innovation. Support should be conditional on a commitment to SLM. In many cases, the most vulnerable time from an environmental

[51] Further information accessible at: http://water.epa.gov/type/wetlands/outreach/facts_contents.cfm

[52] Environment Bank England. http://www.environmentbank.com.

[53] http://www.coedlleol.org.uk/index.php?option=com_content&view=article&id=1166%3Aactif-woods-wales-seminar-days-to-be-held-in-aberystwyth-and-treherbert&catid=12%3Ahealth-a-activities&Itemid=43&lang=en

[54] Mantino, F. (2011). "Developing a Territorial Approach for the CAP". Accessible at: http://www.ieep.eu/work-areas/agriculture-and-land-management/future-of-the-cap/2011/07/developing-a-territorial-approach-for-the-cap

perspective is when a change of land ownership takes place. Incorporating education and skill development into training and advice programmes will strengthen the linkage between SLM and economic sustainability.

In terms of supporting young entrants, Natural Resources Wales has required that those tendering for some long-term timber harvesting contracts (LTC's) take on apprentices who will be trained up to NVQ level 2. To date five apprentices have been employed, and five additional positions are expected following LTC re-tendering.

(x). The most appropriate geographical scale(s) at which we should be delivering sustainable land management policies and practices in Wales?

All scales are appropriate for progressing SLM. National and regional scales are appropriate for establishing overarching policy and monitoring programmes. For example, Natural Resources Wales deploys a strategic approach to the restoration of afforested deep peat[55].

In terms of integrated rural development, the most appropriate scale is likely to be at the catchment/community level and above.

Meeting environmental objectives for diffuse pollution, water level management, soil conservation, habitat networks and species recovery requires collaboration at the catchment/landscape scale[56]. Numerous examples of this exist within Wales[57]. Knowledge gained from previous initiatives has been applied during the current WRDP and funded under the Technical Assistance budget[58]. Considerable scope exists for tackling a wider range of issues by using the facilitation skills of the Glastir Common Land Development Officers alongside participatory approaches such as the Agriscop programme.

(xi). Are there key actions we can take to deliver short-term 'quick wins'?

(a) Ecosystem Approach and the Environment Bill

Publication of further guidance on the Ecosystem Approach should be accompanied by additional information on exemplar projects.

We have described in our response to question **(v)** how national and local planning processes can be integrated to realise SLM.

(b) Implementing CAP Reform

---

[55] A strategic assessment of the afforested peat resource in Wales (2012) http://www.forestry.gov.uk/forestry/INFD-8YYJSU

[56] Identification of Delivery Mechanisms for Welsh Top-Tier Agri-Environment Schemes. Countryside and Community Research Unit (CCRI) University of Gloucester (2006). CCW Research Report 06-15.

[57] Sustainable farming and Environment: Actions towards 2020 – Appendix ii. Accessible at: http://www.physicalactivityandnutritionwales.org.uk/Documents/740/Sustainable%20farming%20and%20the%20Environment%202020report-e%285%29.pdf

[58] An Evaluation of the Commons Development Officer role using LEADER methodology. Commons Vision and University of Gloucester. October 2012. Accessible at: http://www.ccri.ac.uk/wp-content/uploads/2013/07/CDO_Eval-Report_Reduced.pdf

We have described in our response to question **(v)** how CAP reform can be implemented to promote SLM.

(C) Building the New Wales Rural Development Plan

Advice relevant to SLM and SFM needs to be developed and trialled through an improved knowledge transfer system. For example, Natural Resources Wales is currently working with Farming Connect on guidance for techniques to improve farm yard resilience to more variable weather conditions. Land managers will benefit from a forestry advisory service integrated into a broader-based "Connect" programme.

The current balance between the Entry and Advanced elements of Glastir is unlikely to be optimal for delivering SLM. Greater emphasis on the targeted advanced element may deliver improved outcomes. A complementary part-farm scheme could also improve uptake and delivery. Some elements of Glastir could be delivered at a local level, potentially through contracting-out aspects of the delivery system.

(d). Better Regulation.

Natural Resources Wales believes that farmers should be asked to demonstrate compliance with basic environmental standards consistent with SLM in order to secure direct payments. We want to simplify environmental regulations for land management whilst ensuring basic standards are upheld.

We have defined basic standards for some land management practices that have been endorsed by Welsh Government's Working Smarter in Agriculture initiative. These basic standards support SLM practise and are aimed at reducing diffuse pollution and conserving our valuable soil resource.

The basic standards focus on:

- Making sure slurry stores are fit for purpose, both in terms of the capacity and quality of the store;
- Making sure application of slurry to land is properly managed;
- Using a nutrient management plan to improve understanding nutrient status and the pH of the soil.
- Making sure animals have controlled access to fixed watering points or use mobile drinkers.
- Making sure there are plans in place for the correct disposal of chemicals, such as used sheep dip or pesticides.

Cross-compliance requirements should be better aligned to delver key compliance standards, for example The Silage, Slurry and Agricultural Fuel Oil Regulations (SSAFO) could form part of the requirements, but such change is likely to require agreement at EU level.

(xii). Are there actions we should be taking for the long-term?

Monitoring Progress towards SLM

A review of existing and future monitoring programmes should identify what data can contribute to an appropriate baseline for SLM and what indices are needed to assess progress towards SLM.

Applying the Ecosystem Approach

Research is needed to improve our understanding of ecosystem condition, the delivery and value of ecosystem services, and practical ways of applying the ecosystem approach. Mapping ecosystems and their services will help establish consistent presentation methods that make evidence accessible to practitioners.

Providing Adequate Incentives

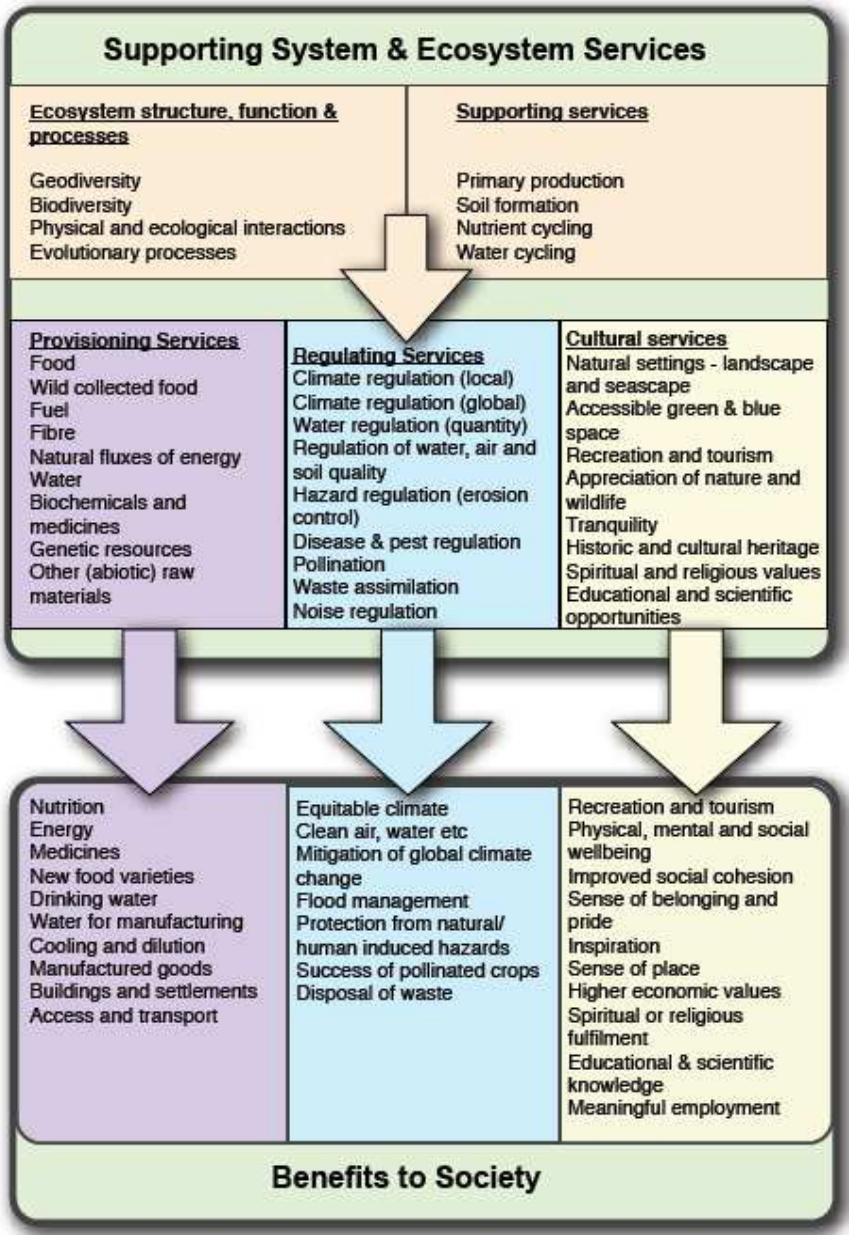
The approach of using market-based Payments for Ecosystem Services (PES) to support SLM needs development. Communicating and embedding in policy the linkage between SLM, ecosystem services and economic and social sustainability should be an over-arching priority.

Delivering SLM through the Ecosystem Approach will take time. In the short term, a combination of agri-environment schemes, market interventions and targeted subsidies will be needed.

Cyfoeth Naturiol Cymru /Natural Resources Wales
September 2013

Appendix 1

Reference List of Ecosystem Services developed for use by Natural Resources Wales [59]



[59] Natural Resources Wales (2013). Draft Ecosystem Approach Framework.