

Sustainability Committee

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National Assembly for Wales Sustainability Committee inquiry into carbon reduction in Wales: rural land use management and carbon reduction

Evidence submitted by Environment Agency Wales

Summary of recommendations.

The Climate Change Committee analysis of the potential reductions in green- house gas emissions is assessed for its application in Wales.

Data to measure the reductions from policies implemented should be identified and collated.

WAG supports the development of Anaerobic Digestion (AD) in collaboration with government agencies and the farming industry.

Within "Sustaining the Land" we strongly support the proposed Option 3 for future land management actions, which would target resources explicitly and exclusively on WAG's high-level objectives including climate change mitigation.

A single body is charged with taking the overview on carbon management in Wales with a statutory requirement to comment on carbon issues in development proposals being considered under Town and Country planning.

Consideration should be given to including carbon retention and sequestration measures within designated habitat management plans and increasing resources to ensure that land management agreements are fulfilled.

Consideration could also be given to identifying new areas for "special carbon protection". These are most likely to be deep peats in the areas of organo-mineral soils.

An updated assessment of the distribution of organic and organo - mineral soils in Wales should be undertaken.

A reliable "up to date" assessment of the amount of carbon within the soils of Wales should be undertaken and periodically repeated.

Measurements of the loss of carbon from soils in Wales should be identified and annually monitored.

Measures to identify success of carbon sequestration within specific soil types need to be developed and related to farm scale actions.

Use of home-grown timber to help reduce the carbon footprint from the substitution of other materials with wood products. This will increase the economic value of timber and thereby support more active management of Welsh woodlands.

Sustainability criteria should be met before government support is given to biocrops, including wood fuel.

WAG should be encouraged to promote the research, development and commercialisation of sustainable second generation biofuel production.

WAG policies should support local procurement and sustainable sourcing of key commodities such as Palm Oil, Soya, Sugarcane and Beef.

Introduction

Since the Agency submitted written evidence to your committee (27th October 2008) the UK Committee on Climate Change has produced its report which includes coverage of the abatement potential of Agriculture. We have also considered the transcript of the Committee's first hearing on this topic and further developed our thinking through the production of an Agriculture and Land Change paper for the Welsh Climate Change Commission. In this light we have produced an additional short document which addresses some of the more recent issues in addition to emphasising our original key points.

1. Abatement potential in Agriculture (After the Climate Change Committee)

There are 3 direct routes by which emissions can be reduced in the Agricultural sector

Lifestyle change: less reliance on carbon intensive produce.

Changing farming practices.

Using new technology on farms to reduce emissions.

Lifestyle changes may offer significant abatement opportunities. The Zero Carbon Britain scenario proposed by the Centre for Alternative Technology identifies a 60 % reduction across the UK in livestock numbers as the major abatement opportunity in

agriculture.

The reduction of livestock numbers in Wales raises many concerns. Key organisations (e.g. NFU Cymru and FUW) argue that land in Wales is particularly relevant to livestock rearing and that there are other areas of the UK where a change from livestock to arable is more effective (e.g. Southern Scotland). As a result reductions of this nature may best be considered across the UK as a whole and would require significant 'behavior change' initiatives.

The UK Climate Change Committee commissioned work from the Scottish Agricultural College on the change of farming practice and use of new technologies. A marginal abatement cost was constructed providing assessments of potential emissions reductions and associated costs. This included assessments of technical and realistic potential reductions.

Under the central feasibility scenario 6 MtCO₂e realistic emissions reduction potential is identified at a cost of up to £40/tCO₂e. This comprises of emissions reduction from crops/ soils (70%) livestock (20%) and anaerobic digestion (10%). On a pro-rata basis the savings in Wales in these categories are likely to be less than 0.5 Mtonnes CO₂e. Further assessment of these suggestions is recommended.

2. Contributions of Agriculture and Forestry to Green- House Gas reductions in other sectors

Land managers can contribute directly to the improved management of greenhouse gas emissions. Hydro and wind power can be harnessed on farms where appropriate conditions exist and appropriate permissions are obtained. On-farm energy production from bio-fuel (wheat, oil seed rape or sugar beet) or biomass, the use of straw, wood chip, agricultural bi-products and waste, and from grasses, will become more attractive as oil prices increase.

Within the Energy sector significant contributions could be made by biomass and biofuels to GHG emission reductions.

The Forestry sector has a key role:

Bringing more of Wales's woodlands under management. Forests should be managed to the UK Forestry Standard.

Increased focus on the use of home-grown timber to reduce the carbon footprint from the substitution of other materials with wood products.

Using wood in place of other products (especially in building, furniture and fittings) has the benefit of reducing CO₂ emissions during manufacture. When it comes to constructing homes and other buildings, wood has the lowest energy consumption and CO₂ emission of any commonly used building material. Research suggests that replacing other materials with wood in construction could cut GHG emissions by between 40% and 80% per building as; for example, replacing one cubic metre of concrete or red brick with the same volume of timber can save around 1 tonne of CO₂ and locks up the CO₂ for the life of the building/furniture/fitting. Wood used in this way delivers a much higher value product as well as skilled employment. It will also encourage land managers to invest in woodlands due to the increased financial incentive.

Biofuels

The sustainable production and use of biofuels has the potential to make a net reduction to CO₂ emissions over the full production cycle compared to the use of fossil fuel equivalents. Whilst much of Wales is unsuited for the growing of first generation biofuel crops, there are some parts which might be better suited. The Institute of Biological, Environmental & Rural Sciences at Aberystwyth University is using their crop breeding expertise to develop bio-fuel crops particularly suited to the Welsh climate and suitable for second generation bio-fuel production. More marginal areas could also be used in the production of biomass crops such as miscanthus which could be used to fuel small scale combined heat and power plants. However, the monoculture of bio-crops is not good for bio-diversity and they are more at risk of disease and climate change induced impacts.

Second generation biofuels (biofuels made from food crop waste products or by-products of other processes) offer real potential in future. Production offers the advantage in that it can convert a larger proportion of the feedstock to bio-fuel and also utilise lignocellulosic biomass. This has the advantage of significantly improving the carbon balance of the bio-fuel production process, being able to more effectively utilise non-food crops such as miscanthus and use certain waste materials. Care should be taken on the development of biofuels. Sustainability criteria must be met before Government support is given. The displacement impact of agricultural production moving elsewhere to supply Welsh consumption must also be considered.

Consumption Issues

Green- house gas emissions world- wide should also be considered. Welsh agriculture can play its part by sourcing locally and considering the carbon inherent in any imports together with the sustainability of any imported commodities.

Transport issues

Promotion of local food sourcing can cut down significantly on transport emissions- where the movement of food currently accounts for 3.5% of the UK green house gas emissions.

3. Sequestration in Agriculture, Forestry and land use sector

This sector is capable of removing carbon from the atmosphere and locking it into ecosystems. Most attention is focused on Forestry although other areas are important including the way that agricultural land is used and the way that planning policies address urban spread and derelict land. Emissions are reported in the National Atmospheric Emissions Directory

A recent study by the centre of Ecology and Hydrology (quoted in the AEA report) has provided projections for Wales up to 2020. The study shows that this sector absorbs slightly more greenhouse gas than it emits at present (0.29 MtCO_{2e}) but the projections are that with current policies there may be a net emission of 0.70 MtCO_{2e} by 2020. Most of this change is associated with Forestry, where the net emission or sequestration is said to be tied to the cycles of growing and felling.

The role of Forestry in relation to carbon sequestration needs careful analysis. Our view is that:

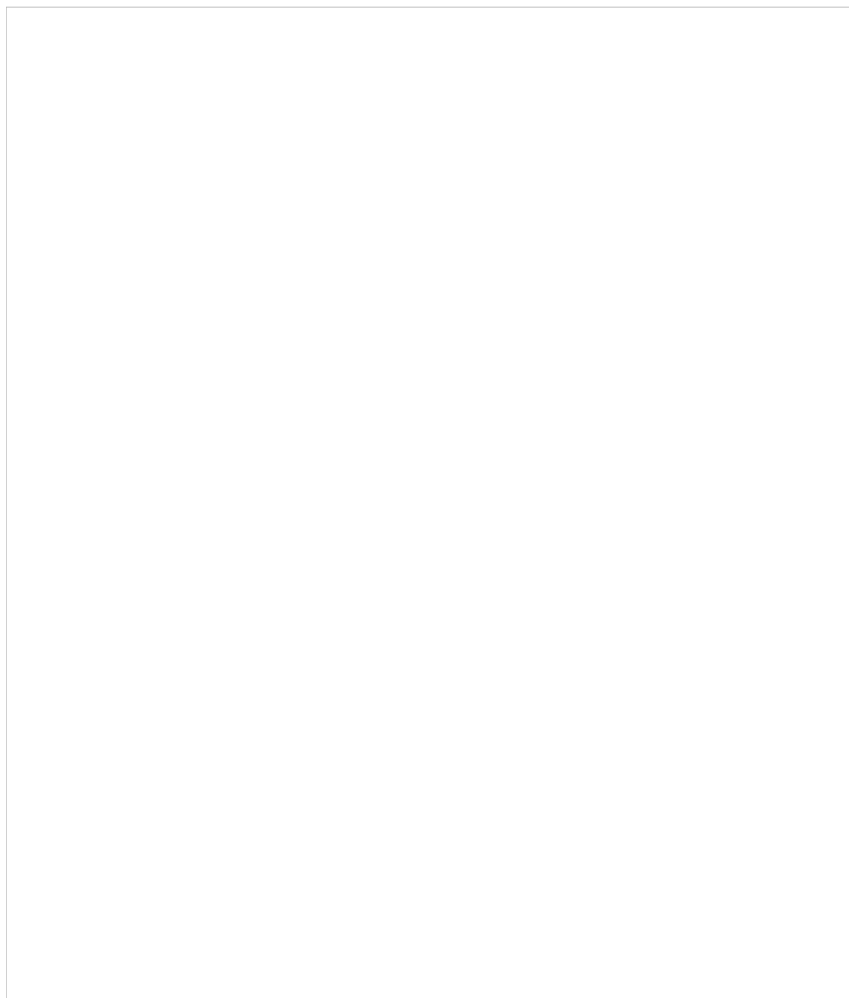
The aim should be to lock carbon away for the longest practical time by using timber for construction purposes. This would be burnt only when it reached the end of its useful life.

Trees should only be planted on appropriate soils. Some existing woodland developments are actually net carbon emitters. Where this is the case, the issue is being addressed by felling of the woodland.

The rate at which trees accumulate carbon varies over their lives, and the profiles are different for different species. This needs to be factored into calculations of carbon sequestration.

The Climate Change Committee has not yet published their analysis of potential for sequestration. Our first paper gave the AEA estimate of potential - but the figure of over 7Mtonnes CO_{2e} does not take account of practicalities or cost. While there is a large potential here further work on the applicability to Wales is needed.

4. Maintaining Storage of carbon in existing Soils and Forests



This map, which we understand is based on 1980's data - and may not reflect current soil carbon distribution, shows the location and extent of organic and organo- mineral soils in Wales. Organic soils cover just over 60,000 Ha (3.4%of land area) and organo- mineral soils just over 420,000Ha (20% of land area).

We recommend that the current distribution of soil carbon be assessed.

Recent work from Cranfield University suggests that there is around 150Mtonnes of carbon stored in the top 15cm of these soils in

Wales and that we may be losing around 1.2 Mtonnes per year. There is a need to reconcile different data sets in this area to come to a common understanding of the problem.

The loss of soil carbon is likely to increase as a result of climate change. We therefore need to ensure these areas are managed as effectively as possible to conserve current levels of soil carbon.

According to "The state of common land in Wales - an indicative study" funded by CCW and compiled by RSPB Cymru, approaching 45% (79,000 ha) of common land areas in Wales are designated as SSSI. One could argue that much of the nations' peatlands are located in common land areas and thus ensuring that these sites of national and international importance are appropriately managed to protect the interest on them is central to meeting the Welsh Assembly Government's and the wider EU's biodiversity targets. Yet according to this study every indication is that a high proportion of features are in an unfavourable condition and therefore not adequately protecting the interest for which those sites were designated.

Against such a backdrop it is of paramount importance that all future agreements have carbon protection at its heart. There are two important questions to consider;

Do current agreements cover all the possible management actions that may impact carbon storage?

How effective are these agreements in delivering the required result?

It may be necessary to update the agreements to ensure carbon issues are covered and to increase resources to make the agreements effective. A cross-check to ensure that all organo-soils are within habitat management schemes is also recommended.

A significant area of the organo- mineral soils must be outside habitat management schemes. We suggest that consideration be given to identification of areas of carbon storage so that some management of these areas could be established. While it would be preferable to do this through agri- environment schemes our view is that all options should be considered.

5. Issues raised in previous committee hearings

Data

We have suggestions on the need to update or acquire new information within this submission. While we acknowledge the importance of this it should not delay actions in areas where data is not critical.

Carbon trading

Financing farmers to protect or improve carbon management requires data to measure the improvement. It would also be more acceptable with financial incentive. As has been previously mentioned such activity does not at present qualify for support through EUETS or other international mechanisms but may be supported through Agri- environment schemes. The Agency has been involved in a project called Tir Cloi-where carbon reduction or storage schemes would qualify for support. We have also had discussions with the Chicago Carbon Exchange and undertaken a desk top study with NSRI to assess the potential in Wales. Financing is at present envisaged from Corporate and Social Responsibility budgets but the scheme is not yet active.

The extent of emissions reduction achievable through domestic reductions as opposed to use of the CDM type mechanisms is an area for discussion. The agency has in the past proposed that a local 'Carbon Reduction Scheme' should be brought into play should the need to use CDM type credits exceed designated limits. Should such a scheme be considered it should include carbon preservation.

Pont Bren

We recognise the need to have measures of carbon sequestration at a farm and small Catchment level. Work continues at Pontbren which should provide additional evidence to help in this process. We are compiling information at present on the results from this work which we will forward to the committee as soon as possible

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