Report on the evidence taken by the Environment, Planning and Countryside Committee on biocrops and biomass

Introduction

1.1 The Committee took evidence on the development and use of biocrops and biomass and considered their impact on biodiversity and the wider environment.

1.2 Oral evidence was taken in Committee on 23 March 2006 and 11 May 2006 [1] from the following:

The Institute of Grassland and Environmental Research (IGER)
NFU Cymru/National Farmers' Union of Wales
Undeb Amaethwyr Cymru/ FUW Farmers Union of Wales
RSPB Cymru
The Countryside Council for Wales

Written evidence was also received from these organisations and the Welsh Assembly Government.[2] In addition WWF Cymru and The National Trust Wales presented briefing papers to the Committee to help inform opinion. We would like to extend our thanks to all who assisted Committee's work in this area.

1.3 The report that follows summaries the main issues discussed.

Background

2.1 Sharply rising oil prices and an increasing awareness of the need to decrease CO_2 emissions to reduce global warming have brought into focus the need to develop and market renewable energy technologies.

2.2 Biomass is any biological matter derived from plant or animal matter, or as one witness put it, it is 'anything that can be burned'.[3] This includes material from forests, energy crops, animal wastes, and municipal solid waste. It currently contributes about 1.5 per cent of electricity and about 1 per cent of heat in the United Kingdom.[4]

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[1] Transcripts of the evidence can be found at
http://assembly/rop/ROP/Committees/EPC/epc060323fv7.htm
http://assembly/rop/ROP/Committees/EPC/epc060511fv7.htm

[2] http://www.wales.gov.uk/assemblydata/N000000000000000000000000042426.htm
http://www.wales.gov.uk/assemblydata/N000000000000000000000000042430.pdf
http://www.wales.gov.uk/assemblydata/N000000000000000000000000042431.htm
http://www.wales.gov.uk/assemblydata/N000000000000000000000000042432.pdf
http://www.wales.gov.uk/assemblydata/N000000000000000000000000043877.pdf
http://www.wales.gov.uk/assemblydata/N000000000000000000000000043878.htm

[3] Transcript, 23 March 2006, paragraph 283
[4] IGER, written evidence, p2

2.3 In its written evidence, IGER made the case for energy crops, arguing that they would be required, 'to fill a gap between imminent demand of 500,000-700,000 tonnes of biomass in Wales and that which can be provided by forestry or wood waste.'[5] There was general agreement that the demand for energy crops would increase and that there were therefore opportunities for the production of short rotation coppice and miscanthus as well as the production of more 'conventional' crops such as oil seed rape and potatoes to produce biofuels.[6]

2.4 The Committee was reminded of the Biomass Task Force's conclusions as to why biomass was not making a greater contribution, given the economic and environmental imperatives:

- Ignorance of potential
- Perceived as complex and high risk
- Lack of policy clarity with fragmented approach within Governments and need for stronger Government 'ownership' of biomass
- Need for regional delivery of information and services
- Too heavy emphasis on electricity rather than heat
- Lack of robust supply chains[7]

The Benefits of Biomass

3.1 All witnesses were supportive of the growing of biocrops and the development of biomass as renewable fuel. The following benefits were noted:

Carbon Neutral

3.2 Carbon is sequestered by crops during growth and then released as energy when they are used as fuel, which means that they are usually regarded as carbon neutral. RSPB Cymru, however, wished to qualify this assertion, stating that they are a low-carbon fuel.[8] Dr Stowe, Director of RSPB Cymru, argued that the critical issue, 'is the distance between the source of the production and where it is actually processed. If the distance is too great, there is no carbon saving at all because of the cost of transportation'.[9] NFU Cymru also emphasised that, 'If we start carting biomass crops or biofuels over vast distances, nationally or regionally, we will undermine the carbon saving by burning fossil fuels'.[10]

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[5] IGER, written evidence, p2
[6] FUW written evidence, p2
[7] IGER, written evidence, p4
[8] Transcript, 11 May 2006, paragraph 281
[9] Transcript, 11 May 2006, paragraph 281
[10] NFU Cymru, written evidence, p1

Security of supply

3.3 While IGER acknowledged that it would be difficult to quantify the amount of grassland that could be used for the growing of biocrops, Dr Valentine noted that if 'one tenth of the grassland and arable land in Wales, which is about 100,000 hectares, were used for perennial energy crops, that would produce 1 million tonnes of biomass by 2020.'[11]

3.4 We were told that one of the main advantages of biomass was that it allows energy to be stored and used on demand.

3.5 NFU Cymru reminded the Committee that the development of a domestic bioenergy industry would, 'increase domestic fuel security as fossil fuels deplete and become more expensive', since biomass and biofuels have the assurance of continuity of supply.[12]

Fuel Efficiency

4.1 In oral evidence to the Committee, Dr Valentine, noted the efficiency of biomass energy crops when used for combined heat and power. [13] Mr Thomas of NFU Cymru said that the efficiency could be as much as 80 to 90 per cent, when compared to coal-fired power stations, which are only around 30 per cent efficient, and gas-fired, which are around 60 per cent efficient.[14]

Job Creation and Rural Regeneration

5.1 The impact of the production and use of biomass on the rural economy was presented as positive, given the potential for local, quality job creation and retention in the agriculture and forestry sectors. Mr Radcliffe, a farmer with considerable experience of growing miscanthus,[15] drew attention to a European study that proved that for every 1,000 tonnes of oil-equivalent biomass produced, five jobs or job-equivalents were created. [16] A Committee member commented further, 'this is not just about renewables, but it will have quite an effect on communities and on keeping young people in rural communities…'[17]

5.2 FUW in its written submission recognised that while renewable energy was 'not the panacea for agriculture in rural Wales…there are significant opportunities for the development of biomass'. [18] NFU

[11] Transcript, 23 March 2006, paragraph 167
[12] NFU written evidence, p1
[13] Transcript 23 March 2006, paragraph 205
[14] Transcript 23 March 2006, paragraph 228
[15] Miscanthus is a tall perennial grass, the harvested stems of which may be used as fuel for heat and power, or for conversion to products such as ethanol.
[16] Transcript 23 March 2006, paragraph 235
[17] Transcript 23 March 2006, paragraph 301
[18] FUW written evidence, p1

Cymru acknowledged that bioenergy could provide a 'much-needed boost' for the rural economy.[19]

Funding

6.1 The need to kick-start the domestic bioenergy industry by stimulating demand and providing adequate and suitable support was discussed at length. WWF Cymru, in its briefing paper to the Committee, stated its belief that, 'Governments have a key role to play in stimulating bio-energy demand through a package of measures including preferential tariffs or quotas for biomass, capital grants, public procurement, demonstration projects, building regulations and planning regulations'.[20]

High Establishment Costs

6.2 Growing bioenergy crops entail a long-term commitment from farmers with returns taking a few years to be realised. Yields often take until the third harvest or longer to materialise. Mr Radcliffe noted that the cost per hectare for rhizomes and the planting costs, without cultivation, was £1,800.[21]

Establishment Grants

6.3 Most were in favour of a grant scheme being developed in Wales, though there was not unanimity as to what form it should take.

6.4 The farming unions pointed to the advantages enjoyed by farmers in England since 2000 under the energy crop scheme, noting that the only form of support in Wales was the farm enterprise grant.[22] The NFU went further stating its concern that English growers might transport their crops to Aberthaw power station, given its proximity to the border, thus undermining a vital Welsh market.[23]

6.5 In contrast, RSPB Cymru in its written evidence – while supporting the aim of building a thriving energy market – was against direct subsides for energy crop production. [24] Experience had shown, it stated, that the use of similar subsides for food production under the Common Agricultural Policy had had a detrimental impact on biodiversity and the wider environment. Dr Stowe expanded on this in his oral evidence:

> We were suggesting that you should not pay the farmer to produce, but that you should pay the end user pubic money to

[19] NFU Cymru written evidence, p1
[20] WWF Cymru submission to the Committee, p1
[21] Transcript 23 March 2006, paragraph 261
[22] FUW written evidence, p1. See also comments by Glyn Davies AM, transcript 11 May 2006, paragraph 324
[23] Transcript 23 March 2006, paragraph 238
[24] P3

help him to build equipment that uses biomass and let the market drive production.[25]

Rural Development Plan 2007-2013

6.6 Possible support for growing biocrops under the successor Rural Development Plan was welcomed by IGER and the farming unions. The figure of £1,000 per hectare is under consideration. We learnt from the Countryside Council for Wales that short rotation coppice could be supported under Axis 2, while support for miscanthus and bioenergy would be possible under both Axis 1 and the EU Energy Crops Scheme.[26]

6.7 There was little support for financing biocrops through modulation, which would mean financing a small number of farmers by deducting money from a far greater number.[27] The farming unions were opposed to additional modulation for this reason.

Environmental Impacts and Benefits

7.1 While all the evidence taken supported the development of bioenergy, some concerns were raised about the impact on biodiversity and the wider environment. All witnesses agreed that energy efficiency and conservation should be given equal consideration.

Location and Management of Crops

7.2 The environmental organisations which provided evidence to us all noted that ensuring energy efficiency and best conservation practice would be key to managing impacts on biodiversity and realising the maximum benefits of biomass. [28] RSPB Cymru further emphasised that biocrops could benefit biodiversity or have negative impacts, and that the kind of impact would depend on location.[29]

7.3 We were interested to be informed of where biocrops could best be grown. Dr Valentine provided us with the rule of thumb, 'if you can put potatoes there, you can put energy crops there'.[30] We were concerned that large areas of tilled land might not be suitable because of the slopes of Welsh hills but were reassured because biocrops could be grown to at least 300 meters or around 1000 feet.[31]

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[25] Transcript 11 May 2006, paragraph 323
[26] CCW written evidence, p6
[27] Transcript 23 March 2006, paragraph 263
[28] This was especially borne out in the written and oral evidence provided by the Countryside Council for Wales.
[29] Transcript 11 May 2006, paragraph 280
[30] Transcript 23 March 2006, paragraph 175
[31] Transcript 23 March 2006, paragraphs 184 and 187

7.4 We were also concerned about controlling the planting of biocrops in special areas of conservation and sites of special scientific interest. Again, we were reassured by Mr Jones of the Countryside Council for Wales who said that most SACs were also SSSIs. There is a list of operations for which consent would need to be gained for a change in cultivation on such land. This would almost certainly cover the planting of biocrops. [32] Mr Jones did, however, draw our attention to a possible loophole in respect of semi improved land such as that which would be eligible for a Tir Gofal payment and where there could potentially be a significant biodiversity loss.[33]

7.5 On a similar issue, Members referred to the possibility of crop growing replacing reared livestock on some farms and the impact on hedgerows and the landscape. Because of the height of short rotation coppice and miscanthus crops, Ms Miller of the Countryside Council for Wales warned us that it would be possible to 'completely lose your pattern of hedgerows and traditional stone walls and so on'.[34] To counter this she suggested a more strategic approach to planning the growing of biocrops.

7.6 When we discussed the use of herbicides and pesticides in managing these crops, potential environmental benefits were identified. We were informed that biocrops on the whole require less herbicides and pesticides than other arable and intensively managed grassland. Herbicides do not need to be applied regularly throughout the lifecycle of the crops, thus resulting in a reduction in diffused pollution.[35] Dr Clifton-Brown of IGER, however, noted that where biocrops are planted in grasslands, more herbicides are needed at first to control weeds, because the seedbed would have been disturbed.[36]

Hydrology

7.7 We were concerned at the possible affect of large-scale planting on the water table, but were assured that, despite the fact that willow, for example, is a very high user of water in early stages of growth, overall there is no increased water usage. The Countryside Council for Wales did, however, suggest that the hydrological impact of some new crop species needed research.[37]

Impact on birds

[32] Transcript 11 May 2006, paragraph 316
[33] Transcript 11 May, paragraph 317
[34] Transcript 11 May, paragraph 338
[35] Transcript 11 May, paragraph 298
[36] Transcript 23 March, paragraph 198
[37] Transcript 11 May, paragraph 304

7.8 We wished to explore the potential impact of biocrops on birds and were informed that little research had been done in this area. It is already known that miscanthus and short rotation willow coppice can have a positive impact on bird species. The location of the crops is key. Biocrops would be likely to have a negative impact if planted in open-field areas or in areas of higher biodiversity value.[38]

7.9 With regard to the overall impact on wildlife, Mr Radcliffe pointed out that biocrops are only mowed and bailed once a year and therefore such areas are quiet and attract birds and mammals.[39]

Guidance and checklists

8.1 In order to avoid negative environmental and biodiversity impacts, all agreed that good environmental management guidelines for new biomass crops are required.

8.2 RSPB Cymru called for a certification scheme for biomass to ensure that the producer meets environmental standards. However, it also argued for a light touch to avoid massive bureaucracy.[40]

8.3 The Countryside Council for Wales favoured a two-stage approach using a higher-level strategic environmental assessment, a key recommendation of the Biomass Task Force report, and then a simple checklist at the farm scale.[41] In its written evidence it also pointed out that any energy crop scheme should be compatible with agri-environment schemes. In addition, it called for further work to expand the suite of best environmental practice guides. [42]

Future Developments

Targets

9.1 IGER believes that a big target should be set, and confidently predicted that Wales could produce 1 million tonnes of biomass by 2020, which would be equivalent to 10.9 per cent of current electricity generation.

Scale of development

9.2 Witnesses were unanimous that a domestic bioenergy industry should be developed on a small, local scale. Mr Radcliffe sees an opportunity to use community schemes and local power projects to keep money in

[38] Transcript 11 May, paragraph 284
[39] Transcript 23 March, paragraph 209
[40] Transcript 11 May, paragraph 287
[41] Transcript 11 May, paragraph 312
[42] CCW written evidence, p1; p3

local economies and produce heat locally.[43] The Countryside Council for Wales in its written evidence also noted that biomass energy was most efficient when the source is close to the end use. It would therefore be suitable for schools or smaller-scale institutions.[44] Others – the National Trust Wales; FUW and the RSPB Cymru - agreed.

[43] Transcript 23 March 2006, paragraph 235
[44] P6