

The politics and potential of biomass crops in Wales

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Introduction

Proposals for farmers in Wales to grow biomass crops, primarily short rotation coppice (SRC), as an energy crop arise from the current interest in non-food crops as alternatives to an increasingly unprofitable livestock industry which has suffered from declining rates of subsidy and depressed markets linked with the strength of sterling [1]. At the same time, the U.K. government's commitment to developing renewable energy sources [2] actively supported by the National Assembly for Wales, has raised interest in wood-fuelled energy schemes and has highlighted the existing resources in Wales of forest residues and the potential for production of fuel from SRC [3,4]. From April 2001 the introduction of the Climate Change Levy will impose a 12% increase in the cost of electricity generated from fossil fuels, prompting local authorities and industry to examine alternative energy supplies from local renewable sources.

Current potential markets

The major potential markets for wood chips arising from both SRC and forest residues, that of energy generation, has yet to be realised in Wales, although a wood-fuelled power station is now in operation at Eggborough, Yorkshire, England. The ARBRE project, promoted by Yorkshire Water was, in 1993, granted a Non-Fossil Fuels Obligation (NFFO) order, which guarantees purchase of 10 MW of electricity into the National Grid at a fixed price. Under NFFO 4 seven projects were accepted, two of which are in mid-Wales [5]. The second largest order granted for a biomass project in this round is for the Newbridge-on-Wye wood fuelled energy plant in mid-Wales. This proposal, for a plant of up to 22 MW capacity fuelled by 200,000 wet tonnes of wood residue per year, is currently being re-submitted for planning permission, having initially been refused. Permission is being sought for a similar project to be located on Anglesey, North Wales.

In parallel with the large scale biomass-to-electricity schemes, there is potential in Wales for local scale heat production units to provide for the energy needs of, for example, schools, hospitals, offices factory units and farms. At present there are no financial inducements, such as selective fuel tax incentives, to promote the installation of wood fuelled heating systems, and the operational convenience of tanked liquid or mains-supplied fuel remains a disincentive to change, despite potential cost savings. However several local initiatives in the form of Energy Agencies have been set up to promote district heating and address these issues.

Recent developments in the technologies of biomass fuel conversion offer promising alternatives for heat supply [6]. Efficient combustion technologies (including CHP), such as fluidised bed combustion require large-scale installations and may be appropriate to meet major heating needs of industrial users in Wales. In the rural context, small-scale gasification units are appropriate for conversion of wood chips to heat energy. New developments in pyrolysis to convert fragmented wood into energy-rich liquor are particularly promising. Small-scale pyrolysis units would enable pyrolysis oil to be generated near to the sites of coppice production, with transport of the product more efficiently to a central collection point or consumer. Another approach to the creation of an alternative fuel may be to convert coppice or waste wood into briquettes to facilitate burning on conventional domestic lump-wood fuelled stoves, particularly appropriate for isolated rural areas.

Economics and subsidy of short rotation coppice in Wales

Wood-fuel crops are perceived by the farming community at the present time as uneconomic because of the poorly developed markets for wood-chips and the high costs of establishing the crop.

In our analysis of the economics of SRC, [7] profitability is strongly dependant on crop yields, to a lesser extent on transport distance, but principally on the price paid for wood chips, indicating the need for the farmer to enter long term supply agreements with the energy industry. It is clear that, without subsidy to cover a substantial proportion of the high establishment costs, growing an energy crop would result in considerably lower returns than sheep production, even at the highest yields and high market prices. Livestock markets may, however, suffer further decline, which may precipitate at least a partial change among farmers towards alternative crops. In the event of subsidy becoming available, energy crops become an attractive option, at least at the higher levels of yield and chip price.

The announcement of an Energy Crops subsidy scheme in England is a significant step towards developing energy coppice as an alternative agricultural crop, and it is expected that a similar scheme will be announced for Wales in the near future. However, under this scheme, establishment grants are approved only after the applicant has entered a contract with an energy producer such as a power station, for the sale of the wood-fuel crop. Although this will ensure that establishment of energy crops is linked directly with the energy market, it will have the effect of inhibiting speculative planting of SRC by farmers in anticipation of future markets developing in their locality.

Future prospects

There is a need for a greater awareness among policy makers, environmental, agricultural and forestry agencies as well as farmers, of the potential benefits of wood fuel production as an alternative land use.

Free market economics alone cannot promote the inception of a wood-fuel-to-energy industry. Issues of social, environmental and energy policy have a strong influence and the financial climate should reflect declared policy goals. Only by the creation of strong financial incentives through shifts in agricultural support policy, in favour of energy crops will the current 'chick-and-egg' situation, which impedes development of energy generation enterprises, be broken. It is to be hoped that the new National Assembly for Wales will give favourable consideration to the positive contribution a wood-fuel based energy industry could have on the future prosperity of Wales.

References

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