Warwickshire Biomass Market Development

Outcomes and recommendations from the market making fair held at Moreton Morrell on November 15 2007

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Matthew Rhodes
Bernard Perkins

www.encraft.co.uk
01926 312159
enquiries@encraft.co.uk

Encraft Ltd
6b Park Street
Leamington Spa
CV32 4QN

Executive summary

The market making event on November 15 identified and quantified a significant market for biomass in Warwickshire – around £6.8 million p.a. for fuel and £10 million p.a. for installations and maintenance. Speakers from Barnsley and Lincolnshire showed how diverse communities have already found ways to exploit this potential and provided models of facilitation mechanisms that work.

Delegates to the event were enthused and identified an agenda for action. Barriers to market development still exist in Warwickshire that will require concerted facilitation and practical legwork on the ground to overcome. This facilitation must cover both demand and supply sides of the market and engage all stakeholders.

The proposed way forward is that local supply side facilitation is established drawing on regional resources via the Heartwoods Project, and based locally at the Rural Hub. Local demand side facilitation will be provided through Encraft, and the two will work closely together locally coordinated by an Advisory Board supported by Warwickshire County Council. This Board will be chaired by a market representative.

If successful, this approach will provide a straightforward model covering both sides of the market that could be rolled out regionally – with local demand and supply side champions in each county.

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1 INTRODUCTION

Following the recent successful Warwickshire biomass event this paper summaries the current state of the market in the county and presents the recommendations from the event as to how the biomass market in Warwickshire can be progressed from its current nascent state.

The paper concludes that significant progress could be made by establishing a local facilitator working specifically on the demand side and complementing supply side initiatives. The facilitator will act as a pathfinder for wider regional activity, and the role could develop into providing training and expertise to set up similar facilitator/champions in other counties. Such regional demand-side activity would dovetail with supply-side work being led from Heartwoods.

2 BACKGROUND TO WARWICKSHIRE'S BIOMASS MARKET

2.1 Steering group

At its third meeting on 20th September 2005, the Warwickshire Climate Change Partnership Steering Group agreed to lead a project to identify the most suitable public buildings for biomass heating. Energy West Midlands agreed to fund up to 20 feasibility studies and some following work. In January 2006 Partners were asked to nominate buildings. The Marches Wood Energy Network were engaged by Energy West Midlands to undertake the feasibility studies which were completed by April 2006. Following these studies a biomass market development event was held on 30th May 2006 at Warwickshire College, Moreton Morrell Hall.

The event generated considerable interest in establishing a biomass supply infrastructure in the county to facilitate public sector biomass projects in the county. Sixteen of the organisations at the event agreed to initiate a local biomass heating support group. This became the Warwickshire & Coventry Biomass Heating Support Group (WBHSG) which had its first meeting on the 4th December 2006.

The main aims of the WBHSG group are to:

- support organisations in Warwickshire and Coventry that wish to implement biomass heating systems resulting from the feasibility studies.
- encourage and support other organisations in Warwickshire and Coventry that wish to investigate the potential for biomass heating systems.
- encourage and support those organisations in Warwickshire and Coventry that will be involved in the provision of fuel for any installed biomass system.

In 2007 a small number of the feasibility studies were taken forward and are now operational. The voluntary nature of the WBHSG membership meant that whilst it provided good strategic guidance it was felt that more impetus needed to be given to market delivery. A subset of the support group formed to convene a planning group to focus on delivery. The November 2007 market making event was the outcome of this planning group. The objectives of the event were to highlight immediate opportunities for biomass in the county and to identify what actions were needed to realise those

opportunities.

To prepare for the event Encraft conducted research[1] into the current state of Warwickshire's biomass market and more importantly its potential. The event itself was held on 15 Nov 2007. Many recommendations from market participants on how to take the biomass market forward were collected.

2.2 County and National Targets

The developing biomass market in Warwickshire can be seen in the wider global, national, regional context of contributing to the UK's CO_2 emissions reduction.

The UK Government has number of emissions reductions targets:

UK renewable energy targets of 10% renewable electricity by 2010

Targets to reduce CO_2 emissions 20% by 2010, and 60% by 2050

Renewable Transport Fuel Obligation – 5% by 2010, 10% by 2020

Additionally, Gordon Brown's Speech of November 2007, suggests tightening these CO_2 emissions` reductions targets to, 26 - 32 % by 2020 and 80% by 2050 . This is to align with current scientific advice.

Warwickshire has set a number of targets at the local level:

- 90MW of Combined Heat and Power (CHP) in the county, currently stands at 2MW
- 2010 renewable electricity target - 136 GWhe of electricity consumed to come from renewable sources. This is driven by the region's target of 5% of electricity consumption to come from renewable resources set in the last Regional Energy Strategy.

3 WARWICKSHIRE BIOMASS MARKET POTENTIAL

The 2007 market research used a combination of interviews with WBHSG members and desk research to provide a broad estimate of the likely potential size of the market in the county and its current size. As a by-product of this research a model[2] of the market was also produced which captures for each element volumes, actors, impacts and standards.

3.1 Market Supply Potential

To estimate the supply potential four sources of wood fuel were studied: woodland management, tree management, the waste stream, energy crops. It was estimated[3] that 120 kilo tonnes of dry fuel could be produced annually with a calorific value of 340 GWh. We believe this could support 130MW of biomass boilers. The fuel supply market could be worth £6.8m per year and displace 68 kilo tonnes of CO_2 emissions from gas.

[1] See Encraft, 2007. Warwickshire Biomass Market, Estimates of Wood Fuel Supply and Demand for Thermal Energy.

[2] Encraft 2007(C) Warwickshire Woodfuel Market Model

[3] Refer to the above document for the basis of the estimates and assumptions made.

3.2 Summary of demand potential

The demand side estimate was derived from the figure for commercial and industrial gas sales published in the Warwickshire Energy Statistics Report 2005. It was assumed that some of this gas would be used for space heating and a smaller proportion still would be used on sites that were suitable for conversion to biomass. The original reported 2450 GWh of gas sales to 4000 industrial and commercial clients in 2003 was reduced by a quarter to take these factors into account arriving at a market ceiling estimate for space heating of 612 GWh / yr or 230 MW of boiler capacity. If this market potential were realised it would displace 122 ktCO2 generated by the gas usage.

The potential projects were valued at £138m and it is estimated that if the market was operating at full capacity it could worth £10m / yr in new installation and maintenance.

3.3 Current state of market

The table below gives the current boiler market for Warwickshire. This includes projects that are known to the WBHSG and may exclude some commercially confidential projects. Some CHP schemes are also included.

Table 1: Current Warwickshire Biomass Projects

Wood Fuel Boiler Projects	Quantity	Total Rating kW
Projects operational or on order	5	610
Projects in progress – at least a feasibility study completed	19	3950 thermal + 6900 power
Known opportunities	23	

This small portfolio illustrates that difference between the market potential and the current biomass boiler capacity in the county. It is estimated that only 0.1% of the market potential has currently been realised with a further 1% of the potential under review.

3.4 Market Barriers

The initial market analysis identified a number of barriers to the market developing. These were broadly in line with the barriers identified and discussed in the 2005 Biomass Task force report to government[4] which identifies 67 market barriers generally applicable across the UK. We have taken this list and updated it for Warwickshire's context. This analysis may be found in the Encraft document Warwickshire Biomass Market, Constraint Evaluation[5]. The high impact barriers are listed in APPENDIX A. Biomass Task Force Barriers).

Although identified nearly 3 years ago many of these barriers were again raised at the

[4] DEFRA, 2005. *Biomass Task Force, Report to Government*. http://www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/pdf/btf-finalreport.pdf

[5] Encraft, 2007. Warwickshire Biomass Market, Constraint Evaluation

2007 conference as still being an issue. Concerted action could address many of them and this assertion backed by the feedback from the potential market members in Warwickshire forms the basis of the recommendations in section 5.

4 FEEDBACK FROM THE BIOMASS CONFERENCE

A number of workshops were held at the 2007 biomass conference with the intention of capturing actions required of the public sector to progress projects in the county. In the morning three case history based workshops were conducted, looking at schools, community centres and district heating. Groups in the workshops were asked to identify issues in developing projects, how they might be overcome and the first steps in making something happen.

In the afternoon sessions wider issues in the market were considered around the themes of public agencies, supply chain and farmers and woodland. The groups were asked, what specific things could public (or other) bodies do to help accelerate progress locally? To follow on from the morning themes, participants were asked to identify the obstacles to engaging with biomass in Warwickshire and what could be done to overcome them.

The 57 actions identified in the workshops are summarised by theme and the totals of actions by theme shown in the table below. The full list is given in APPENDIX B. Market actions). The actions were assessed in terms of potential cost, impact and payback time, categorizing each with a high, medium or low priority. There are high priority actions in most of the themes.

Table 2. Market Action Themes

Theme	Description	Total
Bench marking	Study how others have developed biomass	2
Education / Communications	Raising the understanding of stakeholders and the local community.	10
Energy efficiency	Support for energy efficiency initiatives in buildings	1
Feasibility and technology application	Feasibility studies and guidance on the application of biomass technology.	9
Grant	Help with obtaining grants and monitoring the grant system.	4
Market facilitation	General market facilitation	7
Planning facilitation	Support for planning	2
Policy	Development of policies supporting biomass	4
Project facilitation	Help in developing specific projects.	2
Project generation	Generating and initiating biomass projects	3
R&D	R&D in biomass, promoting research in local universities	1

Stakeholder management	Engagement with significant market stakeholders to promote the market development.	6
Supply facilitation	Facilitating the supply side of the market.	6
Total		**57**

There was a general view that the market development needs to be demand led. A number of questioners at the event highlighted the need for the planning system to support the market too and this clearly is something that needs acting on.

5 WHAT NEEDS TO BE DONE NEXT

5.1 Summary of recommendations from the event

Delegates to the event proposed a large number of actions. This section summarises these.

The potential business opportunities of the market have been demonstrated and the benefits to the rural economy are great.

The consensus view from the event was that the appointment of some form of biomass market facilitation within the county would provide a focus and leadership to market development activity and specifically deliver:

- Education and communications of the benefits of biomass
- A fully-informed planning system, reducing cost for biomass project development
- Engagement of significant demand side stakeholders
- Impartial preliminary feasibility studies and guidance on technology use
- Project generation and supporting their progress – ensuring people follow through on commitments
- Advice on grants
- Support to political initiatives where appropriate

Additionally there were a number of actions requested by the market which would potentially require one-off grants or subsidies. For example:

- Funding for visits to exemplar installations
- Design and project development where technologies were new to customers and suppliers
- Establishing a website and supplier directory as part of the existing Warwickshire Climate Change Partnership biomass website, and promoting this. The County Council has already offered to develop this website free of charge.
- Running specialist training courses

Part of the facilitator's role would be to help secure such funds on behalf of the relevant parties.

5.2 Delivery method and governance

A demand side facilitator needs broad technical competence, leadership skills and strong links into local public bodies and both supply and demand side initiatives. A base in a local organisation that can provide some of these skills and links simply would be a clear advantage.

Both Encraft and the Rural Hub were proposed as potential hosts for a facilitator during the event. In practice, the roles split naturally between on going supply side work (e.g., maintaining momentum among farmers and establishing a producer co-operative when the time is right) and demand side stimulation (e.g., providing technical competence and expertise to early stage projects, removing planning objections based on technical uncertainty, etc). The Rural Hub working with Heartwoods can provide the supply side support to the market and Encraft can provide the demand side support locally, and the two could work closely together to make the whole market work.

Both supply and demand side facilitation should report to an Advisory Board comprising relevant members of the WBHSG who represent the various sectors of the market and also any bodies providing funds. Warwickshire County Council has indicated willingness to host such a Board and provide meeting facilities and similar, although their preference is that the Advisory Board is chaired from within the market community.

5.3 Approach

The view of the Biomass Task Force and the 2007 Warwickshire conference is that effective market stimulation must cover both supply and demand sides. The demand-side facilitator's role is critical, but it is also important they are efficiently linked into local supply-side activities. Many of the high priority actions outlined in APPENDIX B. Market actions). address demand stimulation.

5.4 Objectives and measures of performance

The original objectives of the market making event would be a suitable initial target for the demand side market facilitator. These objectives are:

- Establish 10 -20 projects worth £1-2m, £100-£200k revenue per annum.
- Establish and manage a network of specialist local SMEs
- Create informed customers in the market

Other measures which may be applicable are:

- Numbers of contacts made
- Number of days training delivered

5.5 Benefits

The benefits of effective facilitation are development of a vibrant local economy centred around the use of wood fuel. This means facilitating the generation and progress of projects in a supportive climate. These projects create the necessary

incentives on the supply side of the market to grow and deliver fuel commercially – they make supply side facilitation easier.

6 REFERENCES

Encraft, 2007(A). *Warwickshire Biomass Market, Estimates of Wood Fuel Supply and Demand for Thermal Energy*.

DEFRA, 2005. *Biomass Task Force, Report to Government*. http://www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/pdf/btf-finalreport.pdf

Encraft, 2007(B). *Warwickshire Biomass Market, Constraint Evaluation*

Encraft, 2007(C) *Warwickshire Woodfuel Market Model*

APPENDIX A. BIOMASS TASK FORCE BARRIERS

These barriers were identified by the Biomass Task Force's report to government in 2005. We believe they still apply to Warwickshire in 2007.

1. No clear vision or strategy to develop and deliver biomass. Lack of clarity about what Government wants for future – large-scale, small- scale, embedded generation, heat, CHP, micro generation, period of commitment to ROC system?
2. History of stop/start initiatives, for example, Community Renewables Initiative and Clear Skies. Long-term strategy needed.
3. Complex and fragmented grant aid and support structure, short application deadlines, academic appraisal panels, rates vary between schemes.
4. Grant schemes can distort rather then develop markets – eg Bio- energy Capital Grant Scheme prevents use of heat for some large projects.
5. Public procurement policy has potential to develop the use of renewables, including biomass, by establishing exemplars but this potential has not been exploited.
6. Conflict between Treasury Green Book, which requires local authorities to take account of environmental benefits and disbenefits over 20 years, and PFI which looks at up-front capital cost.
7. Planning policy - no specific drivers to develop district heating.
8. Higher cost of capital equipment compared to gas and oil means that capital support is needed.
9. Needs market to pull through supply chain. Important to involve agriculture, forestry and waste (recycling) sectors. Funding needed to follow-on from Bio-energy Infrastructure Scheme – long-term investment and clear regional strategies needed.
10. Information papers, exemplars, working examples are lacking.
11. Lack of awareness and education - biomass projects can be seen as high risk, builders, architects, engineers and quantity surveyors less aware of options, codes of practice and training based on large gas systems.
12. Lack of promotion and publicity through use of exemplars.
13. Lack of public awareness of the facts about biomass energy.
14. Lack of skilled engineers to install and maintain systems.
15. No clear regional strategy for implementation.
16. Regional effort fragmented – but need regional strategies to implement national targets and priorities. Who should lead? Local Authorities have expertise which is not being tapped.
17. Switching of RDA priorities can lead to a loss of funding for developers.
18. Small projects find it difficult to raise finance.
19. Financing new technologies is difficult.
20. Lenders can be risk averse.

APPENDIX B. MARKET ACTIONS

These market stimulation actions were identified by Warwickshire Biomass market representatives at the conference in 2007.

Priority	Category	Action from a market facilitator
H	Bench marking	Group visits to study Barnsley, Merton. Some small funding from RDP/ Leonardo vocational training
H	Education / Comms	Advertising the benefits
H	Education / Comms	Ensure appropriate language is used in communications. Produce a glossary of biomass
H	Education / Comms	Facilitate access to know how and technical information for the rural hub.
H	Education / Comms	Talk zero carbon
H	Education / Comms	Tours of biomass boilers in public buildings. Demonstrations for the public
H	Feasibility and application	Help with business cases. Show carbon saving potential
H	Feasibility and application	Produce design guidance for fuel storage.
H	Feasibility and application	Produce design guidance on the choice between chip and pellet. Could this be made as part of policy?
H	Feasibility and application	Produce guidance on the finance and maintenance costs of district heating schemes
H	Feasibility and application	Produce guidance on the use of biomass in heating and cooling
H	Feasibility and application	Produce guidance on which schools are suitable for biomass projects. Include in this the issue of base load and school holidays.
H	Market facilitation	Research commercial loans
H	Market facilitation	Set out the market objectives and forms of energy to by promoted.
H	Market facilitation	Support for training courses - sector skills council
H	Planning facilitation	Assist with making the planning system and planners more amenable to biomass
H	Planning facilitation	Support for the planning system to avoid nimbyism, technical knowledge, conservativism (small c)
H	Policy	Review strategy and engage with existing processes
H	Policy	Support for aligning county with country policy.
H	Stakeholder management	Carry out a stakeholder analysis to include the public sector decision markers
H	Supply facilitation	Monitor fuel pricing, as pricing is demand driven
M	Education / Comms	Activity to improve motivation towards this type of solution
M	Education / Comms	Address the issue of perception of reliability
M	Education / Comms	Disseminate knowledge on the science, share information and demonstrations
M	Education / Comms	Plan engagement with tax payers and the general public to communicate, educate and demonstrate biomass.
M	Education / Comms	Raise knowledge within the community of planners and project initiators about the benefits of biomass
M	Feasibility and application	Conduct feasibility studies in schools.
M	Grant	Facilitate lobbying on grants and applications for grants.
M	Grant	Obtain grant from the rural development fund for the Rural Hub Provide revenue funding to ensure survival of rural hub. Rural hub - set up group to apply for funding to RDPE, with a

		manger to lead
M	Grant	Obtain long-term finance from council
M	Market facilitation	Provide and maintain a supplier list. AWM can provide and list suppliers Support a Database / website of suppliers - keep up to date!
M	Market facilitation	Provide one stop shop (- partnership) for biomass commercialisation.
M	Market facilitation	Support for business networking
M	Market facilitation	Support linking willing purchasers to willing vendors - facilitated process
M	Policy	Action to promote a long term LA policy in favour of biomass
M	Policy	Support for carbon taxing
M	Project facilitation	Provide support with project management. This may be in the form of template plans, training resources.
M	Project generation	Identify potential community heating projects for constant heat load
M	Project generation	Identify potential schemes where schools could be linked to community heating. Implies engagement with planning of new developments.
M	Stakeholder management	Activity to promote a "can do culture" and to incorporate this in policy
M	Stakeholder management	Develop effective engagement with public agencies and local authority to promote biomass.
M	Stakeholder management	Engage wth the leader of env/ low carbon council group
M	Stakeholder management	Find ways to engage Barnsley in changing attitudes in Warwickshire
M	Stakeholder management	Work with a political champion within council
M	Supply facilitation	Act as a supply contract facilitator, could include collective bargaining
M	Supply facilitation	Assist in developing a chain of supply. Need to ensure all links in the chain are there. Short chain easier / more economical to run.
M	Supply facilitation	Facilitate the establishment of at least 1 depot in Warks. Although we probably need 4 - 6 to cover the N,S,W,E of the county. The depots should supply from local sources.
M	Supply facilitation	Produce an action plan for recovery of wood resources in the county. There are many different activities here and it is probably a theme in itself. One suggestion involves the use of wood currently going to composting.
M	Supply facilitation	Promote collective fuel supply contracts. Find fuel supply - maybe link with other schools to increase buying power.
L	Bench marking	Arrange visits to denmark, 3 groups
L	Energy efficiency	Link up with campaigns on energy efficiency. Insulate ! - think about energy efficiency
L	Feasibility and application	Pick a District Heating project in a LA for promotion
L	Feasibility and application	Set up a demonstration project for microgeneration.
L	Grant	Warwick university need £1-£2m in grant to startup {biomass}
L	Project facilitation	Specifically support the Warwick University project through WCC + AWM.
L	Project generation	Engage with BSF and PFI in Warks
L	R&D	Help promote R&D and technical development in biomass