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## Focus Site Project Review

Developing a Wood Fuel business at Garthmyn Isaf

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# 1 Summary

Huw Owen runs a wood fuel business at Garthmyn; having shifted from traditional sheep farming combined with agricultural contracting and plant hire activities, and now earning an income from wood fuel processing and supply. Along with his wife Sian and son Carwyn, Huw established Wood Energy Wales in 2014. This timber processing operation is now worth £2 million and has identified and expanded into what was an untapped niche market within the local area.

The enterprise extracts and hauls raw timber product from local woodland and processes the timber to produce and supply wood fuel, primarily in the form of wood chip, to a range of customers.

The business participated in the Farming Connect Focus Farm Initiative in 2016-2017 to look at business expansion requirements. These included:

- the creation of revenue through renewable heat incentives (RHIs) via energy generation on the farm
- developing a more secure supply chain – from increased sourcing of raw material locally
- securing new customers for a range of wood fuel based services.

## 1.1 Business aspirations:

- To support and secure a future for the family run business
- To support local communities through recruiting locally for the harvesting and processing of wood fuel and supporting additional jobs in local forestry industries.
- Encourage establishment of transport companies to create a local and regional delivery network.
- Create local markets for timber co-products to improve the economics of the timber industry
- Revitalise local fuel markets by encouraging consumers to source fuel locally as opposed to sourcing from multi-national fossil fuel companies.
- To continue making sustainable choices when sourcing and selling products
- To grow networks for producing woodchip for cattle and horse bedding

Via the expertise of Geraint Jones, Farming Connect forestry sector specialist, the focus farm project provided guidance on identifying and securing sustainable timber resources, listing opportunities and constraints that influencing new planting schemes and provided guidance in obtaining and securing industry accreditation for standards and quality assurance. The project has helped to develop the supply chain in the local area, ensuring that the business could generate an income from the local timber supply base and local customer demand, as opposed to going further afield (which quickly becomes financially unsustainable due to the cost of timber/wood fuel haulage).

## 1.2 Focus Farm Project key objectives:

- Investigate and identify sources of timber supply for business expansion
- Identify best practice procedures
- Provide advice for wood fuel producers in obtaining and securing wood supply
- Review opportunities for future timber supply through new planting and woodland management schemes

### 1.3 Project Conclusions

The project has provided the business with tangible economic benefits, which are likely to develop further, as the business becomes more established within the wood fuel sector.

**Project outcomes/learning points include:**

**a) Increased awareness of the wide range of products Garthmyn Isaf could offer, to both the public sector and the local economy.**

Geraint was able to give sound business, marketing and supply chain advice to Garthmyn Isaf. This resulted in a greater awareness of what the business could offer to organisations operating in the local area. The project allowed Garthmyn Isaf to develop relationships with new customers, in particular government agencies and larger providers with a range of needs. Those businesses included NRW, the National Park and the National Trust. NRW now uses Garthmyn Isaf to assist in extracting and processing timber from both commercial and recreational woodland within the local area. The National Trust and the National Park also use these services, as well as purchasing wood chip from Garthmyn Isaf for use in their own biomass burners across north Wales.

**b) Involvement with a wider range of forestry sites has identified additional opportunities for the business.**

The range of forestry site work that Garthmyn Isaf is now involved in has in turn identified other opportunities.

Huw realised that more timber could be sourced relatively cheaply and more economically from pruning work, therefore an industrial pruner has been purchased, to work alongside the chipper.

Being able to take out a range of timber from sites is essential. Whilst removing old windblown timber is a service that customers want, and is therefore a business opportunity, Huw also wants to be able to take as much green timber as possible. Green timber is much easier to handle, and once the timber has been chipped, the efficient drying facilities at Garthmyn Isaf will dry it to the necessary moisture content in a matter of hours.

Garthmyn Isaf is in the fortunate position that the range of services it offers are all in high demand, and it is a price maker rather than a price taker. However, this situation may change as the sector matures. Therefore, with the range of investments the family has made, the business should be able to adapt according to the needs of the market.

Farming Connect support included specialist advice on the following topics, which was disseminated to the wider farming and forestry sectors, via an open day at Garthmyn Isaf:

- identifying the sources of timber supplies within the local area
- best practice approaches to working in the wood fuel sector
- advice for wood fuel producers in obtaining and securing a wood supply for themselves
- advice and guidance on woodland management schemes.

**c) Increased demand and expectation for wood fuel when heating needs are high have been met with the ability to stock pile both raw material and customer ready wood chip.**

Annual temperature fluctuations influence the demand for wood fuel, with greater demand in the colder months. Garthmyn Isaf's experience over winters 16/17 and 17/18 has shown there is a need for additional reserve and storage of woodchip to meet demand.

Throughout the cold wet winter of 2017/2018 the business had to work very hard to ensure it did not run out of product, and therefore bulk buying in preparation for such issues is a priority. An additional factor has been that a cold winter makes access into woodland and haulage activities challenging, due to snow and ice. Bulk buying will again alleviate the pressure if such circumstances do arise.

**d) Adding value to by-products, with a consistent quality for alternative uses.**

The process of drying the wood chip at Garthmyn Isaf creates an additional added value by-product. The woodchip is passed over screens prior to entering the biomass plant which allows the finer particles, known as fines, to be extracted. This product is of consistent enough quality to sell to the dairy industry locally as a bedding product.

#### 1.4 Take home points for the industry:

**a) Engineering expertise and operational skills are needed for successful business operation.**

To ensure business operations run smoothly and effectively there is the need for specific skills and expertise, particularly when working with a wood chipper, and maintaining a Combine Heat and Power (CHP) installation. The business is heavily reliant on the wood chipper. Its operator is trained in the day to day operation of the machine, and is capable of maintaining and repairing the chipper. Routine maintenance ensures the raw material is chipped correctly and chip is produced to required standards. Engineering expertise is also required for haulage, the biomass burner, CHP facilities and drying beds.

**b) Maintaining a steady supply of both raw material and saleable energy product is essential.**

Forging links with local timber markets will help in managing a steady supply of quality timber. Analysis should be conducted on availability from resources such as:

- Estates
- Woodland managers and agents
- Local farms
- Own woodland management
- Other privately owned woodlands
- Local arboriculture businesses
- Local farmers
- Local woodland owners
- Foresters/agents/consultants
- Timber contractors
- Arboriculture contracting business

Being able to take advantage of every timber purchase opportunity has been key to business expansion. Building an inventory of timber stock will compensate for periods when supply is short, and lessen the

effect of high timber prices when demand is high (prices are particularly high over winter periods). Purchasing stock in advance also allows time to condition the fuel to a low moisture content, and stock pile in anticipation of customer demand.

Both purchasing locally, and using local contractors builds good relationships whilst minimising logistical costs. Such benefits not only improve the business performance economically and environmentally but in turn benefit the local economy. Local sourcing helps in meeting the outcomes of 'The Wales Woodland Strategy' to foster the development of renewable energy from Welsh woodlands.

#### **c) The importance of producing high quality timber products and gaining accredited status.**

A consistent size and moisture content of product is essential for both wood chip customers and Huw's own CHP plant. A maximum 15% moisture levels is tolerated in the (non CHP) wood chip product sold off site, and it takes 6-8 hours to dry 25m<sup>3</sup> on the drying beds at Garthmyn Isaf to reach satisfactory moisture levels. For the CHP, the moisture levels have to be down to 5%, so adequate time on the drying bed is essential for the wood chip to meet both Garthmyn Isaf's and other CHP customers' specification.

The importance of certification from the wood fuel quality assurance scheme – Woodsure - provides recognition that the product is produced to certain standards. Certification is likely to aid sales growth as customers are provided with confidence that the fuel they purchase is consistently high quality and fulfils their requirements. Certification also provides a safety net for the supplier. If customers complain about quality, testing will supply sound evidence of product quality.

Gaining business from government organisations and larger organisations is likely to increase if the supplier is capable of maintaining woodland management standards through accreditation.

#### **d) Positive engagement with health and safety requirements is essential.**

There are health and safety responsibilities that all businesses involved in woodland and tree work must comply with<sup>1</sup>. Safer and more efficient working practices can often save money but more importantly save lives. Successful management of health and safety in forestry and associated haulage requires coordination between landowners, forestry work managers, contractors and sub-contractors<sup>2</sup>. When working with large organisations such as NRW, the National Trust and the National Park, evidence of competent health and safety compliance is also likely to support business opportunities and develop trust within working partnerships. Ensuring the same attention to health and safety is applied across all business operations should be a key priority.

### **1.5 Farmer's perspective of the project**

The primary objective of the project was to investigate the practical sourcing of sustainably managed timber within the business environment. Huw feels the project helped Garthmyn Isaf take control and develop its own supply chain (raw material sourcing, wood fuel supply and on-farm energy generation).

He is convinced this has benefitted the local economy in terms of suppliers and customers, and helped ensure the business can generate an income from that local economy. Huw reflects this has not only

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<sup>1</sup> HSE. 2018. Tree work health and safety. HSE. Available from: <http://www.hse.gov.uk/treework/site-management/index.htm>. (Accessed 26<sup>th</sup> April 2018).

<sup>2</sup> UKFISA. 2014. Guidance on Managing Health and Safety in Forestry. UKFISA. Available from: <https://www.ukfisa.com/assets/files/safetyLibrary/MHSF-2014.pdf>. (Accessed 26<sup>th</sup> April 2018).

reduced the unsustainability of costly haulage for all concerned, but also acted as a method of climate change mitigation as fuel supply haulage miles are reduced.

Due to Huw's experience as a contractor and running a plant hire business, he is able to source labour and machinery and other services easily within the local community for a range of work, as required by his customers. He can then ensure that all services provided meet the H&S and quality standards needed, in order to do the job effectively, which then results in repeat work. The benefits to the wider local economy are evident.

Huw reflects that Geraint's involvement with business marketing and supply chain knowledge has helped generate wider customer awareness of what Garthmyn Isaf could offer. Such work enabled Huw to develop relationships with customers that are both raw material suppliers, and wood fuel product purchasers. In engaging with a wider local supply network the business has been able to process over 15,000 tonnes of timber over its first 4 years of operation. This has helped secure a viable future at Garthmyn Isaf for Huw and his family.

## 2 Business Review

### 2.1 Business Background

Having run Garthmyn Isaf as a traditional sheep farm with some agricultural contracting and plant hire, Huw Owen diversified into becoming a wood fuel supplier. The family previously ran a flock of 1,040 sheep, but the sheep were sold in 2017, with the family now focusing entirely on the wood fuel opportunities the land boasts.

Wood Energy Wales was established in 2014 by Huw, alongside his wife Sian and son Carwyn. The core farm consists of 80 hectares, with additional land owned and rented in the locality. Farmland is now either rented out, or has been planted up with woodland. The business produces, processes and supplies wood fuel, which is then sold and/ or used on-farm as a wood chip product. A further 26 hectares of mature woodland is currently being purchased by the business, to help secure supply of raw material into the business.

The aspiration of the business was to supply quality wood fuel to the local economy, where the family identified a gap in the market. It was also felt there may be the opportunity to influence future markets as the increased availability of Garthmyn Isaf supplied wood chip, may accelerate biomass boiler installations locally.

Initial wood fuel installations at Garthmyn Isaf were a biomass burner, wood chipper and wood chip drying bay. Although initially reticent, once these items were in place and the business concept had been tested, the bank was keen to assist with further expansion activities.

These consisted of the installation of 2 additional drying beds and 3 CHP systems. The CHP facility generates sufficient energy (from the burning of home produced wood chip) to heat the drying beds, and sell electricity to the grid. It has the capacity to produce 49kW of energy per hour, with circa 150kW being sold into the national grid per day.

The mobile chipper generates income both at home, chipping wood for use in the CHP facility, and for selling to customers with biomass burners. It also earns an income off-site for customers that need timber wood chipped, with Huw contracting out as required with himself or his son operating the chipper.

The farm yard has now become a wood fuel depot, with Huw bringing in logged timber which the family has cleared off customers' sites, grading it for a range of uses, processing and then reselling it in various forms.

Redirecting the farm to become a commercial wood fuel production business has ensured a secure future for the family and has enabled Huw, Sian, their son Carwyn, and their daughter's partner, to be employed within the business.

## 3 Project Review

### 3.1 Aims of the project

1. Research the timber supply chain and provide supportive information and guidance for new entrants.
2. To highlight details of best practice, particularly when sourcing timber
3. Provide advice for wood fuel producers in obtaining and securing a reliable wood supply
4. Address future opportunities for timber supply, through new planting and woodland management schemes.

### 3.2 Project results.

Geraint helped Garthmyn Isaf investigate and identify the sourcing of timber supply for such ventures in a business environment and detailed best practice in doing so. In turn, the project provided advice for wood fuel producers in obtaining and securing a wood supply for themselves.

#### **The Wales Woodland Strategy – outlined to interested parties as part of this Focus Farm Project**

The Wales Woodland Strategy is based upon ambitions for how woodlands and trees could contribute even more to the people of Wales. The strategy is framed upon four strategic themes, which are:

- Responding to climate change by reducing our carbon footprint
- Increasing the benefit of woodlands to people by serving local needs for health, education and jobs
- Creating a competitive and integral forest sector through innovation, and improving the skilled industries supplying renewable products from Wales
- To make a positive contribution to environmental quality through improvements in biodiversity, landscapes, heritage and reducing additional environmental pressures

The forestry strategy is underpinned by the nature, quality, distribution and management of Welsh woodlands and trees. The below outcomes are hoped to strengthen the foundation to ensure the strategy objectives set are able to meet the needs of the future.

- Increased area of woodlands and trees managed sustainably
- Ensure healthy and resilient woodland ecosystems
- Increase woodland cover in Wales
- Better adapt woodlands to deliver a full range of benefits
- Ensure that management of woodlands and trees are more closely related to that of other land uses and deliver a full range of benefits

<http://gov.wales/topics/environmentcountryside/forestry/our-strategy/?lang=en>

### 3.3 SWOT Project Analysis

<p><b>STRENGTHS</b></p>	<ul style="list-style-type: none"> <li>• Increased understanding of the supply chain, enabling the business to provide a local service, ensuring costs are kept down for both consumer and processor</li> <li>• Detailed analysis of future business opportunities and contacts</li> <li>• Increased knowledge of the need for product marketing</li> <li>• Evidence of improved product and business awareness</li> <li>• Optimised production and implementation of a more efficient system through the use of technology, such as CCTV systems to monitor security and general operations on site</li> <li>• Understanding of the potential value of by-products has been identified</li> <li>• A mixture of different burners means the business can take a range of raw material, regardless of quality</li> <li>• Engaging positively with health and safety requirements has opened up new opportunities, evidencing competence and professionalism, particularly with the public sector</li> <li>• The public sector has become aware of services and products offered by the business, this has led to further business adaption to meet customer needs</li> <li>• Engineering and mechanical expertise have been highlighted by the business</li> <li>• Tailored services to offer the small/medium wood fuel resources</li> <li>• Services are all in high demand</li> <li>• Having a variety of machinery has allowed the business to offer numerous services to effectively process varied material</li> </ul>
<p><b>WEAKNESSES</b></p>	<ul style="list-style-type: none"> <li>• A maturing market may create some future uncertainty</li> <li>• Increasing awareness of woodchip and woodland enterprises may increase business start-up within the sector and therefore increase competition</li> <li>• A range of machinery is required, which are essential to business operation. Any machinery downtime or lack of maintenance expertise would have a significant impact on business activities.</li> </ul>
<p><b>OPPORTUNITIES</b></p>	<ul style="list-style-type: none"> <li>• To become Forestry Stewardship Council (FSC) certified</li> <li>• Further develop the sustainable and traceable supply chain currently operated by the business</li> <li>• Planting additional woodland for long term projects</li> <li>• Alternative opportunities may become available as the sector develops</li> <li>• Improved production efficiency through further developments in technology</li> </ul>
<p><b>THREATS</b></p>	<ul style="list-style-type: none"> <li>• Customer demand may become more stable, with lower levels of growth than experienced to-date</li> <li>• Increased competition from other businesses within the sector</li> </ul>

### 3.4 Alignment to sector's strategic goals

This work contributes to the Woodland for Wales Action Plan, helping deliver the 20 outcomes of Woodland for Wales, which are grouped under the following five strategic themes.

STRATEGIC THEME	
WELSH WOODLAND & TREES	<ul style="list-style-type: none"> <li>• More woodlands and trees are managed sustainably</li> <li>• Woodland ecosystems are healthy and resilient</li> <li>• Woodlands are better adapted to deliver a full range of benefits</li> <li>• Woodland cover in Wales increases</li> <li>• The management of woodland and trees is more closely related to other land uses</li> <li>• Urban woodlands and trees deliver a full range of benefits</li> </ul>
RESPONDING TO CLIMATE CHANGE	<ul style="list-style-type: none"> <li>• Welsh woodlands contribute to reducing the carbon footprint of Wales</li> </ul>
WOODLAND FOR PEOPLE	<ul style="list-style-type: none"> <li>• More communities benefit from woodlands and trees</li> <li>• More people enjoy the life-long learning benefits of woodlands and their products</li> <li>• More people live healthier lives as a result of their use and enjoyment of woodlands</li> <li>• More people benefit from woodland-related experience</li> </ul>
A COMPETITIVE & INTEGRATED FOREST SECTOR	<ul style="list-style-type: none"> <li>• More Welsh-grown timber is used in Wales</li> <li>• The forest sector is better integrated and more competitive, supporting the Welsh economy</li> <li>• Increased use of timber as a key renewable resource</li> <li>• A thriving, skilled workforce in the forestry sector</li> </ul>
ENVIRONMENTAL QUALITY	<ul style="list-style-type: none"> <li>• Woodland management achieves high standards of environmental stewardship</li> <li>• Woodlands and trees of special conservation value are in favourable management</li> <li>• Woodland biodiversity is supported and native woodland is in favourable management</li> <li>• Woodlands and trees make a positive contribution to the special landscape character of Wales and to sites of heritage and cultural importance</li> <li>• New and existing woodlands and trees contribute to water and soil management<sup>3</sup></li> </ul>

<sup>3</sup> Welsh Assembly Government. Not dated. Woodland for Wales Action Plan. Welsh Assembly Government. Available from: [https://www.forestry.gov.uk/pdf/WoodlandsforWalesActionPlan2.pdf/\\$file/WoodlandsforWalesActionPlan2.pdf](https://www.forestry.gov.uk/pdf/WoodlandsforWalesActionPlan2.pdf/$file/WoodlandsforWalesActionPlan2.pdf). (Accessed 26<sup>th</sup> April 2018).

## 4 Impact on the industry

### 4.1 Impact on the individual business

For a summary list of the impact of the project on the business, refer to the Project Conclusions in section 1.1 of this report. Other points to note include the following.

Evaluation of the supply chain has allowed Garthmyn to implement long term goals to ensure the business remains a success. The business is currently building up a range of smaller machinery, which means that it has greater efficiency in recovering specific timber categories than the larger scale machinery run by big timber extraction companies who are unable to access some woodland areas. The mosaic of planting woodland in North Wales is challenging as regards management and extraction, and therefore Huw is broadening his business offer to include small/medium wood fuel supplier sites, with the expectation that this offer will in turn generate more custom for Garthmyn.

Work conducted throughout the project has allowed Garthmyn to become one step closer in becoming FSC certified. Growing and harvesting timber on the farm will help in developing a sustainable, traceable supply chain for the future, which is part of FSC's criteria. FSC certification on existing woodland is now the next goal for the business, with sustainable woodland management a key element of the FSC criteria. Huw has therefore planted 34 ha of woodland on the farm, indicating his long term commitment to the wood fuel enterprise within the business.

The business has the added benefit of payments received under the RHI for the energy generated by the CHP installation. This payment which will remain for 20 years will provide security and improve business resilience throughout a period of increased competition.

Improved use of technology has recently been made, with the installation of a CCTV system on-farm. The investment was made to help improve security on site, in addition to monitoring the CHP equipment to ensure it is fully operational. Visuals can be accessed quickly from via staff smart phones meaning maintenance issues can be identified and resolved quickly, minimising any breaks in energy production or wood chip drying. Although such technology is costly the business has accepted this as a key investment measure that will not only reduce labour requirements and minimise staffing costs but will also maximise efficiency without compromising safety standards.

### 4.2 Impact on wider industry

Take home points for the industry are reported in the Summary section of this report.

### 4.3 Impact on Welsh Government's cross cutting and priority themes

#### 4.3.1 Climate change

Increased use of forests and wood products can provide environmental benefits as well as contributing to climate change mitigation efforts. This is, however, very dependent on the type of wood production systems in operations. It has been indicated that woodland creation is generally a cost effective method of climate change mitigation. Improving wood purchasing decisions are now becoming increasingly important in mitigating the effects.

Understanding the local supply chain will not only increase awareness of local markets but will inform local consumers of the range of products on offer from this forestry businesses. This should result in the reduction of haulage activities, resulting in a reduction in transport related greenhouse gas emissions.

If the principles of this project are adopted more widely (local supply within a local rural economy), they should contribute to a reduction in emissions from operations and transportation.

#### 4.3.2 Future Generations

This particular project has enabled the next generation of the family to be employed on the farm with a secure future. The project encourages young farmers who are working or looking to work in the forestry industry to be forward thinking and to grasp opportunities to run a business more efficiently. This includes reducing cost, labour and time; which are all increasingly important post Brexit in such a volatile industry.

#### 4.3.3 Tackling Poverty

The forestry industry is proving successful as a diversification option for farming businesses, particularly allowing previously livestock only farms to remain viable and profitable. Running efficient systems will allow businesses to use time wisely and have the ability to focus investment on improving productivity and effectiveness of operations. More cost efficient business practices result in the potential for increased returns, whether that be from one or off farm income.