CURRENT STATE AND POTENTIAL OF THE WOOL INDUSTRY IN GWYNEDD

Geraint Hughes and Jennifer Hunter

Mawrth / March 2019

CONTENT

“Pleidiol wyf i’m gwlân…”

INTRODUCTION TO THE DELIVERY TEAM AND PROJECT BRIEF

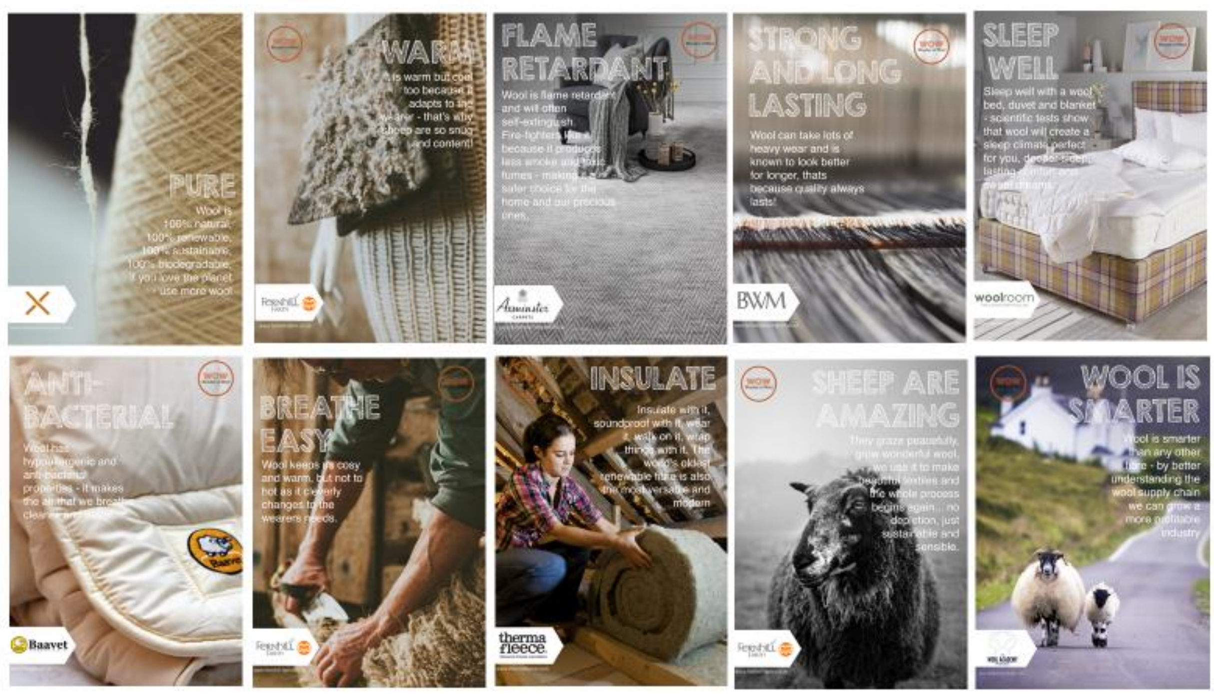
Geraint Hughes and Jennifer Hunter have collaborated to deliver this proposal believing that certain changes in wool markets and UK legislation make this a timely opportunity. They are both aware of examples in all parts of the UK where wool producers are gaining control over their wool sales.

Developing profitable routes to market is key to maximising the value from raw wool. Innovative processes have arguably never been so important economically, culturally and environmentally for Gwynedd.

Geraint and Jennifer are both Nuffield Farming Scholars and worked together in 2017 to deliver the first session of the Agri-Academy (under ‘Farming Connect’) program hosted by Jennifer on her family farm in Somerset.

Geraint was the local contact for this work and co-ordinated the delivery, provided a local overview and engaged with local stakeholders as part of the primary research with users.

Jennifer has over 10 years of experience adding value to wool. She has visited 10 countries as part of her Nuffield Scholarship studying wool, specifically sheep genetics, wool harvesting and processing, adding value at shearing and innovation. Jennifer established the ‘WOW campaign’ – “Wonder of Wool” - to highlight the many uses of wool. See the panel below for an insight of the many uses of wool highlighted by ‘WOW campaign.’ Jen regularly employs shearers from North Wales and has an insight to the micro-economic factors at play in Gwynedd.



Geraint and Jennifer believe that the publication of this short study is only a small step forward, and may contribute towards the progression of many steps to add value to a resource that is produced in abundance in the area. This will only be achieved through people power, and it was indicative of the interest in wool in the area to have such a positive response to the work over “Arloesi Gwynedd Wledig’s” social media platforms during January and February 2019. Comments and thoughts continue to come in at the time of finalising this study report.

In light of the level of interest, it was decided in early January to hold a one-off workshop to bring various stakeholders together to discuss and consider ways of developing the wool industry in Gwynedd. Held on February 12th at Y Ganolfan, Porthmadog, 40 people attended the workshop and included farmers who produce wool, small manufacturers who source wool or interested in doing so, crafters, researchers from Bangor University, representatives from the British Wool Marketing Board and other wool buyers.

The event attracted good local coverage and was featured on the 'Ffermio' programme. Issues discussed and thoughts shared at the workshop have contributed towards shaping this report. There was a strong appetite for a follow up event to continue the thinking and networking, and possibly start putting a plan in place.

Elements of the study commissioned by 'Arloesi Gwynedd Wledig' in December 2018 were:

1. Collating relevant information about the current Welsh wool industry.
2. Identify what potential benefits could marketing products as Welsh wool add to a Welsh Mountain Sheep fleece.
3. Evaluate how much demand is there in Gwynedd/North Wales for Welsh wool from small manufacturers and producers.
4. Identify the process of buying fleeces directly from farmers and possible difficulties.
5. Consider potential for a wool scouring mill in Gwynedd.

We have however provided additional information to the above brief where it became possible within the allocated time and where we felt it could add further value.

BACKGROUND TO THIS STUDY

- There are many smallholders and farmers in Wales who hold flocks of Welsh Mountain sheep as well as sheep classified as rare breed that can supply good quality fleece and yarn.
- There are several spinning and weaving companies in Wales who are happy to work with quantities to produce cloth and yarn on a small scale.
- Almost by definition, though, supply is at a 'cottage industry' level of wool to individuals and small textiles companies. For companies needing wool on a larger scale, obtaining Welsh wool with any traceable provenance is almost impossible.
- Cleaning wool is known as wool scouring. The lack of a local commercial scouring facility in Wales is often quoted as a barrier for the industry to progress.
- The price of a Welsh Mountain Sheep fleece can be less than the cost of shearing. There is little or no financial incentive for the farmer to invest time or money on the quality of fleeces.
- Currently, wool from Gwynedd, just like Welsh Wool joins the rest of British wool where it's graded and sold worldwide at mass electronic auctions. Therefore, the notion of provenance is lost with Welsh Wool being sold as British.
- This research is intended to explore the opportunity in Gwynedd of selling Welsh Wool as a product and establishing whether there is a need for Welsh Wool as a resource for producers, manufacturers and visitor/customers.

We are looking at the current state and potential opportunities for the wool industry in Gwynedd.

Throughout history sheep numbers in Wales have fluctuated although recent numbers have been relatively stable at just under 10,000,000 total sheep and lambs, with 15.6% located in North West Wales. According to 'Welsh Agricultural Statistics' published by the Welsh Government, there was 9,810,486 sheep and lambs in Wales in 2016. Appendix 1 provides an overview of how land use statistics is presented for Wales.

Table 2 below shows the amount of sheep and lambs per region in Wales

Thousands

	NW Wales	NE Wales	Powys	Ceredigion	Pembrokeshire	Carmarthenshire	S Wales	Wales
Breeding flock (1 year old and over):								
Ewes kept for breeding (b)	764.2	696.7	1,770.2	398.6	159.1	373.3	438.2	4,600.4
Ewes intended for slaughter	54.9	52.1	119.4	30.0	11.6	23.5	26.2	317.7
Total breeding flock	819.1	748.8	1,889.6	428.6	170.8	396.8	464.4	4,918.1
Other sheep (1 year old and over) :								
Rams for service	18.3	15.5	38.1	9.4	4.2	9.2	11.5	106.2
Other sheep	9.9	14.9	24.8	6.8	4.9	10.0	10.1	81.4
Total other sheep	28.3	30.3	62.9	16.2	9.0	19.3	21.5	187.6
Lambs under one year old	687.1	738.8	1,907.3	417.8	161.4	378.6	413.8	4,704.8
Total sheep and lambs	1,534.5	1,517.9	3,859.9	862.6	341.2	794.6	899.6	9,810.5

Table 2: Sheep and lamb numbers per thousand in different Welsh regions. (Source: Welsh Agricultural Statistics, 2018)

Table 3 below provides a breakdown of the number of various flock sizes in different regions of Wales.

	Size of total flock									
									1,000 and over	Total
	1-24	25-49	50-99	100-199	200-299	300-399	400-499	500-999	1,000 a throsodd	Cyfanswm
ldings:										
North West Wales	330	170	248	217	184	122	107	342	489	2,209
North East Wales	396	154	181	211	143	99	85	282	507	2,058
Powys	432	174	226	276	200	158	150	629	1323	3,568
Ceredigion	305	126	148	158	114	82	60	208	278	1,479
Pembrokeshire	227	86	106	95	68	43	33	75	83	816
Carmarthenshire	511	192	215	250	143	104	63	228	246	1,952
South Wales	447	163	219	253	160	108	87	245	259	1,941
Wales	2,648	1,065	1,343	1,460	1,012	716	585	2,009	3,185	14,023
estock:										
North West Wales	3,261	6,116	18,012	31,275	45,870	42,206	47,575	250,911	1,089,306	1,534,532
North East Wales	3,499	5,495	13,234	29,868	35,893	34,348	38,124	207,276	1,150,171	1,517,908
Powys	4,375	6,639	16,377	39,371	49,389	54,372	66,623	464,367	3,158,390	3,859,903
Ceredigion	2,810	4,471	10,673	22,546	28,167	28,672	27,119	152,628	585,545	862,631
Pembrokeshire	2,142	3,090	7,457	13,589	16,726	14,797	14,770	52,085	216,574	341,230
Carmarthenshire	4,953	6,729	15,851	35,143	35,346	36,201	28,211	161,666	470,539	794,639
South Wales	4,213	5,889	15,866	36,523	39,007	37,595	38,813	171,856	549,881	899,643
Wales	25,253	38,429	97,470	208,315	250,398	248,191	261,235	1,460,789	7,220,406	9,810,486

Table 3: Holdings in Wales with sheep and lambs, by region and flock size. (Source: Welsh Agricultural Statistics, 2018)

There are many contributing factors to these population shifts, yet it's interesting comparing Wales to another influential sheep countries as populations have shown dramatic reductions in numbers yet total export for both meat and wool have remained at the same levels.

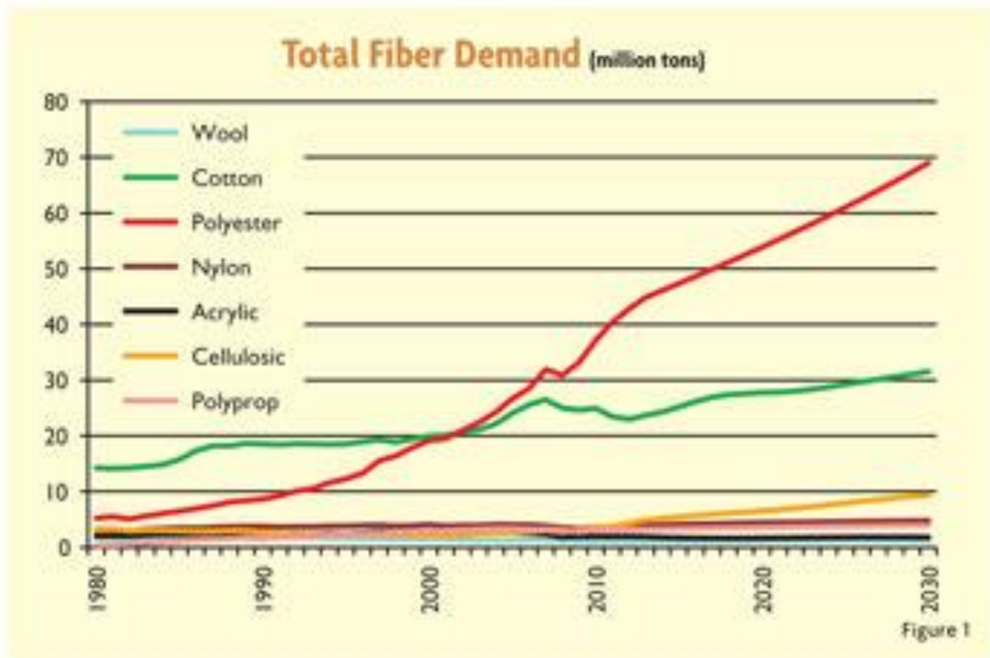
UK is illustrated in table 1 below.

Table 1: Change in sheep numbers

million head	**1990**	**2007**	**Change (%)**	**2014**	**Change (%)**
Australia	173	86	-50%	73	-15%
China	113	172	52%	159	-8%
New Zealand	58	39	-32%	30	-24%
South Africa	30	21	-28%	25	17%
United Kingdom	44	34	-23%	34	0%
Argentina	29	16	-45%	12	-23%
Uruguay	25	11	-56%	7	-32%
Brazil	20	16	-22%	17	11%
Peru	12	15	23%	12	-19%
Total	1206	1097	-9%	1148	5%
Total ex China	1093	925	-15%	990	7%

Source: Poimena, DELTA, IWTO

It is essential to note that one of the major reasons for the decline in UK sheep numbers pre 1990 has been the introduction of man-made fibres known collectively as synthetic fibres. These chemically synthesised fabrics which have amalgamated in mass since the 1950s, have reduced the use of wool fibres to a mere 1% of the textile market and this has a direct correlation with sheep population figures. Graph 1 overleaf illustrates the amount of different types of fibres produced in the world and puts in context the use of wool in general.



Graph 1: Production of different fibres by type and future demand projections.
(Source: https://www.textileworld.com)

Wool represents 1% of the textile industry – observing this future prediction and the recent discovery of nano-plastic fibres released from synthetic fabrics, environmentally the health of this planet is determined by the increased inclusion of natural fibres grown on regenerative soils.

Farmers are naturally resilient to change and post war agriculture deemed the production of meat the primary focus for genetic improvement programmes. In contrast to previous needs for wool, milk, meat, skins, manure and tallow, today most northern hemisphere countries consider wool as an expensive by-product.

90% of income derives from the production of meat in the form of lamb, hogget and mutton and genetic selection is focused almost entirely on environmental adaptability and carcass conformation in the finished lamb. Selecting for meat growing traits tends to have a negative correlation with fleece qualities which has resulted in wool being disregarded, a lack of respect for fleece handling and after many thousands of years where wool was the human saviour, it’s now commonly referred to as a by-product from the sheep meat industry.

The future of Sheep in Wales

Wales has 2.1 million hectares of dramatic continuous coastline, an abundance of mountains, rough hills and fertile lowlands which create perfect conditions for rain clouds to form as they drift inland along the West coast of mainland UK. This provides perfect growing conditions for plentiful lush green grass and the thousands of sheep that have thrived on this landscape for centuries.

Farmland in Wales, including the common land amounts to 88% or 1.8 million hectares and much of this topography is difficult the cultivate mechanically due to steep slopes, high rainfall and inaccessible shallow soil land masses and as these areas are perfectly suited to grazing livestock, sheep are a main farming focus for Gwynedd and Snowdonia National Park.

The 1,534,500 Sheep (see table 2) in this North West area accounts for Gwynedd and Anglesey, with Gwynedd (2,548 square miles) occupying most of this total area compared to Anglesey (714square miles). Gwynedd has a lot of mountains and sheep are farmed extensively, whereas Anglesey has no mountains and thus dairy and beef farms prevail with sheep enterprises, and with a significant % of the land on the island will be used for cropping alongside intensive lowland sheep enterprises.

Projected figures for 2019 have been affected by the long harsh winter of 2017, followed by a late dry Spring and the hottest summer on record for over 30 years in 2018. The knock-on effects of these environmental influences and lack of available summer forage whilst in peak lactation resulted in lower weaning weights and 20% reductions in lambing percentage. An increase in barren ewes and ewes carrying singles rather than twins has been reported in lowland flocks, whereas, hill ewes have not suffered the same decrease in lambing percentages. This highlights the natural resilience of native breeds to cope with environmental challenges and the importance of keeping these gene banks available for the future of changing sheep farming demands.

Wool prices have also fallen from 77p/kg in 2014 down to a predicted 27p/kg in 2019 for the Welsh mountain fleece (Source: British Wool Marketing Board) which is a reflection of global market trends rather than internal or UK price fluctuations.

Brexit is predicted to result in a further 5% reduction in overall UK sheep populations as the uncertainty with future export trade halts positive progress across all sectors. To prepare for this, Hybu Cig Cymru – Meat Promotion Wales (HCC) is leading a five-year Red Meat Development Programme to assist Welsh farmers prepare for post-Brexit challenges.

The three main objectives are animal health, genetics and meat quality, aiming to boost farm productivity by incorporating rams with known genetic performance levels and demonstrating the long-term benefits of proactive flock and herd health planning.

Engaging with all aspects of the supply chain to assess and develop the meat quality of Welsh Lamb, this £9.2 million project will also evaluate practices that can be adopted pre and post farmgate to secure and enhance Welsh Lamb's position as a premium product. The future of red meat production needs to meet the demand of an ever-changing and increasingly discerning consumer, both in the UK and overseas.

Key point - Researching wool growing traits alongside meat evaluations is highly recommended as kemp is the main issue effecting price of the Welsh Mountain fleeces in the past and future both in UK and Export.

Kemp is an unwanted element in today's processing markets, even for carpets thus genetic selection could be explored to reduce and eliminate kemp from this breed.

Note, kemp is defined as a brittle weak fibre forming the residual traces of a secondary coat in some species of sheep, which can be mixed with normal fibres in a wool fleece. This type of hair is usually not desirable in a fleece, as it does not accept dye, minimizing both the quality and value of the fleece.

Sheep breeds in Wales

The British Isles are renowned for the 60 native breeds of sheep that have been crossbred for centuries to create an additional 90 regionally recognised breed-types that grow highly variable fibres within their unique fleeces – variations in terms of length, diameter, crimp and colour are commonly found as these relate to breed, cross-breed, age and environmental conditions.

Wales has direct links to 18 of the original 60 native breeds, and genotypes can be traced throughout history to today's collective sheep breeds, each breed suited to specific regional environmental conditions.

Two white Welsh Mountain breeds remain today:

- The **'Welsh Mountain'** that founded the original fibres used in the Welsh woollen industry to make blankets and traditional tweeds, dating back to the 13th Century – see photograph on right hand side.
- The '**South Wales Mountain'** with its long brown collar fleece, was developed in the 20th Century around the hills of Glamorgan, Gwent and South Powys. See photograph below.

Both breeds have white fleeces with mixed coloured kemp fibres and are currently regarded within the UK carpet industry for their strong, robust, resilient and abundant fibres.

For the purpose of this report focusing on the Gwynedd and North Wales regions, we shall incorporate production information to include the original Welsh Mountain breed most commonly found in Gwynedd.

Key Point- It is thanks to this natural variation in wool fibre traits that has enabled people to thrive and survive on 7 continents in the world – Antarctica is the only continent without sheep and without sheep there are no human populations.

Sheep Stratification

The stratification diagram is used to illustrate the flow of 21st Century sheep breeding tiers that commonly occur between UK sheep flocks. This continuous genetic crossbreeding has evolved to maximise the environmental adaptability from the Mountain and Hill breeds with a wool producing hardy and prolific Upland breed. These are often referred to as Mule sheep breeds that are perfectly suited as a mass-producing commercial ewe that are crossed to Lowland terminal sires and the vast array of modern meat breeds to produce fast maturing heavier lamb products.

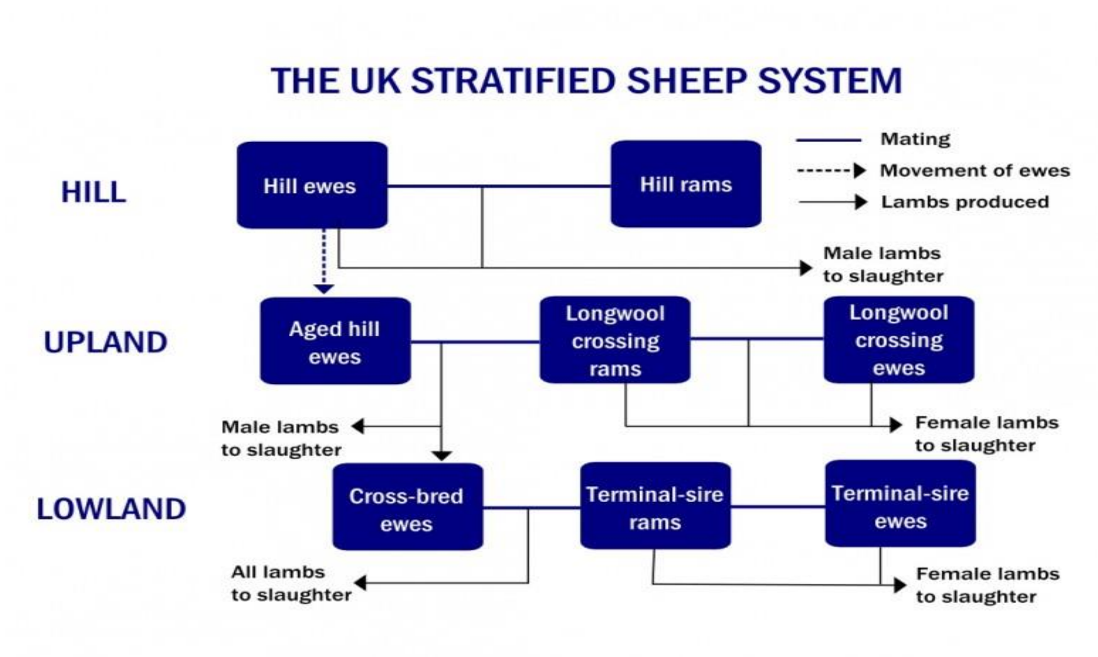


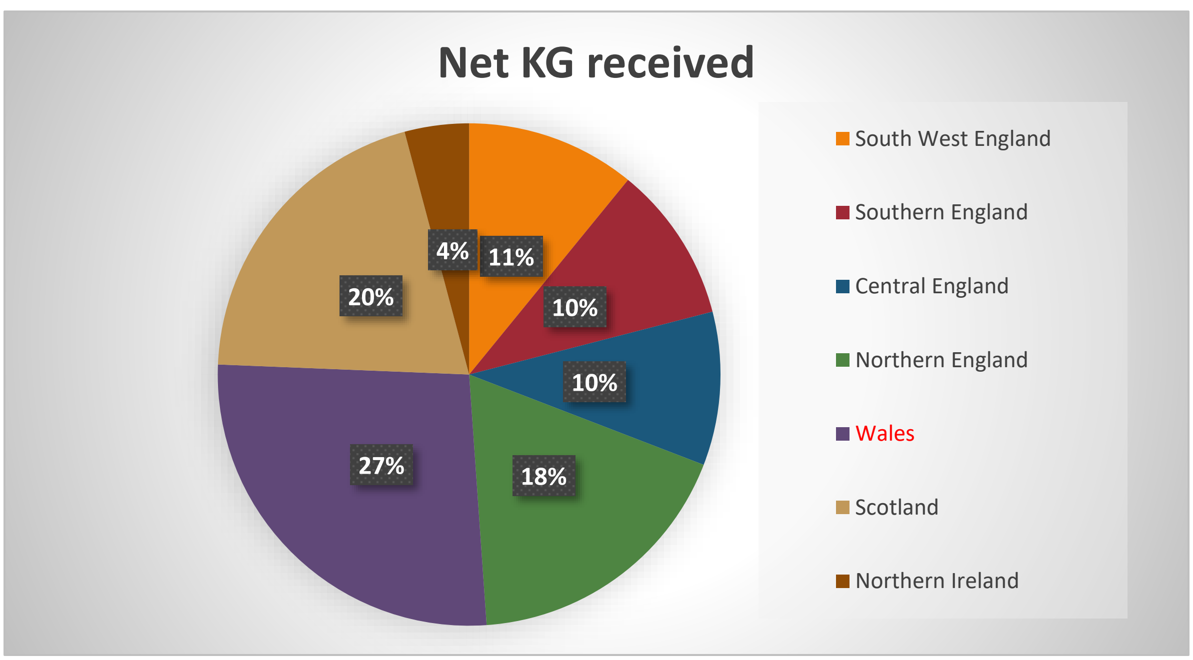
CHART 1: The UK's stratified sheep system as illustrated by a flowschart. **(Source: UK Sheep Farming – National Sheep Farming** **www.nationalsheep.org.uk)**

Greasy Fleece as a Primary Industrial Resource

Wales supplies 27% of the annual British wool clip according to the British Wool Marketing Board (BWMB), producing 7,707,372kg of raw fleece from 8,617 sheep farms. It is also apparent to highlight the number of wool growers in Wales is greater than in any other UK region which is concentrated further when comparing sheep per hectare of land mass available. On average, a Welsh wool grower will produce the highest volume of wool per farm that overall signifies the importance of sheep to Welsh communities.

Regional statistics 1st May 2017 - 30th April 2018	**Net Kgs Received**	***Number of producers***	***Average clip per farm***
South West England	3,138,913	*4606*	*681*
Southern England	2,904,853	*4129*	*704*
Central England	2,847,066	*4519*	*630*
Northern England	5,197,307	*6874*	*756*
Wales	7,707,372	*8617*	*894*
Scotland	5,828,150	*6846*	*851*
Northern Ireland	1,192,274	*3068*	*389*
TOTAL	**28,815,935**	***38,659***	***745***

TABLE 4: Total greasy fleece received by UK regions from 1st May 2017 to 30th April 2018. Also shown in pie chart format below. (Source: BWMB)



British Wool, formally recognised as the British Wool Marketing Board (BWMB) has been the largest UK selling agent for wool since the 1950's and is still currently responsible for selling an estimated 60% volume for over 40,000 producers.

Due to the importance of wool throughout history, all British sheep breeds were classified according to their wool type and British Wool subdivide these 150 lines (types) into seven categories and market the wool according to specific line number – please refer to the https://www.britishwool.org.uk/information--wool-values for their extensive list of wool lines, corresponding breeds and annual clip values.

To organise their service, British Wool (BW) has 10 regional licensed depots to collect raw fleece direct from the farmers. Upon delivery farmers receive an advance payment whilst BW grade and sort each fleece according to their 150 selling lines, repack, test and store ready for marketing.

Wales has three collection depots and Porthmadog processes 13.62% of the total annual Welsh wool clip.

For regional production figures of greasy fleeces please turn to Appendix 2 at the end of the report, which state production figures based on old county boundaries. The modern day Gwynedd includes "Caernarfonshire" and most if not all of "Meirionethshire." Between these two old counties, the closest estimate we have show a total output of 1,133,572Kg of greasy fleeces from Gwynedd during 2017-18. This accounts for 14.7% of the Welsh output.

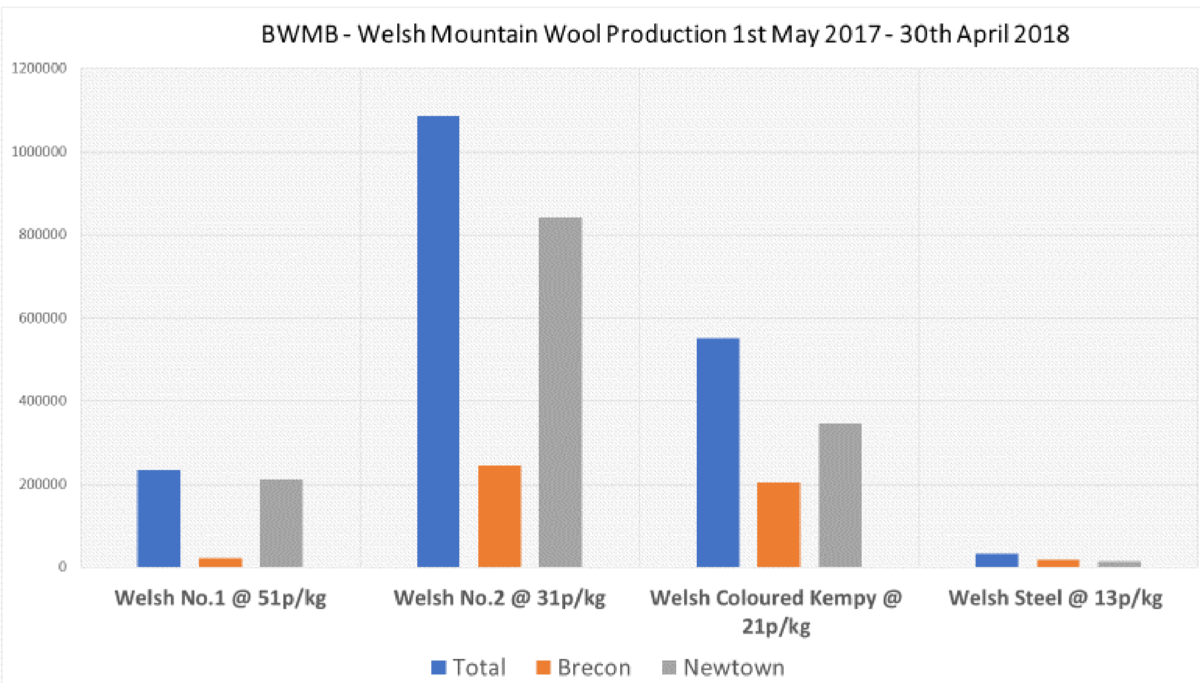
Regional Depot	Greasy fleece / annum (KG)	Regional % in Wales
Brecon	3,179,118	36.78
Newtown	4,287,438	49.6
Porthmadog	1,177,118	13.62

TABLE 5: Amount of greasy fleeces delivered per Welsh depot from 1st May 2017 to 30th April 2018. (Source: BWMB.)

The Porthmadog depot has only a collection function. From there, the fleeces go to Newtown for further grading and preparation to be sold on the open market. Apart for Newtown, Brecon is the only other grading station for wool in Wales.

Graph 2 below illustrates that the largest clip in Wales comes from second sheer breeding ewes and returned an average 31p/kg in 2018. The total amount of raw Welsh mountain fleece is 17% of the total Welsh wool clip and averages 800,000kg per year.

The total revenue created from the sale of this Welsh mountain wool through the BWMB currently stands at £440,509.56p. It is not possible to calculate the sale value from the remaining 83% Welsh wool as some breeds are amalgamated and sold across the 150 lines within BW and are thus not regionally recognised as Welsh. Raw fleece is also purchased by additional wool merchants which will be discussed further in this report when discussing a Welsh Wool Brand.



GRAPH 2: White Welsh Mountain British Wool payments by volumes 2017/18 season. (Source: BWMB)

Logistics of Greasy Fleece

Shearing is the process of removing the fleece from the sheep and usually occurs once a year by professional shearing gangs that operate regionally. It is essential that qualified shearers are available for this task as second cuts (cutting the fibre twice) damage the fibre by creating mixed fibre lengths that reduce the value of fibres as a spinning yarn.

Key Point: Farmers pay shearers 90p for hardier sheep and up to £1.20/sheep for shearing and £10/hour for wool packers, yet the sale of the fleece returns £1 to £3 per sheep per year.

A wool handler typically gathers the fleece, tucks the belly fleece inside, folds in the sides, rolls into a ball and packs into a special wool sheet. They also keep the shearing area clean from dirt, droppings, reject wool fibres etc. On farm sorting (dividing up the fleece) is not common practice as UK wool growers are required to follow the above procedure and allow trained classifiers to grade each fleece in their depots.

Note:

- **Grading** is the process that determines the fleece quality – strength, length, colour, micron etc
- **Sorting** is the process of separating fleece parts depending on the above characteristics – bellies, skirting, back legs, cotted (felted) parts plus any damaged, kemp, spray marks etc are often removed depending on the requirements for the finished product.

Raw fleece is a Category 3 Animal product that requires a licence to handle within the UK and when exported for both clean and greasy fibres. "Animal by-products" (ABPs) are defined as entire bodies or parts of animals, products of animal origin or other products obtained from animals which are not intended for human consumption. Animal by-products are a potential source of risks to public and animal health. Legislation has been in place for many years to control these risks by setting out the requirements for the collection, storage, transport, treatment, use and disposal of animal by-products." (See www.daera-ni.gov.uk/articles/animal-products-general-guidance for more information.)

Key Point – A licence is required if farmers wanted to collect volumes of wool and sell independently from all other wool buying options.

British Wool offer the best advice available for fleece packing instructions and include faults to avoid, ram fleece assessment services and packing and haulage information for farmers to help achieve maximum price for their wool – see Wool Clip Presentation guidelines. In 2017 they introduced the Golden Fleece competition to encourage best practice rewards for those who maintain excellent wool growing conditions with a £1,000 top prize gift.


C.G.C.
W P W
PORTHMADOG

FLEECE PURCHASING OPTIONS

Wool Merchants are licensed traders responsible for the transport logistics of greasy fleece and assist farmers by providing wool sheets (poly-woven bags with ties) and packing instructions to each registered farmer. Collection depots are available locally and farmers receive a price per kg of greasy wool delivered that fluctuates annually depending on global trends, fleece type, quality and cleanliness.

BRITISH WOOL (BRITISH WOOL MARKETING BOARD)

The largest wool merchant in the UK, British Wool operates 10 regional depots that repacks, weighs, and then presses graded fleeces into 200+kg bales. Each farmer has a reference number and receives approximately 10% of the estimated value of their wool clip on delivery, with the remainder paid when the farmer's wool is sold into the global market. A common misconception is that wool is never owned by the British Wool.

BWMB-registered buyers are traders who attend electronic auctions to purchase British wool available in over 120 wool lines (types). Lots of 8 tonnes consisting of 24 bales are sold to wool traders from all over the world. Only a registered person can enter this auction room in BWMB's Bradford headquarters from July through to March; after that the farmers receive their full payment.

2015 BWMB fact sheet stated a permit of 3,000kg was allowed for wool to be sold privately by wool growers for artisan craft uses and 15,000kg for insulation purposes provided wool exemption certificates have been obtained.

Today the exemption certificates are not required and in June 2018 the introduction of Agency Buyers was introduced to increase competition amongst the regular buyers and allow all persons to approach the Agency Buyer to request the purchase of any wool line in any volume. This has huge benefits for the concept of a Welsh wool brand and demonstrates the continued support British Wool offer to those who wish to add value to UK and regionally graded wool lines.

Information about the BW's Licensee Scheme can be found from following this weblink: https://www.britishwool.org.uk/ksupload/userfiles/British%20Wool%20Licensee%20Scheme.pdf

Texacloth

In the 1970s Aiden Walsh set up Texacloth in Ireland to buy wool direct from farmers by weighing and paying on delivery, accumulate bales and exporting bulk quantities to their main market in China, which also includes India and Europe.

Operating in Scotland and Northern Ireland for 20 years, Wales and Southern England for over 15 years and over 40 years in the Republic of Ireland they now have over 3,000 farmers on their register and buy wool directly from wool Auctions.

Despite several requests for figures, it wasn't possible to obtain the amount of Welsh mountain fleece sold through Texacloth.

Aiden Walsh designed it to be a quick simple system where farmers deliver wool to their closest depot with prices confirmed prior to delivery. It is weighed immediately, and payment is via electronic transfer for the total wool weighed on the day. They do not operate grading systems and the majority of the wool is exported, although Welsh Mountain is reportedly purchased by UK Carpet manufacturers.

Lawrence Pierce Wool Merchant

Based in the Republic of Ireland, this company has been trading wool since 1909 and currently sells 15% of England's wool trade since opening its depots in the UK in 2004. In recent years they have offered this service to Welsh farmers and in 2018 reportedly purchased 90,000kg of raw Welsh fleece, with 35,000kg (31.5%) of this being the Welsh Mountain fleeces.

Described as the main alternative to British Wool in England creating a much needed competitive market, efficient packing and grading methods allow better prices to filter down directly to the producer, whilst offering affordable prices to customers. The company claims "from discussions with farmers and their calculations, our pricing is consistently higher than that of the BWMB." See www.wool.ie for further details.

Attracting farmers with local drop off points within a 40-mile location to reduce travel times to under an hour, convenient drop off times together with fixed prices and immediate payment, the annual growth is a steady 8-10% increase year on year.

The price paid for wool is an across-the-board price based on the location and the basic breed make up which are fixed throughout the selling season from May to September each year.

As the wool is to be exported, VAT registered producers will not be required to pay VAT, although again its reported that the Welsh mountain breeds remains in the UK and enters the carpet industry. The prediction for 2019 is 60p/kg for the fine export wool, which would be lower for black and kemp fleeces.

The company has invested in research and product development, which has led to the establishment of the Sheep Wool Insulation company - see www.sheepwoolinsulation.com Owned by Lawrence Pierce, the business uses the ‘bouncy’ fleece from the down breeds rather than kemp fibres to create insulation panels for homes.

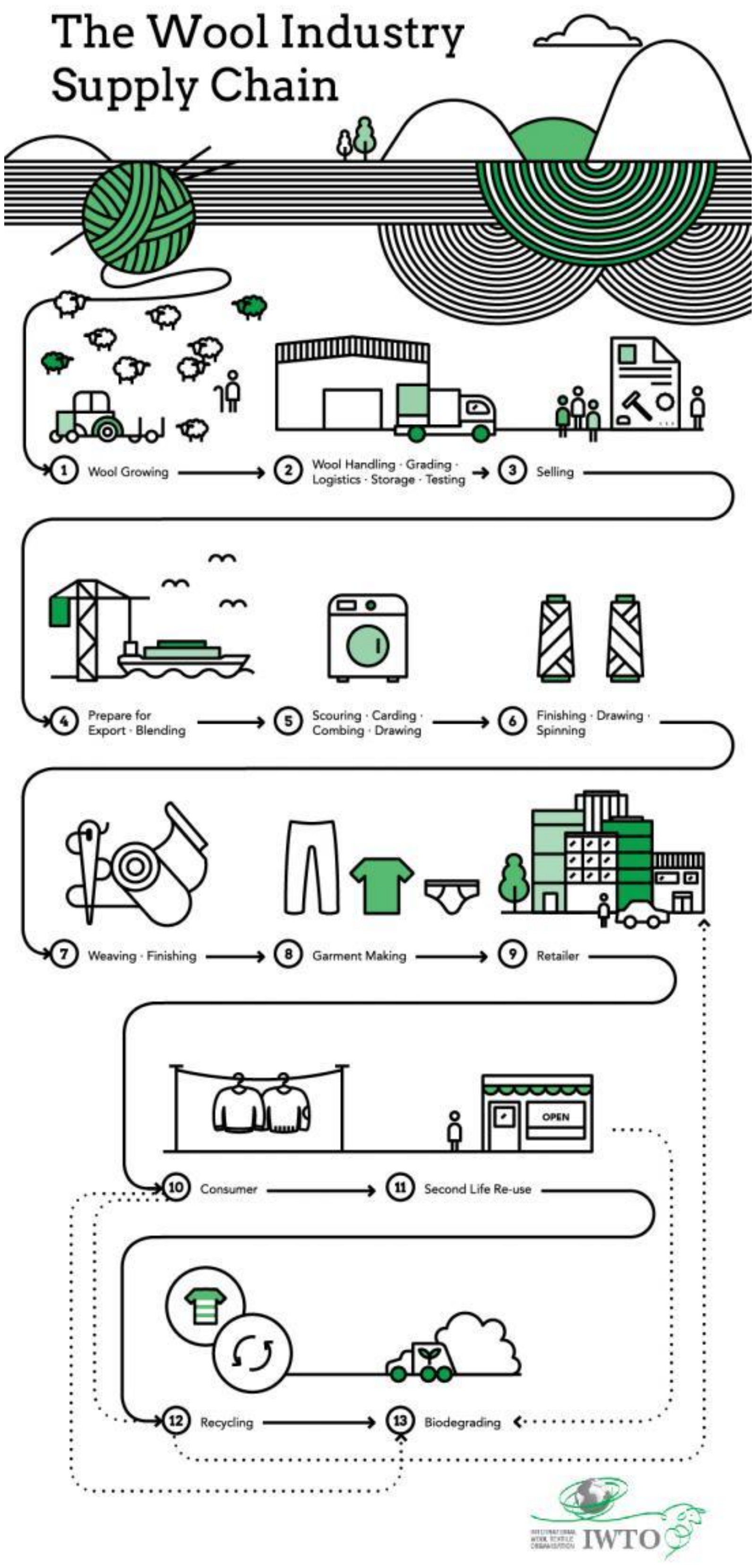
Independent processors
These are small to medium sized businesses buying wool directly from the farm gates to add value from the early processing to finished product stages. Agents also source for companies incorporating wool for specific end products. An example of this is Baavet, based at Harlech.

Hand spinners
The smallest percentage of buyers by volume with the most appreciation for the product is the hand spinner. Hand spinners are prepared to pay higher prices for individual fleeces straight from the shearing boards at local shows, wool festivals and online and prefer specialist fine, colorful curls and open locks and are rarely interested in the kemp coarse fibres associated with the Welsh mountain breed.

Key Point – The challenge of wool logistics highlights the need to identify who shall be buying or using the fleece as the decisions that are made at shearing are essential to both farm gate sales and product manufacturing.

To sell wool privately a farmer needs to:

- allocate grading, sorting and package requirements at shearing
- consider transport logistics from the farm
- pre-plan product design and processing volumes


The Wool Industry Supply Chain
OPEN
1 Wool Growing
2 Wool Handling · Grading · Logistics · Storage · Testing
3 Selling
4 Prepare for Export · Blending
5 Scouring · Carding · Combing · Drawing
6 Finishing · Drawing · Spinning
7 Weaving · Finishing
8 Garment Making
9 Retailer
10 Consumer
11 Second Life Re-use
12 Recycling
13 Biodegrading
IWTO

FLEECE TESTING

Sheep fleeces are highly variable and relate directly to the final product and thus Wool Testing Authorities (WTA) exist throughout wool growing continents to offer internationally recognised fibre tests. The UK and European WTA is based in Caernarfon, Gwynedd, which provide the area with a significant intellectual resource for wool growers and users to work with.

Providing accurate information about every bale, a sequence of random bale punctures extracts small samples to provide an average index score for future wool buyers. This accurately measures every bale to present information at auctions consisting of micron, length, strength, colour and contamination levels. These sample are also washed to provide the clean weight figures.

A similar service is also available to growers but, as it’s not common practice to test fleece fibres in Europe, these prices are high due to lack of demand, at £8 - £25 per sample.

Fibre length and strength are an important aspect of international wool sorting, removing short, coarse, tender and damaged fibres to ensure wool is fit for purpose.

IMAGE 3: Shows the comparative quality features of wool from different breeds. A typical Welsh Mountain fleece is long and double coated with primary hair follicles to allow water to shed, and is short and dense to insulate from the heat.

THE SCOURING OF WOOL AND EQUIPMENT REQUIRED

Scouring is deemed the first element of early-processing and vast quantities of greasy wool, in 8 -20 tonnes batches are washed in purpose-built scouring plants around the world. Wool is pass through enormous industrial machines, untangled and submerged in hot alkali solutions, rinsed and blown dry with warm air to produce lanolin free, sometimes bleached wool. Unscoured wool has a lot of grease present (around 20-30% of the weight of the fleece could be grease), and the primary goal of scouring is to remove this.

Haworth Scouring Company based in Bradford is owned by Curtis Wool and has the capacity to scour 1,000,000 Kgs a week, which is more than the UK produces on an annual basis and currently imports greasy fleece from all parts of the world. Investing in modern equipment including a state-of-the-art effluent treatment plant, their adjoining **Haworth Combing Company** markets British wool and imported wool top blends with an environmentally sound service in the heart of the UK textile centre.

Standard Wool (UK) Ltd is a multi-million-pound group of companies with customers in more than 30 countries that together make up one of the world's leading **wool** trading businesses. Commission scouring is available by their Dewsbury-based **Thomas Chadwick & Sons** that has been part of the Standard Wool group for many decades and can scour around 20 million Kgs of greasy wool every year. It is the only UK company to hold ISO9001:2000 Quality Management accreditation in Wool Trading and Processing as well as ISO14001:2004 Environmental Management accreditation, together with Soil Association accreditation to permit the scouring of organically grown wools.. They can offer a competitive, reliable and affordable service to all wool growers within the UK.

Key Point – Fernhill Fibres, owned by Jennifer Hunter, has scoured greasy fleece for 67p/kg or 71p/kg with an organically certified detergent with volumes in excess of 1000kg. A 500kg batch cost approximately 1.07p/kg in 2018.

Independent processors offer gentle washing with soaps in smaller batch quantities and allows normal fleece structure to be maintained by reducing the heat, agitation and harsh stripping of all the lanolin from delicate fibres. Drying is a longer process using natural air flow or reduced heat and movement and thus this system is often requested in the production of hobby and craft textiles and is useful in the small-scale spinning process.

Key Point – With a reasonable choice available for contract scouring in the UK, albeit a few hours drive from Gwynedd, it is difficult to identify under what circumstances it would make commercial sense to invest and establish a scouring plant in the area. Those running at the moment either focus on volume or have developed a specialist niche process to satisfy specific market demands. The general conclusion from this work is that it would make more sense for wool growers in Gwynedd to contract an existing scouring plant as part of an effort to develop their own supply chain. This was supported by the majority of wool users consulted as part of this project, with many noting the environmental standard for dealing with the effluent a significant barrier alone. Despite this conclusion, time was spent investigating what scouring equipment is available on the market, as per study brief.

Alternative Scouring Options

1. KiwiScour, New Zealand (www.kiwiscour.co.nz)

The KiwiScour is a relatively small mechanical system for washing animal fibers that has the capacity to wash 9kg / hour, although actual throughput is dependent on the fibre and level of grease/dirt etc.

The complete scouring system is designed to operate with two KiwiScours and a single dryer that offer a combined input of 432kg in 24 hours or 216kg in 24 hours with a single scour unit. Greasy weight input would on average see 30% reduction in output yield.

IMAGE 2: Two separate 'KiwiScour' scouring machines side by side with a single dryer behind.

Price indications for 2019 as follows:

Kiwi Scour	**NZ$ 75,000** **£38,499**	Standalone Basic 350 Scour (Automated control)
Single Kiwi Scour with dryer	**NZ$ 195,000** **£102,698**	Complete with High Pressure Squeeze/Dryer (Automated Control)
Two Kiwi Scours with dryer	**NZ$ 264,000** **£139,037**	Complete with High Pressure Squeeze/Dryer (Automated Control)

Freight from New Zealand, installation and training are not included and currently none of these systems are in operation in the UK. See Appendix 3 at the back for detailed information

Notes to consider: Opening is a simple process of separating the natural fiber clumps as the wash will be more effective with pre-scour opening and wash methods may need to be different according to type of fleece and animal fibre. For example, washing wool requires the forcing of the washing liquor through the fiber mat and a temperature of 60°C/140°F to remove the lanolin, whereas alpaca fibers are better agitated to rinse off dust while they are in a loose form at a lower temperature of 55°C/131°F.

Key Point - Washing and drying is a delicate procedure and felting during processing is a common problem associated with wool fibres – dedicated care and attention is required, with considerable breed knowledge and understanding not to damage or felt the fibres together during these primary processes. It is one challenge to find and commission suitable equipment. It's another matter to find trained skilled operators.

2. **Belfast Mini Mills**, Canada (www.minimills.net)

Belfast Mini Mills scouring units can process small quantities of wool (<6kg or 2-3 fleeces/batch) and offer complete pre and early processing techniques that include washing, combing, carding, spinning and associated balling yarns onto cones or hanks. These operations offer a complete processing service enabling producers to have access to fibre cleansing and restructuring without losing the identity of individual animals or specific colours. Please see appendix 4 for detailed information.

With an estimated running cost of approximate £45 per fleece, mini mills offers an option with speciality fleeces or specific orders to enable wool growers to sell direct to consumers and continue to add value to their own wool fibres.

Key Point – Kemp fibres are not welcomed by Belfast Mini Mills equipment as they contaminate all the machines and thus not suitable for the Welsh Mountain Breed.

HOW MUCH DEMAND IS THERE FOR WELSH WOOL?

Primary research and investigation was carried out to establish the level of interest for Welsh branded wool from small manufacturers and crafters in Gwynedd and further afield.

In total, 28 questionnaires were completed. A copy of the questionnaire used can be found in Appendix 5.

Respondents included 15 small-scale manufacturers or/and crafter, 5 who mainly considered themselves as being retailers of wool products or tourist attraction with a significant retail outlet, 2 from organisations involved in supporting the development of wool supply chains, 5 farmers or wool growers and 1 wool buyer.

Based on this research and extensive discussion during the preparation of this study, we are happy to conclude the following:

1. The wool industry in Gwynedd and further afield in North Wales appears to be a niche sector and to a large extent fragmented. However, it is vibrant and made up of people who are both passionate for wool, optimistic of its prospects and knowledgeable.

2. Exempting the wool buyer, the businesses we engaged with had an estimated annual requirement for 30-35 tonnes of wool. This varied from an independent crafter requiring 5-10Kg of yarn or 10-20Kg of felt, up to a locally based manufacturer purchasing 25 tonnes per year.

3. There is a market for locally grown wool from local markets and we came across a number of examples where micro/small enterprises had innovated to build their own supply-chains. There is an excellent opportunity to encourage knowledge sharing among different stakeholders in Gwynedd and North Wales.

4. Thoughts on the current state of the wool industry in Gwynedd varied from being very positive to questioning if there was such an industry left. This probably reflects how the commercial activities going on in the area is little known about and its niche scale. However, when questioned about the possible future of wool in Gwynedd, all respondents were upbeat and believed it could play a very important part of rural Gwynedd's economy post-Brexit or post-CAP payment support. The sector has the potential to be smart, innovative, integrated, vibrant, versatile, resilient, prosperous and forward-thinking according to the stakeholders questioned.

5. There was a degree of confusion among the respondents on the definition of "Welsh Wool." Did it mean the breed of sheep? Or did it mean the provenance? Or both maybe? This highlights a key challenge in defining a brand for wool. It became clear during the work that other parts in Wales are looking to develop their own local market for wool, and those who have already invested time in developing the sector had strong opinions that wool growers and users in Wales should work together on a national brand, with the possibility of sub-branding under this umbrella brand to recognise different breeds, wool types or region within Wales. Here are a selection of quotes:

- *"Success of a brand will rely on price, kemp levels and price."*
- *"Hurry up!"*
- *"Not important for me."*
- *"What would it mean?"*
- *"Good idea – could help set standard and raise status of local wool. Other places have done this successfully."*
- *"What would be a good idea is an overall Welsh Wool umbrella brand with regional labels working under it. As there are other groups looking to develop regional Welsh Wool, it would avoid duplication. Each area have their own specialism."*

6. There is a strong interest in developing a brand for wool, with demand strongest from small-scale manufacturers. However, the quality of the wool remains the top priority for all wool users.

7. When asked to score a number of criteria on their perceived level of importance, with a score of 1 meaning "not important at all" and a top score of 10 "critically important," the outcome was as follow:

- WELSH PROVENANCE – 7.4
- LOCALLY SOURCED WITHIN 30 MILES – 3.5
- WOOL BREED – 8.6
- QUALITY OF WOOL – 9.5
- SERVICE eg RELIABILITY, CUSTOMER CARE, KNOWLEGDE…. – 7.9

8. When asked about the need for a local scouring facility, the responses received were polarised. Just over 70% of the respondents had doubts over the economic viability of having a scouring facility in or near Gwynedd, especially considering the existing alternatives already highlighted in this report. Furthermore, most of the same respondents had further doubts in terms of issues dealing with the effluents created from the process and whether the skills and experience were available locally to run a plant efficiently. The same group of people did recognise that in a "perfect world", the whole process of adding value to wool should be done locally. To reach that point, a number of other more fundamental steps will need to be taken such as improved co-ordination

between growers/users, developing other aspects of the supply chain and adding value through branding.

9. At the same time, 22% of the respondents felt very strongly about the need for a scouring facility in Gwynedd urgently to allow their businesses to grow. These businesses were currently finding it difficult to contract the scouring services they required or/and found it too time consuming and labour intensive to consider doing it themselves. The scope of this brief didn't allow further examination of the different models of how a scouring plants could be established or run in Gwynedd. It came apparent during the work that new technologies are being developed to scour wool that could address the effluent issues. This may justify further investigations. Likewise, a detailed economic feasibility study would be valuable based on either the KiwiScour or Belfast Mini Mill system being established in Gwynedd. It wouldn't be appropriate for this study to close the door on the possibility of a scouring plant in Gwynedd for the immediate future, however, it is clear that other areas of supply chain development should be prioritised first.

10. Just under 10% didn't have a particular opinion on the need of a scouring plant in Gwynedd.

The concept of calling sheep farmers in Wales "wool growers" is still novel and unfamiliar. We felt that doing this in this report can be part of challenging the mindset of farmers in Gwynedd on their role within the wool supply chains. At the moment, wool is to a large extent considered a co-product at best, by-product at worst, of the sheep meat industry. This can be considered as a miss opportunity for one of Gwynedd's most important rural sectors or as a mindset that needs to be challenged robustly in light of likely future political and policy changes. When we state the need to "challenge," we mean that everybody along the supply chain and involved in supporting it needs to be challenged, not just the growers.

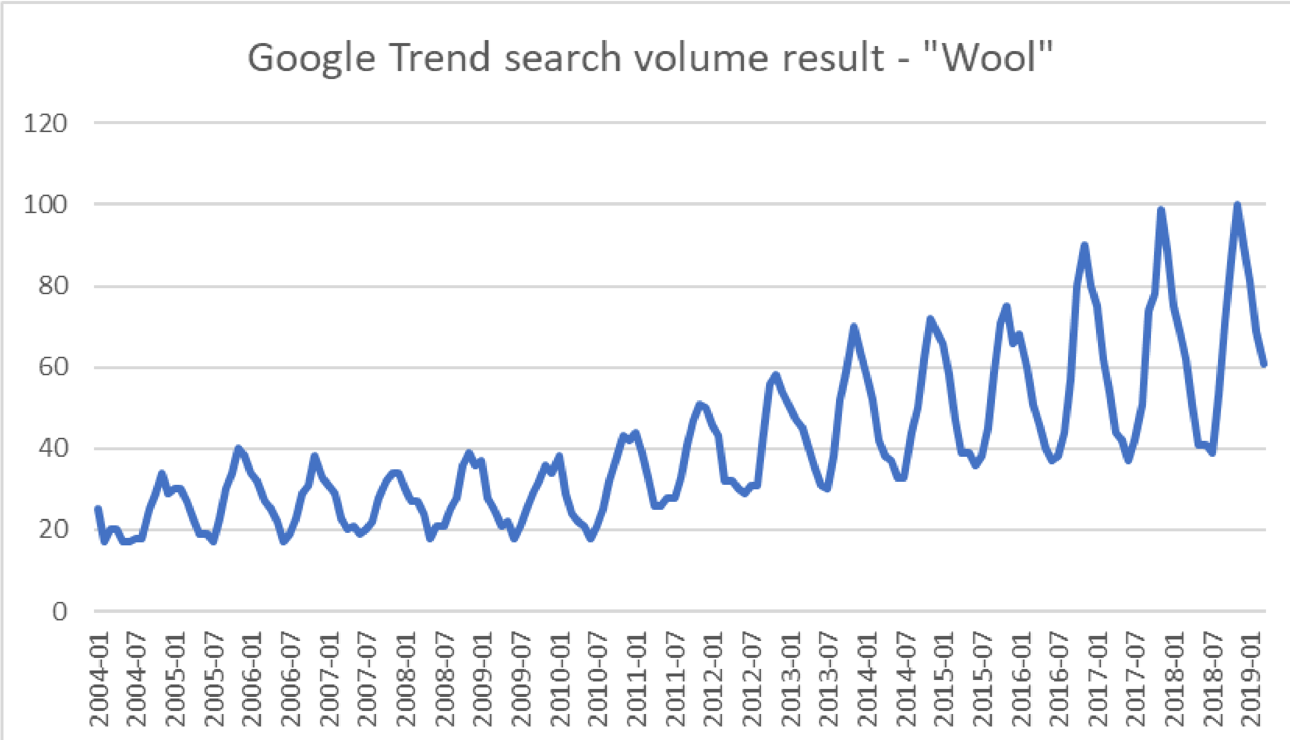
The primary research conducted as part of this work and the workshop held at Porthmadog confirmed that farmers are open to consider new opportunities. Like all businesses, they will be looking for a strong market signal to initiate the change that's required and will naturally be cautious initially.

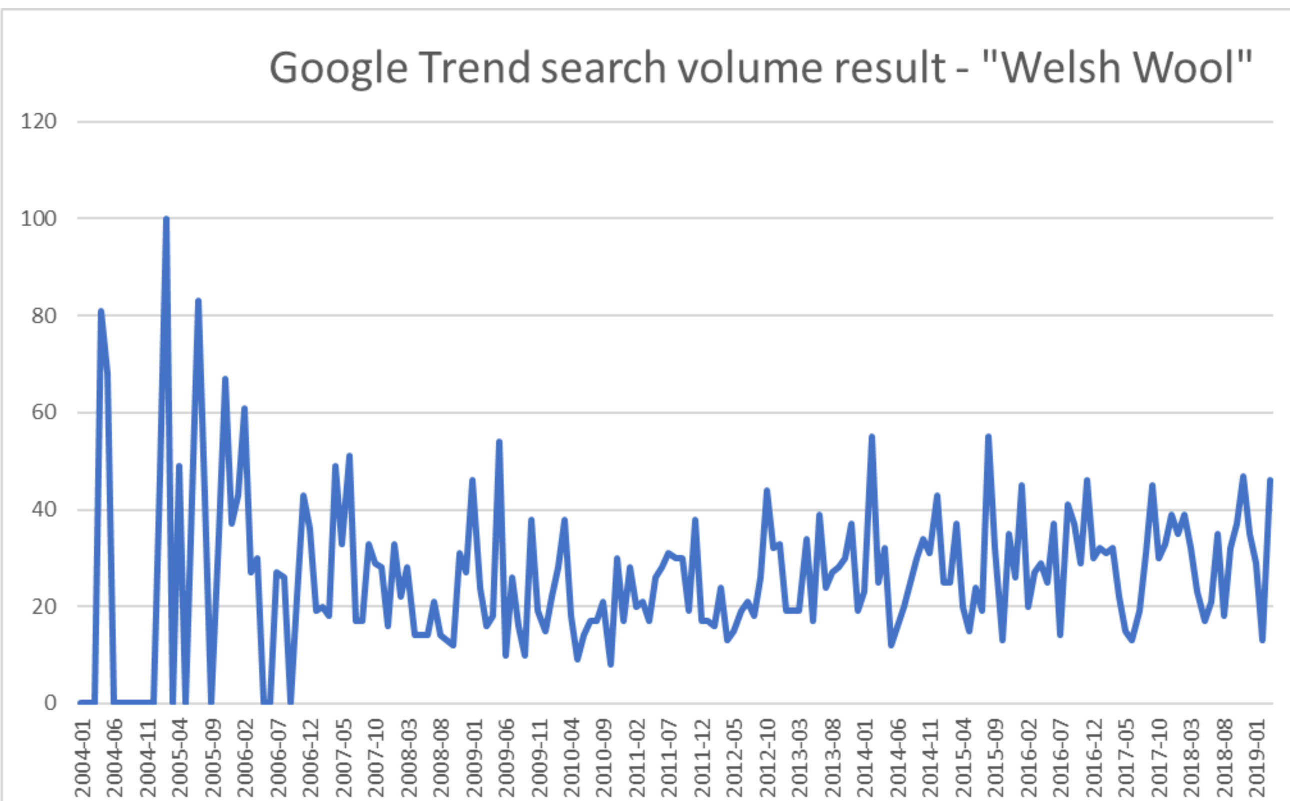
Having a clear, secure, simple and viable route to market is a key factor for a farmer to invest time, money and energy into a new opportunity. Simplicity is important, more so nowadays as many farmers farm on their own and therefore don't have much spare time to embark on complex new enterprises.

Support and advice would encourage more to take up a new opportunity. The majority of those interviewed believed that it's fairly straight forward to overcome technical issues by working with experts and other partners from the supply chain.

Overall, the response from the farmers were very positive. When speaking with wool growers, there was a sense of wanting to throw the challenge back and ask "tell us what are the opportunities?"

Based on our extended work with farmers across Wales, the industry's attitude to change is getting more positive, with more farmers accepting that the industry needs to diversify within and beyond conventional farming in order to evolve and grow.


Google Trend search volume result - "Wool"
120
100
80
60
40
20
0
2004-01
2004-07
2005-01
2005-07
2006-01
2006-07
2007-01
2007-07
2008-01
2008-07
2009-01
2009-07
2010-01
2010-07
2011-01
2011-07
2012-01
2012-07
2013-01
2013-07
2014-01
2014-07
2015-01
2015-07
2016-01
2016-07
2017-01
2017-07
2018-01
2018-07
2019-01


Google Trend search volume result - "Welsh Wool"
120
100
80
60
40
20
0
2004-01
2004-06
2004-11
2005-04
2005-09
2006-02
2006-07
2006-12
2007-05
2007-10
2008-03
2008-08
2009-01
2009-06
2009-11
2010-04
2010-09
2011-02
2011-07
2011-12
2012-05
2012-10
2013-03
2013-08
2014-01
2014-06
2014-11
2015-04
2015-09
2016-02
2016-07
2016-12
2017-05
2017-10
2018-03
2018-08
2019-01

TRADITIONAL WELSH WOOL PRODUCTS

Welsh wool products have a long and varied history throughout the centuries, and perhaps the most admired woollen item is the Traditional Welsh Wool Blanket. Originally woven from Welsh mountain fleeces, the black and white fibres, overdyed with natural colours and spun into weaving yarns have left a lasting impression and striking regionally recognised textile heritage.

Similar to a tapestry the pattern is not considered a story as explained by Elaine Williams of Trefriw Woollen Mills.
"How do the patterns tell a story? I don't think they do. It is plain double weave woven on 16 shafts which means 4 blocks so the number of motifs that you can come up with are quite limited. We have woven our bedspread pattern (T3) here for over 100 years but other Welsh mills have woven (or may still weave) the same pattern. Our smaller tapestry by the metre patterns were designed mostly in the 1950s, 60s, 70s."

There is also evidence of the **Frieze** or **Frisian cloth** originating from Wales which is a general term used to describe a coarse woollen woven cloth that had a recognizable nap or raised fibres on one side only. The cloth was scrubbed to release the curls and raise the nap and this was then left un-shorn after being raised, creating an uneven surface.

Woven in the English Midlands and Wales, and in Ireland from the fourteenth century, and later in Holland, this type of cloth was dense and strong opposed to being fine in quality and made almost entirely for export to Ireland well into the nineteenth century.

Tailored into long loose overcoats, the term frieze can also be used for the curly nap frieze fabrics and the action of raising the nap. Today, *frieze* is a textile technique used to make modern machine-loomed carpets. Carpets made with this technique are known for their resilience, due to the high twist rates that last longer than the standard cut or loop pile carpets, highlighting their significance of robustness.

The future of Gwynedd’s only working woollen mill at Bryncir was raised a number of times during the primary research and consultation, and also during the workshop group activities. It’s unclear at the moment what the owners have planned in the longer-term for this site which holds significant heritage and commercial value to the area. The mill is privately owned, and therefore we did not think it was appropriate to open discussions with the mill as it was not part of this brief. We did however note that many of the stakeholders consulted put a lot of value in having the woollen mill near-by and would like to explore possible collaboration, only if the owners were willing and happy to do so. We would be happy to support that suggestion on the basis it’s done sensitively and with the view of finding “win:win” opportunities.

Key Point - A similar style garment found in this era, known locally as the Varafielder was woven from the double coated Icelandic breed consisting of a woven cloth from the softer undercoat ‘thel’ layers, together with the long ‘tog’ outer fibres woven loosely through the warp of the cloth. These were worn at Sea to recreate the water shedding effects of sheep fleece as moisture would collect on the tog fibres and naturally drip away keeping the thel cloth dry, exactly as they do on the sheep.


BRYNKIR

Discussion

Wales has a strong position in the UK wool trade, with more than 27% of the supply share and 3 major wool merchants in competition to purchase raw fleece direct from the farmers. Investment into genetics, animal health and supply chain information are receiving financial support, and the native array of genotypes will enable future breeding programmes to supply a multipurpose ewe capable of producing nutrient dense meat products, heavy fleece crops and maintain environmental balance in a challenging ecological modern world.

Mountain breeds are unique as they have evolved with kemp fibres that are considered primary hair follicles that grow amongst the more common secondary wool fibres that create the main mass of fleece. Short and insulating, secondary fibres are of a lower micron, higher crimp and ideal for spinning, whereas Kemp fibres are hair-like, hallow, rigid and are variable in length and colour, especially in the Welsh Mountain with its infamous red kemp.

Kemp fibres do not behave like secondary fleece fibres, do not take dye colours or wrap into yarns and thus most lowland and many upload flocks have bred sheep to be Kemp-free as they devalue the fleece. The main purpose of these primary follicle is to insulate and shed rain and moisture as its collects on the sheep fleece whilst grazing and without this ability the sheep suffer from harsh weather and thus are less thrifty. Kemp is therefore considered an essential part of Welsh Mountain sheep breeds and farmers look for this Kemp when selecting breeding stock.

The UK has an active textile industry and purchasing Welsh Mountain fleeces, scouring, combing and weaving are all possibilities with assistance from the continued marketing strategies of the newly formed British Wool. New initiatives such as The Cambrian Mountains offer Welsh wool yarns and woven products, Baavet have been supplying Welsh wool bedding since 2009 and Wool Cool is an Award winning thermoregulating packaging product that incorporates Welsh mountain wool.

The excellent service offered by Chadwick's for commission scouring will enable any processing volume to be considered, with 100% traceability to the Gwynedd area should any decisions be made to focus on new enterprise operations outside of wool merchants. The KiwiScour could open up possibilities to wash and dry fleece in the Gwynedd area and partially linked to Mini Mills modular equipment if demand, location and environmental impact can be secured.

Focusing on the strength of the mountain fleece and its robustness, abundance, and kemp fibres we can determine that it's not suitable as a soft, next to skin wool to wear as apparel that we find in the long wool upland breeds. It has less bounce than the lowland breeds that are ideal as insulation, and the kemp fibre will prickle in blankets, quilts and duvets. From this conclusion, research and design that incorporate the strength and robustness is encouraged to create suitable and useful products that our modern society demand with environmental soundness.

Linking strength with a traditional Welsh product that is hard wearing woven cloth, (blankets and Frieze) there is a need for replacement plastic shopping bags. Welsh wool is strong, durable and thermoregulating which are all useful elements for the distribution of every day commodities. Bringing history back to life, maintaining the weaving tradition, a plain-woven Frieze cloth or a highly decorative carpet bag incorporating the beautiful tapestry designs are basic ideas to link heritage with future product ideas. Biodegradable food waste / Compost caddies are another example as most households like to recycle their food waste and pre-felt bags can be trailed to replace cornstarch bags. Kemp is not an issue with felt and fibres release their nutrients back into the soil as they decompose along with food and paper waste.

Sound absorbing qualities differ from heat insulation requirements and research is required to encourage the use of wool in the event business to replace the use of straw bales that are currently used as sound barriers. Straw is > £40/ton and highly flammable and useful as bedding, feed, bio-fuels, compost etc. Wool is a naturally fire retardant alternative with the water shedding quantities are welcomed where wool drapes (like a heavy-duty Frieze cloth) can create sound drapes and bafflers to absorb reverb in the music industry. Raising the nap on the Frieze cloth will offer additional aesthetic and absorbing effects as sound reflects hard flat surfaces.

Welsh Wool Branding can be explored further with a national focus and regional sub-links to the original C13th Welsh Mountain breed with a logo suited to emphasis Snowdonia, with the Red Dragon and the Welsh anthem, “true to my country” as the collective theme. Modern breeds can be regionally highlighted to create recognition of finer wool products and thus regional branding can exist under a Welsh Wool umbrella.

The location of North Wales also attracts millions of visitors annually, many wishing to escape city life and explore native countryside that Snowdonia National Park offers. All these visitors can be educated about the importance of grazing sheep and carbon sequestration. Gifts are an essential part of remembering and sharing a holiday and Holyhead Port and Cardiff Airport are ideal outlets to display British and Welsh heritage and modern wool items.

NEXT STEPS

Appendix 6 at the end of this report outlines in some detail a proposed 8-step plan to further develop the industry in Gwynedd, and offers suggestions on immediate steps that can be taken over coming months. It's based on Kotter's well-known and respected "8 step process for leading change."

We the authors, or 'Arloesi Gwynedd Wledig' cannot and should not try to attempt to lead the development of this sector in Gwynedd. The people who can make this happen are those involved in the industry already or who wish to be involved. People like us, and organisations such as 'Arloesi Gwynedd Wledig,' 'Farming Connect,' local County Councils and the Welsh Government can make resources available to support the stakeholders.

The response received for this study was unexpected and very encouraging. A large number of different stakeholders, mostly from Gwynedd or with a strong connection to the area, engaged with the process of thinking and sharing ideas. We are very grateful for the time, energy and thoughts people were so kind to share with us – we do feel that we weren't able to give an adequate response to all, although we can assure that all points were taken on board and noted.

It's the very same people that can make changes happen. It has to be led by them. We have identified areas that offer good opportunities, and likewise, areas that are probably best left for the time being – this should assist stakeholders to prioritise. Appendix 6 also lists what support and resources organisations such as 'Arloesi Gwynedd Wledig' can offer to make a difference.

The work facing any group that may decide to come together would involved a large degree of supply chain development. We have observed that key parts of the chain exists, with maybe a few linkages weaker than others. A brand and an organisation with strong governance and co-ordination is required to bring it all together.

Small businesses, in particular in rural Wales, don't have a strong tradition of working closely together, despite the positive benefits spouted by expert after expert. Necessity is the mother of invention however, and the fact that individual businesses in Gwynedd will not realistically be able to compete on their own for a slice of the big cake on offer in the future may just force, or at best nudge businesses to seriously look at sharing resources and information to work more formally together.

We have identified "Agrisgôp" as a possible vehicle to assist the early development of such a group/organisation. Agrisgôp is a fully funded programme under 'Farming Connect' that bring farmers and their family members together to work on an idea or develop a solution to a challenge. Additional members can be involved.

The programme offers the support of a trained facilitator to meet up with the group for 6 to 8 sets. This offers a way for key people to come together.

Supply chains are increasingly being scrutinised for their resilience. Recent research work into this area show that resilience can be improved through regular and clear communication along the chain, transparent business models and adoption of technology to improve data management, monitoring work and resources allocation. A producer and user driven organisation, given the brief of developing and managing local wool supply chains, would benefit from having a transparent business model and effective communication channels.

Gwynedd has many strengths when it comes to building a supply chain. It's well connected to a large mostly urban population seeking green solutions made closer to home. Gwynedd has a vibrant tourism sector keen to offer local merchandise and gifts for tourists.

It has key centres that are world leading in their specialist fields. The Bio-Composite Centre based at Bangor University leads on material research and development, and offers Gwynedd a fantastic intellectual resource on its doorstep.

The test laboratories of the Wool Testing Authority in the Northern Hemisphere is based in Caernarfon. Although it has proven difficult to nurture links with this organisation so far, it would make sense to make a more concerted and direct effort to see how this facility could benefit local wool stakeholders.

And thirdly, although not based in Gwynedd, but only a few miles south of the county, the Centre for Alternative Technology at Machynlleth is a well respected voice in the use and development of sustainable solutions to modern-day living. It seems that little has been done in investing time to develop this relationship, and initial enquiries points to serious interest from the Centre to nurture stronger links that could be mutually beneficial.

This study should be considered as an important first step in putting a plan in place that will maximise the opportunities for Gwynedd's various wool stakeholders over the next 10-20 years. The legacy by 2030 could be a Gwynedd or Welsh wool supply chain that is more agile, productive, competitive and resilient, providing valuable employment for local people and adding more value to its primary produce.

Challenges for establishing a wool group in Gwynedd

1. **Recognition** – Nobody will be obliged to recognise a Group. However, wool growers and users, if successfully persuaded about the merits of the concept, should adopt ownership of the group/organisation from the start.

2. **Funding** – A group will need resources. A number of support programmes could be used to support such a Group in Gwynedd including assistance as already identified through 'Arloesi Gwynedd Wledig' and 'Farming Connect.' Funding could be made available in the future under the Welsh Government's "Supply Chain Development and Co-operation Fund." Longer-term, an organisation could consider different options for generating income to sustain the structure. For example, income could be generated through annual membership or/and by taking a small percentage of each sale to cover the cost of supply chain management. Whilst running a producer led organisation is not cost free, the additional amount that needs to be recovered from the market should be significantly less than the extra value created for the producers. Persuading producers that a small charge is more than recoverable could be a challenge. In one sense, if producers cannot be persuaded of the potential benefits, it might be an indication that the structure needs more development work or it could be an early sign to suggest future problems.

3. **Skills** – Those tasked with leading and running the organisation will need to be equipped with the right mix of skills in order to deliver increased and/or more stable returns to producer members. This is different to having good knowledge about a sector. A skill refers to the ability of using information and applying it in a context. There are 7 key skills that would be required to run a successful wool group:
   - i) Understanding of the local, national and global markets
   - ii) Understanding of information systems and latest applications to run monitor, communicate and manage efficiently and effectively.
   - iii) Ability to ensure compliance of the adopted business structure and guidance are adhered to.
   - iv) Good governance skills to include how to run effective boards, selecting and appointing representatives/directors, conflict resolution, effective decision making, sound understanding of the business environment and networking.
   - v) Highly developed negotiation skills will be required to undertake contractual discussions. This skill can come more naturally for some people. Good negotiators are typically well organised and prepared and has a strategic mind to help approach a negotiation with a clear end goal in sight. Professional negotiators can be employed on a contract or ad-hoc basis to deliver training or to advise and support any negotiation. This is common practice in some industries.

vi) Basics of contract law – contract law is becoming increasingly complex and in some way or another, it now affects every type of commercial arrangement. A good grasp of contract law will be an important skillset to have.

vii) Business skills will be important, as any organisation will have to be accountable to its members and run in accordance with prevailing legislation. Those entrusted with leading an organisation need to have competence in planning, budgeting, accounting and possibly in managing staff.

4. **Leadership** – To be successful, an individual or group of individuals with the leadership skills will be needed to take the initiative off the drawing board and into the real world. The transformational leadership skills required include high levels of influence, self-confidence, motivation, initiative, optimism and an instinct for organisational politics. Growers and users would need to take this as a mission, not just a job, and who would be passionate about the changes required. Even from an early stage, people would need be able to rouse other people with infectious enthusiasm for the vision being developed and inspire a shared vision of what the future could look like with a successful organisation.

5. **Cohesion** - Cohesion amongst a group could be difficult to achieve unless a group trust one another and share common goals, timelines and good communications. It can take time for sufficient trust to develop between members of an organisation. Effective facilitation can support trust building within a group. Cohesion is usually easier to achieve with a homogenous group of people with similar sized businesses, interest and systems. A lack of cohesion between producers can soon undermine the unity that is needed to stand together and utilise any potential bargaining power. Cohesion is easily eroded by poor communication and weak leadership.

6. **Patience and Confidence** – Is it realistic to expect a organisation to be immediately transformative? Unfortunately, an organisation is unlikely to achieve its end goal overnight and will need to take a long term strategic perspective. Realistic targets or goals will help to manage expectations, and setting a clear objective should make it easier to attract producers, users and customers to engage. Gaining confidence without any track record can be difficult and could be addressed by ensuring producer ownership from the outset and targeting individuals with their own track record to get involved in its management.

Case Studies

The following 3 case studies have been chosen to provide useful comparisons and lessons for all wool stakeholders in Gwynedd to learn from. They are all based outside of Wales, and we suspect that many growers and users of wool in Gwynedd will not have come across before.

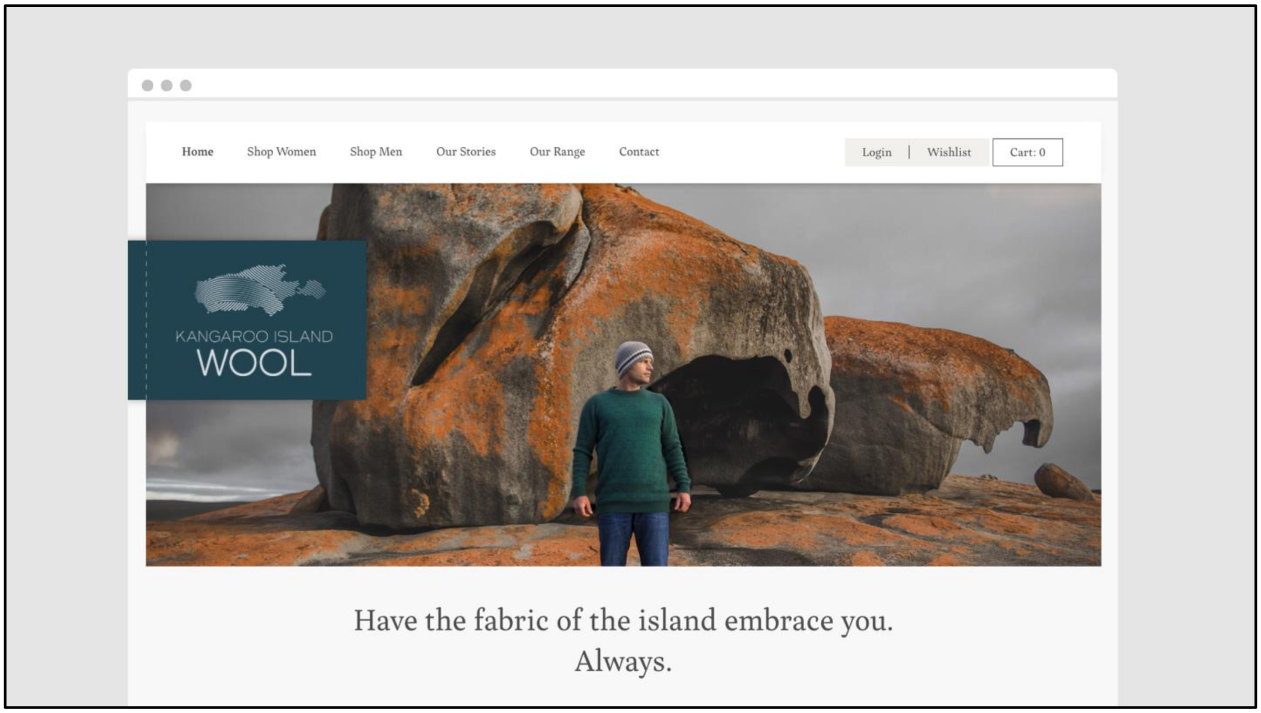
Closer to home, we were particularly impressed by the Cambrian Mountains Wool initiative, and would encourage all readers to visit cambrianwool.co.uk to read about their experiences. They have offered to support any efforts from Gwynedd to add value to wool and are very willing to share what they've learned over the last few years developing the Cambrian Mountains Wool brand. We believe this is a generous and valuable offer.

Case Study

Kangaroo Island Wool **www.kangarooislandwool.co.au**

Kangaroo Island is an interesting case study as the brand's messages are a reflection of the political voices echoing from around the globe and which applies to Gwynedd and Wales: *locally resourced, regionally recognised, environmental sustainability, cooperative power and family business.*

All Kangaroo Island wool producers are shareholders of Australian Wool Innovation. Their wool clip accords with the Australian Wool Exchange (AWEX) code of practice for the preparation of Australian wool clips and they maintain their own codes of practice in sheep health and welfare, management excellence, social good, premium fibre and environmental care.



For further information see this link:

[PDF]Kangaroo Island Wool - Authentic Kangaroo Island
www.authentickangarooisland.com.au/.../kangaroo_island_wool_standards....

Case study interview:

1. Please provide brief background for your wool business eg. when established, main driver for establishing business, main markets, product description, staff, future goals…

"Started in 2012 with group of farmers and a vet to increase margins on wool production by stepping away from mainland Australia. Group of shareholders invested in 5 strategies - *locally resourced, regionally recognised, environmental sustainability, cooperative power and family business.*

In 2019, 22 growers producing 30% of total Island wool clip are registered with KIW.

Greasy wool sold transported and through a large wool broker, Australian Wool Network. This company trades 90% on the open market and the 10% that meets their processing specifications is shipped to China for Scouring, NZ for Yarn production and returns to Melbourne for garment manufacturing. Range of finished items such as hats, jumpers, scarves and throws etc are sold through tourist and retail outlets on Kangaroo Island and also supplies other retail outlets on mainland Australia.

The premium for the top 10% that goes to marking garments is $1.10 on top of the standard returns per kg of clean (scoured) fleece."

2. Approximately how much wool do you (KIW) grow - what % is processed by KIW and sold annually? (Kg)

"Grow 900,000kg Merino fibres for KIW and use approx. 10% within our own supply chain agreements. 800,000kg Merino sold on general market along with 100,000kg crossbred wool that is sold into Japan. Therefore, can focus on adding value to the top 10% wool clip."

3. When sourcing directly from farmers, what barriers did you face?

"Biggest challenge in beginning was getting the farmers to communicate and formulate a system to create their strategy and practical set of standards."

4. What do farmers have to do to be recognised as KIW growers / different to none KIW wool growers on the island?

"Registered as KIW – set of standards – some smaller producers not interested or suitable therefore often aim for biggest and better wool growers with a passion to lead the way."

5. Please explain how you evaluate/measure wool quality in your business.

"Wool Testing Authorities in Melbourne – micron and strength, colour and bounce ensure the top 10% grades are selected for processing."

6. What would be your advice on creating a "Welsh Wool" or "Gwlân Gwynedd" brand?

"Consolidate the base, know where you're going, know product limitations and get recognition – use brokers with a supply chain as retail is competitive and difficult – use a unique regional story for personal items. If industrial products created, hard to get this benefit back to the farmer compared to the creation of personal items.

In NZ a percentage of yarns are blended with possum fur to increase thermoregulation, drape and re-bounce in the yarns, and also create harder wearing finished items with less pilling. Recommends investigating other fibres or materials to increase the overall performance in the finished product to make items more attractive to the end consumer. This can also add to the story!"

7. Choose 3 words to describe your vision for KIW in 10 years' time.

“Achieve **Brand recognition** from working hard and trying to make a difference. Receive enough **sales** to keep and increase the **demand** flowing. “

CASE STUDY

Bristol Cloth   www.bristolcloth.co.uk

Here’s a summary of our discussion with Bristol Cloth as told by them:

“The Bristol Cloth project showcases British heritage, preserving what this land has always offered and what British communities have done for centuries. We are set to prove that it is still commercially viable to make cloth on our shores, sustaining British tradition, culture, community, land and the economy.

Bristol Cloth is made with holistically farmed and biologically washed wool from Fernhill Farm. Naturally dyed with organic plant dyes by Botanical Inks. And woven at the Bristol Weaving Mill, the first industrial loom to open in Bristol in nearly 100 years

By supporting this campaign, customers can help re-create a local, resilient textile economy in the South West, offering an alternative to the unsustainable global textile production systems which have threatened traditional British cloths almost to extinction and critically damaged the health of our biosphere. Also supports regenerative agriculture which captures Carbon from the air and locks it back into the soil whilst also replenishing soil health. Help recreate our ability to dye textiles using non-toxic plant dyes. Promotes biological textiles which are safe to use and put back into the Earth at the end of their useful life cycle and bring artisan textile production back into our local economy.”

Social media accounts for @BristolCloth can be found on Instagram, Facebook and Twitter.

CASE STUDY

Exmoor Horn Wool www.exmoorhornwool.co.uk

Exmoor Horn wool is a high-quality knitting yarn that comes from the Exmoor Horn, the ancient breed indigenous to Exmoor and unusually, both males and females are horned. A minority breed classed as "at risk", 95% of the breeding stock is within the moorland areas of Devon and West Somerset and they are one of the few hill breeds with a relatively fine fleece, with a good staple length.

The knitting wool produced is a pure wool, 100% natural, 100% renewable, 100% sustainable, 100% biodegradable, and "good for the planet" as their strapline goes. The yarn is spun on Exmoor at John Arbon's mill in South Molton, where there has been a connection with the wool trade since mediaeval times. All its DK yarn, whether spun in Devon or Yorkshire, is worsted spun, so it will give a good pattern definition. A soft, hard-wearing 70:30 blend of pure Exmoor Horn with Exmoor Blueface wool is available in its natural colour, and also in the colours "inspired by the landscape in which it grew."

Connoisseurs of the wide variety of British wool types appreciate the robust, hard-wearing, though soft, qualities of Exmoor Horn wool. As a result, it is ideally suited for pullovers, jackets, tank tops, waistcoats and the yarn colours are Earth Red, Dark Skies Blue, Heather Purple, Fern Green and Gorse Yellow, designed to reflect the colours of the landscape where the wool grew.

Each ball is approximately 250 metres long per 100g and retails at £10/100g

The company are well-known for its thoroughly Exmoor socks. As an area world-renowned for its high bird shoots, the company's real wool socks are popular as they are warm and paradoxically, cool, because wool adapts to the wearer. This yarn for the socks has an added 15% nylon for durability.

Every pair of socks and shooting hose sold generates a 10p donation to ***CareMoor for Exmoor.*** This is Exmoor National Park Authority's donation scheme which invites contributions to the upkeep of the landscape.

A collective of 10 investors joined-up with the assistance of the Exmoor Horn Breed Society to create a retail outlet to promote this ancient hill breed. Purchasing Exmoor Horn and Exmoor Mule fleeces from British Wool and benefitting from the UK supply chain that incorporates a local spinner and sock manufacturer, these products are regionally identifiable as Exmoor's iconic traditional hard wearing wool items.

Unfortunately the current situation with declining fleece prices on the global markets has resulted in no financial gain filtering down the supply chain back to the sheep farmers, despite their best efforts to pack better quality fleeces (shearling / first clip fleece) separately which signifies there is still work to be done finding a way to obtain the top 10% of wool clip from farms to go into enterprising schemes like Exmoor Horn wool.

APPENDIX 1 – HOW WELSH LAND USE DATA IS COLLATED

Welsh land use data are reported at an agricultural region level instead of at corresponding County level. This approach was laid out by the Welsh Government during the introduction of the 22 Welsh unitary authorities in April 1996.

The new authorities were largely defined by populations, meaning that they are not always suitable for presenting agricultural data. However, it would have made very good sense in Gwynedd's case to have been able to collate land use data for the county as a stand-alone area. The adopted agricultural region system makes it very difficult to analyse and understand what's happening in Gwynedd, as the currently shares statistics with Anglesey which has a very different type of land features.

Consequently, all levy bodies and organisations who collate data on Welsh land use and agriculture have followed suit and adopted the agricultural regions as their land area distribution method. The table below shows the composition of the 7 Agri regions in Wales, and how Anglesey fits in.

List of Current Unitary Authorities - 22		Old Corresponding Counties - 8		Agri regions - 7
Blaenau Gwent	=	Gwent	=	South Wales
Bridgend	=	Mid Glamorgan	=	South Wales
Caerphilly	=	Mid Glamorgan	=	South Wales
Cardiff	=	South Glamorgan	=	South Wales
Carmarthenshire	=	Dyfed	=	Carmarthenshire
Ceredigion	=	Dyfed	=	Ceredigion
Conwy	=	Clwyd	=	NE Wales
Denbighshire	=	Clwyd	=	NE Wales
Flintshire	=	Clwyd	=	NE Wales
Gwynedd	=	Gwynedd	=	NW Wales
Isle of Anglesey	=	Gwynedd	=	NW Wales
Merthyr Tydfil	=	Mid Glamorgan	=	South Wales
Monmouthshire	=	Gwent	=	South Wales
Neath Port Talbot	=	West Glamorgan	=	South Wales
Newport	=	Gwent	=	South Wales
Pembrokeshire	=	Dyfed	=	Pembrokeshire
Powys	=	Powys	=	Powys
Rhondda Cynon Taff	=	Mid Glamorgan	=	South Wales
Swansea	=	West Glamorgan	=	South Wales
Torfaen	=	Gwent	=	South Wales

Vale of Glamorgan	=	South Glamorgan	=	South Wales
Wrexham	=	Clwyd	=	NE Wales

APPENDIX 2: PRODUCTION OF GREASY FLEECE PER WELSH COUNTY

Production of greasy fleece per Welsh county 1st May 2017 - 30th April 2018, in Kg:

Anglesey	236,048
Breconshire	978,019
Caernarfonshire	535,345
Ceredigion	656,759
Carmathenshire	638,190
Denbighshire	841,292
Flintshire	129,238
Glamorganshire	352,226
Meirionethshire	598,027
Monmouthshire	257,817
Montgomerieshire	1,273,378
Pembrokeshire	248,168
Radnorshire	962,865
	7,707,372

APPENDIX 3 – KIWISCOUR

KiwiScour can supply a single standalone scouring unit with the option of an integrated drying system.

The option with the integrated drying system is designed to operate with one or two Kiwi Scours. The equipment is computer controlled and when linked to the company's New Zealand office (via the internet), KiwiScour staff are able to control the system remotely if necessary.

A single Kiwi Scour can process 6 kg/hour of greasy wool, which translated to 17,500kg of greasy wool per annum when operating 8 hours/day for 7 days/week. Essentially the Kiwi Scour is an automated batch process where the fibre is scoured in a series of 7 bowls with each bowl containing heated water and detergent. Each bowl has a heating element.

The process involves the operator loading unprocessed fibre into a basket and placing this basket into the Kiwi Scour. The Kiwi Scour transports the basket of fibre through each of the 7 bowls to complete the scouring process. While in each bowl, the basket of fibre is immersed in the scour cleaning liquor where it is mechanically agitated and squeezed.

10L/min is the maximum water flow the scour will cope with. The company suggests starting at a flow rate of 2L/minute, but the rate of flow of incoming water can be adjusted to keep the water sufficiently clean for good quality scouring of the fibre. On occasions a proportion of liquor would need to be dumped to flush out the solids that have dropped to the bottom of the tank. The water flow is counter flow to the product - clean incoming water flows from bowl to bowl starting at the wool exit end (here the wool is cleanest) and flows to drain at the entry point (here greasy/dirty fibre is introduced to the scouring unit).

The scour and baskets are constructed from stainless steel and other non-corrosive materials.

The High Pressure Squeeze/Wool Dryer system is another automated standalone machine. To reduce power consumption this machine uses very high pressure to mechanically dewater the fibre (while still in the basket) followed by heated air for drying (while still in the basket).

Ex-works price indications received are as follows:

1. NZ$71,450 : Kiwi Scour - Standalone Basic 350 Scour (Automated control)

2. NZ$191,265 : Single Kiwi Scour complete with High Pressure Squeeze/Dryer (Automated Control)

3. NZ$257,865 : Two Kiwi Scours complete with High Pressure Squeeze/Dryer (Automated Control)

All scours are manufactured to order and would typically be minimum of 20 weeks delivery from receipt of order.

Appendix 4: Belfast Mini Mill

The Belfast Mini Mill equipment is manufactured at Belfast, Prince Edward Island, Canada. All equipment is fully tested before delivery and technicians load, deliver and completely commission new & used equipment.

The mill configuration is capable of up to 10 kgs of finished yarn per day or will also produce a combined weight of up to 10 kgs of other products per day such as batts, roving's and felt.

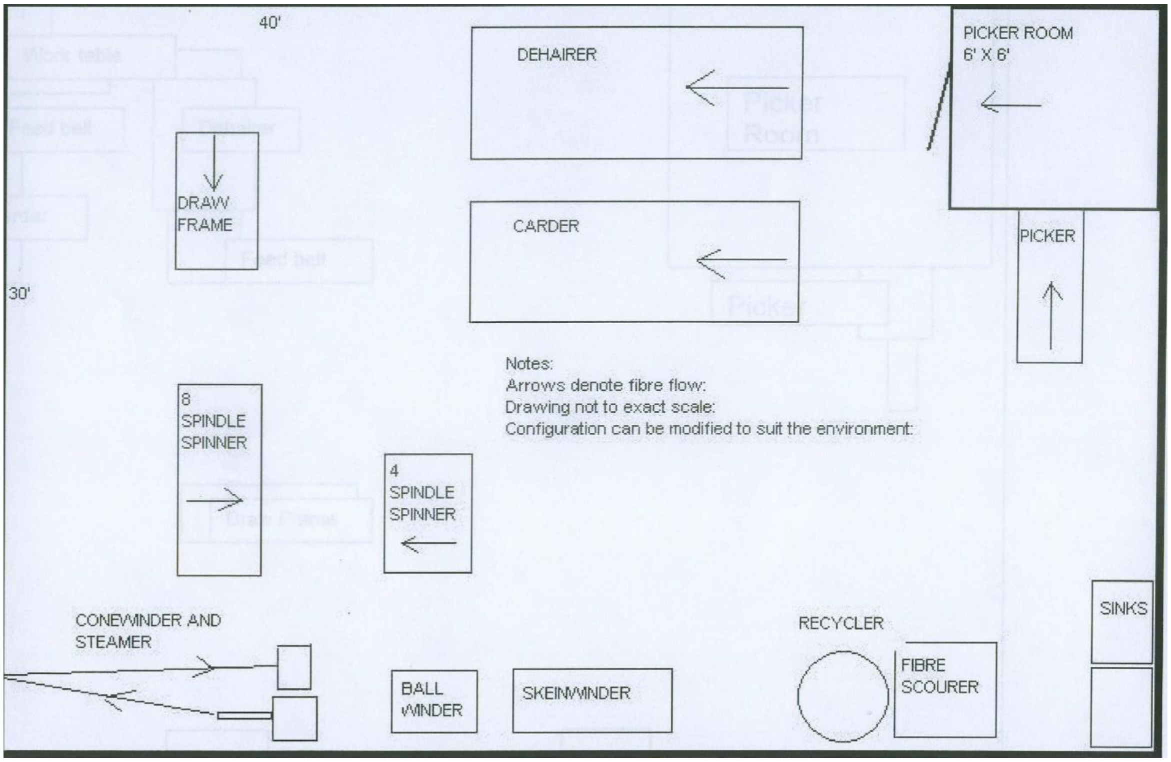
It requires 2 people to operate a full mill the size quoted below safely and efficiently.

A mill configuration for processing most fibres is as follows, prices are in USD dollars:

Washer Unit	$11,000.00	
Tumbler	$3,500.00	
Picker	$7,500.00	
Small Fibre Separator	$25,000.00	
Carder	$42,000.00	Includes bump winder roving deck batt drum & vacuum system
Draw Frame	$11,500.00	includes 2 heads regular & lace weight
8 Spindle Spinner	$32,500.00	available in lace & regular weight
4 Spindle Plyer	$20,000.00	
Steamer	$3,500.00	
Cone Winder	$8,500.00	
Skein Winder	$6,000.00	
Felt Maker	$6,000.00	
Consumables & Spare Parts for two year	$8,000.00	
Delivery	$22,500.00	set up + 2 trainings
Total	**$201,500.00** **Approx. £150,035.98**	Equipment is modular and can be added at any time

The company provides insurance cover for the equipment from time of departure from their facility to final destination point. All equipment from the company comes with a 2-year warranty.

On occasion when the company have used equipment to re-sell, that typically reduces the above cost by approximately 15%. At time of order, the company requests a 25% down payment in order to secure a slot in the manufacturing schedule.



The above drawing shows a possible configuration for a mini mil layout.

The following are optional machines that can add value and options for a wool mini mill enterprise:

XL Carder	$55000.00
Large Fibre Separator	$50000.00
Dye vat	$10000.00
Rug Yarn Maker	$6500.00
Drying Racks	$3000.00

The technical spec received by the company through phone conversations and e-mail correspondences include:

- Floor space for a mini mill configuration would need to be approx 1000 to 1200 sq ft (approx 90 sq meters).
- Power requirement is all 110 to 120V outlets 60 amps runs a small mill, 100 for a large version. This would include the lighting but not the heating of the hot water for washing. The company normally recommends an 80 gallon (300 litre) oil fired water heater in order to keep up with the demand.
- Electrically wire all equipment to suit local power source – responsibility of new owners to provide the appropriate plugs.

- The company can offer an extensive inventory of parts, accessories, consumables and exotic blend fibres so repairs can be conducted quickly.
- Delivery, set up and 2 training sessions for a full mill, one training upon delivery and a second approx 3 months later, are separate cost items. The company estimated that this would cost in the region of $22,500 if they supplied and commissioned a mill in Wales.
- The slowest output machine in the line would be the carder at approx 1 to 2kgs per hour depending on the quality and cleanliness of the fibre.

The Company's full suite of machines working can be viewed on "Autumn Mist Alpacas Fibre Mill" YouTube video. Customised processing machines can be developed and manufactured to suit individual needs. They recently developed a new machine capable of producing rug making yarn with a jute core and a tumbler.

Appendix 5 – Copy of questionnaire used to establish level of demand for 'Welsh Wool.'

Cyflwr presennol a photensial y diwydiant gwlân yng Ngwynedd - HOLIADUR

Wool industry current state and potential in Gwynedd - QUESTIONNAIRE

***Bydd y wybodaeth a roddir gennych yn cael ei ddadansoddi mewn modd anhysbys. Byddwn yn parchu natur gyfrinachol y wybodaeth/barn rydych yn ei rannu gyda ni. Croeso i chi adael cwestiynau heb ymateb os ydych yn dymuno gwneud hynny.

*******The information you provide will be analysed anonymously. We will respect the nature of the information/opinion you share with us. Do feel free to leave questions without a reply if you prefer.*

1. Daraparwch gefndir byr o'ch busnes gwlân ee pryd y sefydlwyd, pam wnaethoch chi ei sefydlu, prif farchnadoedd, ystod cynnyrch, staff, amcanion i'r dyfodol…
   Please provide brief background for your wool business eg when was it established, main driver for establishing business, main markets, product range, staff, future goals…

2. Faint o wlân ydach chi'n ei brynu bob blwyddyn ar gyfartaledd (Kg) ac ar ba gofynion ansawdd?
   How much wool do you purchase each year (Kg) on average and at what quality requirements?

3. Nodwch 3 gair sy'n disgrifio cyflwr presennol y diwydiant gwlân yng Ngwynedd.
   Note 3 words to describe the current state of the wool industry in Gwynedd.

4. Rhannwch enw cwmni rydych yn ei edmygu am ei llwyddiant yn ychwanegu gwerth i wlân.
   Share the name of a company you admire for their success adding value to wool.

5. Beth yw eich ffynhonnell/au presennol o wlân?
   What is/are your current source/s of wool?

6. Ydi eich patrwm prynu gwlân yn dymhorol neu'n gyson drwy'r flwyddyn? Os yn dymhorol, nodwch y cyfnod prysuraf a'r distawaf.
   Is your purchasing pattern of wool seasonal or constant throughout the year? If seasonal, please indicate peak time and quietest.

7. Ydach chi wedi ystyried prynu'n uniongyrchol gan ffermwr? Os do, pa fath o heriau wnaethoch chi ddod ar eu traws?
   Have you considered sourcing directly from a farmer? If yes – what challenges did you face?

8. Ar raddfa o 1-10 (gyda 1 yn golygu "ddim yn bwysig o gwbl" a 10 yn "hollbwysig") – sut fyddech chi'n sgorio y canlynol yn nhermau eu pwysigrwydd i'ch busnes chi:
   On a scale of 1-10 (1 being "not important at all" and 10 "critically important") – how would you score the following in terms of importance to your business:

- Tarddiad Cymreig i'ch gwlân / *Welsh provenance for your wool*
- Tarddiad lleol (o fewn 30 millitr) / *Locally sourced (within 30 miles)*
- Brîd y gwlân / *Wool breed*
- Ansawdd y gwlân / *Quality of the wool*
- Lefel gwasanaeth y cyflenwr ee dibynadwyedd, gofal cwsmer, gwybodaeth… / *Service level eg reliability, customer care, knowledgeable…*

9. Eglurwch os gwelwch yn dda sut rydach chi'n gwerthuso/mesur ansawdd gwlân yn eich busnes chi.
   Please explain how you evaluate/measure wool quality in your business.

10. Beth yw eich barn chi am gael brand “Gwlân Gwynedd”, “Gwlân Eryri” neu “Gwlân Cymreig”?
    What’s your opinion on having a “Welsh Wool”, “Snowdonia Wool” or “Gwynedd Wool” brand?

11. Nodwch ar raddfa o 1-10 (gyda 1 yn golygu “anghytuno’n gryf” a 10 yn “cytuno’n gryf”) i ba raddau byddai cyfleusterau sgwrio a glanhau gwlân lleol yn helpu’r farchnad leol dyfu a llewyrchu.
    Please indicate on a scale of 1-10 (1 being strongly disagree and 10 strongly agree) if a local scouring plant would help the local market for wool grow and flourish.

12. Sut fyddech chi’n disgrifio y dyfodol ar gyfer gwlân fel defnydd?
    How would you describe the future for wool as a material?

13. Beth fyddai eich 3 prif “tips” i rywun sy’n ceisio canfod ffyrdd o ddatblygu y diwydiant gwlân yng Ngwynedd?
    What would be your 3 main tips for someone trying to identify ways of developing the wool industry in Gwynedd?

14. Oes yna rywun arall yn eich tyb chi y dylem ni siarad gyda?
    Is there someone else you think we should speak with?

15. Nodwch 3 gair sy'n disgrifio sut gallai'r diwydiant gwlân yng Ngwynedd edrych fel ymhen 10 blynedd?
    Note 3 words to describe what the wool industry in Gwynedd could look like in 10 years.

Diolch o galon am eich amser a pharodrwydd i rannu eich arbenigedd a barn.

A sincere thanks for your time and willingness to share your expertise and opinion.

APPENDIX 6: 8 STEP PLAN FOR GWYNEDD'S WOOL INDUSTRY

This is a proposed 8 step plan for establishing a Wool Growers and Users led organisation in Gwynedd to realise and maximise the opportunities on offer to add value to wool.

It is based on the well-known and applied "Kotter's 8 step process for leading change."

STEP 1 – *Create a sense of urgency*

A sense of urgency is required to secure the co-operation and interest of producers. This is arguably in place already, as the impending changes and re-structuring ahead in the sheep industry is increasingly recognised and accepted .

A sense of urgency can be heightened through a targeted campaign to raise awareness of the opportunities and therefore the need to take action.

STEP 2 – *Build a task force*

Major transformational change is difficult to accomplish on your own or with a very small group of people. An effective task force needs to be mobilised with enough key growers, users and general stakeholders involved and ready to listen and being adaptable, creative and crucially prepared to work hard to move forward. It also needs the skills, credibility and leadership to take producers and the sector with it.

Given resources, the work of building a task force could start immediately with local stakeholders. A series of facilitated workshops and a programme of visits and talks between now and Christmas 2019 would allow space and opportunity for a task force to grow.

STEP 3 – *Develop a vision and strategy*

An authoritarian decree for growers and users to join up will not be effective. Creating and presenting a sensible and attractive picture of the future, or vision, is vitally important to bring producers and other parts of the supply chain on board. This needs to come from the task force, the people themselves.

Expert facilitation by an individual who is skilled in helping a group to develop their vision could be one form of very useful support at this stage. A compelling vision will not be created in one meeting. A group will need to explore and exchange ideas over a series of meetings and workshops.

STEP 4 – *Communicate the change vision*

The group leading the organisation will be responsible for this and will again benefit from facilitation support to come up with a plan to communicate their vision to the wider industry. Different vehicles could be used by the group to communicate their vision and strategies, and the group may decide to role model the behaviour expected form its members. Various digital communication platforms could allow the group to engage with a wider audience.

STEP 5 – *Empower producers and customers*

Steps 1 to 4 will have done a great deal to empower people. Step 5 is more focused on consolidating what support the group has achieved and remove barriers that may still lie ahead in implementing the plan.

At this point, the producers and users will get to grips with structure, skill requirements, systems and governance to lay the strong foundation for the organisation to deliver for many years. Who will be involved, capital requirements, the decision making process, business planning and organisation structure will all need to be tackled at this stage.

The group at this stage could benefit from continual facilitation and specialist advice such as legal guidance from a solicitor.

STEP 6 – *Generate momentum*

To build credibility and retain cohesion, the people involved are likely to need to see convincing evidence early on to show that their effort is paying off. The organisation will need to seek quick wins, which will undermine cynics and sceptics, and allow momentum to continue.

Early wins should be visibly supported by the organisation and its leaders. Producers and users have a realistic chance of achieving early wins due the level of interest and commitment already in place.

STEP 7 – *Consolidate gains and produce more wins*

By this step, the group may have succeeded in securing its first major breakthrough. As producers and users will only know too well, the “first order” is far easier than the second, third… The first success will herald the start of a long and difficult journey of seeking more opportunities and managing existing progress diligently and looking for ways of adding more value for producers and users alike.

Leadership will be key at this stage, as the group aims to retain focus and momentum. Processes and systems will need to be reinvigorated, and the organisation may decide that it's time to hire, promote or develop people who can continue to implement the change vision.

A key strategy for sustaining success and overcoming possible inertia is to put in place a system that rewards good performance and applies penalties for producers who may not perform to expectation.

STEP 8 – *Anchor new approaches in the culture*

After many years of operating, the results delivered by the producer and user led organisation should be evident and impressive. The new way of collaborating together and working closely with their customers should be the new norm.

The culture should have changed from being a producer against producer, and producer against corporate giants, towards being a more collaborative partnership to ensure best outcomes for all along the supply chain. This can only become culture after it is clear that it works better than the previous ways of doing business.

Support at this stage could include assistance in demonstrating the benefits of the organisation and in providing training to ensure the skillset are updated and renewed, and that leadership development and succession is in place.

Between now and end of 2019

Steps 1, 2 and 3 of the "8 step plan" could be initiated immediately with support. These steps could include the completing the following activities between now and end of the year:

- Disseminate and publicise key findings from this study.
- Promote press release outlining the possible benefits for producers and users.
- Organise study visit to a case study/ies.
- Consider social media campaign to raise awareness and create sense of urgency.
- Confirm what funding could be available to support a industry led organisation.
- Co-ordinate a directory of individuals and businesses from Gwynedd who may be interested in the opportunities.
- Organise a workshop or "Wool Summit" to bring all stakeholders together to further explore the opportunities and potential of a producer led organisation.

Building a producer led organisation will not be a straight forward process. Key parts of the process will be intangible and require innovation, creativity, persistence and adaptability. The process in many ways is a change management task, requiring the skills of an experienced facilitator. The working group set up by 'Arloesi Gwynedd Wledig' could play a key role in creating the right environment for this process to start and ensuring that resources are made available for the producers.

Communicating and disseminating the key conclusions and ideas from this study, and facilitating producers and users to explore further should be the next action.   Let start the journey now.