Summary of EU Exit Scenario Planning Workshops

Paper from the Energy, Planning and Rural Affairs'
Evidence and Scenarios Roundtable Sub-Working Group

Executive summary

This paper summarises the key findings of The Evidence and Scenarios Roundtable sub-working group. It is a sub group of the Brexit Roundtable Group, a forum set up by the Welsh Government Cabinet Secretary for Energy, Planning and Rural Affairs of Welsh Government and stakeholders across the portfolio to support a collective approach to Brexit in Wales.

Leaving the EU brings a high degree of uncertainty, and poses both risks and opportunities across sectors including food, fisheries, farming, forestry and the environment which are covered by the Cabinet Secretary's Energy, Planning and Rural Affairs' (EPRA) portfolio. The Evidence and Scenarios Sub Working Group of the Cabinet Secretary's Brexit Roundtable Stakeholder Group have been working on a number of different Brexit scenarios to examine these. This work is not trying to predict what will happen, but is designed to identify how those impacts may affect key sectors, to draw out the interdependencies across sectors and consider the wider impacts on the environment and communities. This report summarises the key findings of the work, which was a collaborative analysis with stakeholders across all of these sectors.

Much of the work is underpinned by evidence, but some areas are inevitably based on expert opinion given the uncertainty surrounding actual outcomes. An output of this type can therefore only be a "snapshot" and the best estimate as to what might happen.

The scenarios

Over a number of months, five scenarios structured around 3 possible trading scenarios were developed; those scenarios being World Trade Organisation (WTO) default, EU-UK Free Trade Agreement (FTA) and the UK Government aspiration of complete access to the single market and new FTAs with third countries. Variables for funding, immigration arrangements and market access of international competitors were also considered. The scenarios were:

No deal with funding
Trade under World Trade Organisation rules, funding maintained at current levels with UK Government matching EU funding, deregulation in England, strong restrictions on immigration.

No deal without funding
Trade under World Trade Organisation rules, Welsh funding calculated by the Barnett formula (significantly reduced), strong restrictions on immigration and with other countries having greater access to the UK market.

EU deal with funding
EU-UK FTA trading environment, funding maintained at current levels with UK Government matching EU funding, some restrictions on immigration.

EU deal without funding
EU-UK FTA trading environment, Welsh funding calculated by the Barnett formula (significantly reduced), some restrictions on immigration.

Multilateral Free trade with funding
UK Government aspiration: FTAs with the EU-27, with other nations with EU FTAs and new FTAs with other countries, strong restrictions on immigration.

Key findings across the scenarios:

- Opportunities arise for some sectors in some scenarios, but not in all.
- Food prices increase to some degree across all scenarios, particularly influenced by import tariffs, non-tariff barriers and higher labour costs.
- The potential impacts for Welsh fishing vary from collapse under World Trade Organisation tariffs to no change if the trading arrangements with the EU remain unchanged.
- The importance of investing in 'added value' is a theme across all scenarios and with all sectors.
- The sheep sector faces severe challenges as it relies on export to balance seasonal production and to achieve carcass balance. The pressures from geographical constraints and workforce availability in abattoirs and processing mean lamb markets are likely to struggle in all scenarios.
- The dairy and poultry sectors are most robust because of their focus on UK internal markets and lower reliance on export. Beef remains viable with a buoyant dairy industry to supply calves, with a better carcass balance and a lower dependency on export.
- The Welsh environment sector remains a potential growth area in term of eco-tourism through landscapes and seascape. It is rich in natural capital but investment is needed to develop new markets and to develop the skills the sector needs.
- Government funding significantly impacts the rate of change but not the eventual outcome. For many of the most severely impacted sectors funding is unlikely to be able to prevent the impacts but it could help to facilitate change.
- Without Government transitional support, in scenarios of big change, specific sectors may collapse quickly which will have wider consequences on community health and well-being.
- Both farming and fishing businesses in Wales need to improve productivity and efficiency, and consider other income streams to stay viable. This will require improved business skills and investment in infrastructure.
- The challenges and opportunities of Brexit will be different for each agricultural, fishing, forestry or food business. Mechanisms to support businesses to make the right decisions need to be put in place.

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Introduction

Following the Referendum in July 2016, the Cabinet Secretary for Energy Planning and Rural Affairs established a Brexit Roundtable of stakeholders from across her Portfolio to discuss the implications of the referendum result. In early 2017, the Environment Planning and Rural Affairs Roundtable Group set up seven thematic and cross cutting sub-groups to examine in greater detail the implications of Brexit in relation to key cross-cutting policy themes and to supplement existing sector specific stakeholder engagement arrangements.

The seven groups cover:

- Land Management.
- Coasts and Marine.
- Air and Climate.
- Trade and Supply chains.
- People and Communities.
- Legislation and Regulation.
- Evidence and Scenarios.

This report has been collated as a result of a number of workshops held by the Evidence and Scenarios Sub Working Group. The views expressed in this paper are not necessarily the views of the Welsh Government or the individual organisations represented on the working group but are the collective summary of the discussions of each of the scenarios and their potential impacts on the sectors and areas.

Purpose of this report

This report draws together evidence and expert opinion around five possible scenarios for the UK leaving the EU. The report uses scenario planning as a tool to analyse the potential impacts on the agricultural, fishing, forestry and environment sectors, it explores some of the interdependencies to understand some of the complex changes that may be ahead. That is to say, this is not a prediction of how the changes in trading arrangements may occur in Wales, but a methodology for exploring the risks and the opportunities that Brexit may present. The group endeavoured to use that analysis to also explore how those changes may impact the environment and communities in rural Wales, termed the 'indirect' impacts.

The intention is that this report stimulates thinking and dialogue within and between sectors in Wales to help prepare for the changes ahead. It is clear from this analysis that maintaining the status quo is not an option and we must all prepare for change.

Economic impact assessment

The key focus of the Evidence and Scenario work is on the implications of the differing potential future trade arrangement and migration. Whilst there was some discussion based around potential future levels of Government funding, a detailed economic analysis has not been undertaken.

There have been a number of studies undertaken that specifically analyse the economic impacts of the possible trading environments. These were key pieces of evidence that the working group drew on. A brief descriptions and references to these papers can be found in Annex 2.

The EU exit scenarios

In initiating this work, three basic trade scenarios were identified with additional variables of public funding and workforce constraints (therefore five scenarios in total) to help draw out the Welsh implications of EU Exit. The work was designed to test particular trade and market vulnerabilities in key sectors including fisheries, farming and timber while drawing out interdependencies across sectors and the wider impacts on the environment and communities. This work is not trying to predict the outcomes of the Brexit negotiations but to explore the risks and opportunities the different arrangements may present for Wales.

The trade scenarios were designed to explore the possible different trade arrangements that might emerge post Brexit. The variables were largely changes within the control of the UK. Using both sets of external and internal drivers of change enabled us to examine the tensions that are created.

The scenarios are as follows:

Scenario 1: No deal - with funding
Trade under World Trade Organisation rules, funding maintained at current levels with UK Government matching EU funding, deregulation in England, strong restrictions on immigration.

Scenario 2: No deal - without funding
Trade under World Trade Organisation rules, Welsh funding calculated by the Barnett formula (significantly reduced), strong restrictions on immigration and with other countries having greater access to the UK market.

Scenario 3: EU deal - with funding
EU-UK FTA trading environment, funding maintained at current levels with UK Government matching EU funding, some restrictions on immigration.

Scenario 4: EU deal - without funding
EU-UK FTA trading environment, Welsh funding calculated by the Barnett formula (significantly reduced), some restrictions on immigration.

Scenario 5: Multilateral Free trade - with funding
UK Government aspiration: FTAs with the EU-27, with other nations with EU FTAs and new FTAs with other countries, strong restrictions on immigration.

Further detail on each scenario is shown in Table 1.

Table 1: Brexit scenarios including key assumptions

	No deal		EU deal		Multilateral free trade deal
	Scenario 1: No deal - with funding	**Scenario 2: No deal - without funding**	**Scenario 3: EU deal - with funding**	**Scenario 4: EU deal - without funding**	**Scenario 5: Multilateral trade with funding**
Trade arrangements with the EU	**World Trade Organisation** (WTO) WTO rules and tariffs apply, UK-EU trade relationship is the same as with rest of the world.		**Free Trade Agreement (FTA) with EU-27** Trade with the EU-27, non-tariff barriers are in place increasing transaction costs by 20%.		**FTA** with **FTA's** negotiated with other countries, WTO with countries with no FTA.
Trade with the rest of the World	**World Trade Organisation** (WTO) WTO rules and tariffs apply. The UK and EU trade relationship is the same with rest of the world.				
Domestic support available	**Yes** But declining levels of funding continue from the UK Government until 2022, but gradually decreasing to 2030.	**No** The overall funding settlement is based on the Barnett Formula (see Glossary).	**Yes** But declining levels of funding continue from the UK Government until 2022, but gradually decreasing to 2030.	**No** The overall funding settlement is based on the Barnett Formula (see Glossary).	**Yes** But declining levels of funding continue from the UK Government until 2022, but gradually decreasing to 2030.
Limits on immigration	**Immigration severely restricted** (In line with the UK White paper).		**Freedom of movement** is linked to employment.		**Immigration severely restricted** (In line with the UK White paper).
Access to the UK market by key competitors	**Unlimited access** subject to World Trade Organisation tariffs.		**FTA** with Australia and NZ limiting imports to present levels.		**FTA's** with increasing access to the UK market.
Coastal State Agreement in place	The proportion of fish within the Economic Zone of the UK will become the resource of the Coastal State (UK). The resource within the Welsh Zone will be managed by Welsh Government but subject to an agreement between the four UK administrations and any coastal state requirements. For fisheries, a CSA between UK and EU (UNCLOS) is in place and is negotiated annually from 2018 alongside agreement with Norway and Iceland.				
Regulatory standards	UK Gov pursues a deregulation agenda.	Regulation across Wales and England remains at current levels.	Regulatory standards continue on their upward trajectory.	UK Government takes responsibility for some areas of regulation. Some loss of Welsh devolution, eroded by UK frameworks. Standards remain at current levels.	Regulation across Wales and England remains at current levels.

- The UK food sector, including the red meat sector[1], relies heavily on a flexible migrant workforce to manage the seasonality of the market. The nature of the work means that full automation is very difficult to implement. If access to the current workforce is reduced and not replaced quickly, then there could be a devastating impact on processing in many sectors.
- Overall, restriction of EU immigration is likely to push up food prices. To continue to harvest and process products companies either have to pay higher wages to attract staff or invest in automation to reduce the labour required. Both options put upward pressure on the price of food that consumers will have to pay.
- The veterinary sector is heavily reliant on non-UK labour. 22% of the vets in Wales are non-UK with 50% of new RCVS registrations coming from outside the UK. The situation is particularly acute in the Meat Hygiene Service which sources over 90% of its vets from outside the UK. Under World Trade Organisation rules, export certification will potentially require more vets than at present.
- It was postulated that the inability to recruit vets may result in more centralisation of abattoirs in the UK. The loss of abattoirs from Wales was seen as a major contributing risk for the lamb industry in scenarios where prices drop. Costs for transporting animals to slaughter would fall to the producers. Greater travel would put further pressure on tight margins and undermine the validity of Welsh brands.
- In addition to direct impacts, restrictions on immigration may hamper potential opportunities opened up by Brexit due the lack of an available work force. The UK is currently close to full employment. In the World Trade Organisation scenario where horticulture emerges as a key opportunity, without labour to harvest crops, this opportunity could be limited. Technology may eventually allow a mechanised solution but would need investment and limit the number of businesses able to realise this opportunity.
- Under a free trade agreement with the EU, food processing may move out of the UK, to Ireland and the Netherlands, to take advantage of lower wage costs with businesses balancing wage costs against transport costs.

[1] About 70% of workers are from continental EU countries. http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/feeding-the-nation-labour-contraints/written/47449.html

Impacts from three possible trading environments

For the purpose of this report, we have simplified the analysis on each sector to reflect the three possible trading scenarios.

- No deal (scenario 1 and 2).
- EU deal (scenario 3 and 4).
- Multilateral free trade (scenario 5).

The main body of this report now concentrates on three possible trading environments that could be in place after March 2019.

No deal

Above all, the World Trade Organisation (WTO) is a negotiating forum for:

- Liberalising trade.
- Governments to negotiate trade agreements.
- Governments to settle disputes.

The WTO was born out of negotiations, and everything it does is the result of negotiations. The bulk of the WTO's current work comes from the 1986-94 negotiations called the Uruguay Round. Where countries have faced trade barriers and wanted them lowered, the negotiations have helped to liberalise trade. But the WTO is not just about liberalising trade, and in some circumstances its rules support maintaining trade barriers — for example to protect consumers or prevent the spread of disease.

At its heart are the WTO agreements (the WTO trade rules), negotiated and signed by the bulk of the world's trading nations. These documents provide the legal ground-rules for international commerce. They are essentially contracts, binding governments to keep their trade policies within agreed limits. Although negotiated and signed by governments, the goal is to help producers of goods and services, exporters, and importers conduct their business, whilst allowing governments to meet social and environmental objectives.

The system's overriding purpose is to help trade flow as freely as possible — so long as there are no undesirable side-effects — because this is important for economic development and well-being. That partly means removing obstacles. It also means ensuring that individuals, companies and governments know what the trade rules are around the world, and giving them the confidence that there will be no sudden changes of policy. In other words, the rules have to be "transparent" and predictable.

The UK will trade under WTO rules to a degree under all scenarios as it does so, at present, within the EU. The WTO rules set the framework but does not set tariff levels. The UK could choose to keep the current level of tariffs or at the other extreme choose to drop them all to zero. The UK would have to apply the same tariff level to all countries it trades with, this is called "Most Favoured Nation" (MFN) rule whereby the level of tariff applied is the same for all countries unless there is a comprehensive trade agreement in place.

The EU and UK have recently submitted their proposed revised schedules to the WTO council, and at present the UK is proposing to apply the same tariff structure as currently applied by the EU. In this analysis we used the EU tariff structure as a guide to the scale of tariffs that would apply to exports to the EU and imports from the EU. As a rule of thumb, the more processed a product, the higher the tariff. Furthermore, the more processed or complex a product, the more detailed the 'country of origin checks' applied by the importing country are.

Moving to WTO rules would be a major change for existing business models, causing economic disruption. Even if this environment is in place for a short period, significant impacts would be felt across the Welsh agriculture and fisheries sectors.

There may be some increase in the price of manufactured feeds, seed, fertilisers, animal medicines and crop sprays. WTO tariffs could be applied at 6.5% to imported fertiliser, approximately 70% of fertiliser is imported from the EU. There may be an opportunity to source from global markets at a lower price and with a zero tariff. Other farm inputs are partly sourced from the UK or are already traded with import tariffs, so the overall increase may be small. The lower value of Sterling has already had a larger impact than possible price increases from trading costs.

Under a WTO scenario, we could see 'market partition' for some products particularly where trade barriers (tariff and non-tariff) are high, and this would impact on the relative competitiveness of UK and EU production. Processing for the UK market could remain in the UK or move to the UK from the EU, with processing for the EU currently carried out in the UK, potentially moving to the EU. Partitioning would minimise cross border movements of processed goods, reducing tariffs and customs checks which they would otherwise attract.

The immediate risk in this scenario is that the sudden introduction of financial and practical barriers will disrupt or sever pan-EU supply chains. In addition, it would create uncertainty within the economy, even if the period of WTO trading is short. In this context, it is also notable that some non-EU markets which are important to Wales are accessed under EU trade agreements, which would no longer be in place under the WTO scenario. If a Free Trade Agreement (FTA) with the EU was not negotiated and trade continued under WTO rules, the UK would have to enter into new FTAs with third countries.

EU deal

This scenario was used to explore issues and concerns from the EU perspective if there was a free trade agreement with the UK after Brexit.

The European Commission, Germany and France have repeatedly stated that "being out of the club cannot be as beneficial as being in the club." It is not clear what this may mean in practice but a key driver is to discourage other countries from leaving the EU.

Furthermore, for agricultural products, the main concern from an EU perspective is the threat of food at global market prices coming into the UK from countries which don't have Free Trade Agreements (FTAs) with the EU, which are then exported to the EU at prices which undercut European producers and/or EU Tariff Rate Quotas (TRQ) being by-passed by using the UK as an intermediate destination. The UK argues this would be managed by border checks.

One mechanism that the EU could use to control agricultural products flowing through the UK whilst still allowing two-way trade with the UK would be to set TRQs at levels equivalent to current or historic levels of UK exports into the EU. Such an approach would allow the UK to continue to sell into the EU with minimal tariffs, but would prevent the UK from increasing EU exports in the future. Addressing concerns around the presence of third country ingredients in many processed products are likely to lead to an increase in non-tariff trade barriers even if additional tariffs can be avoided.

To represent this a general tariff/non tariff barrier cost was used to explore the impact of some trade 'friction.' Discussions inside and outside of the Welsh Government have indicated that trade friction costs may be in the order of 5-10%.

In the scenario discussions we assumed that the UK would adopt a similar approach for goods coming into the UK.

Multilateral free trade

This scenario is based on statements made by the UK Government before the 2017 General Election, that "...the UK should be a beacon for free trade." It was proposed that a FTA with the EU could be achieved within 2 years, equivalent to full access to the single market. We have understood this to cover a free trade arrangement under which there will be no tariffs or other non-tariff barriers. (It is not clear if a deal that involved TRQs, limiting the expansion of UK exports into the EU, would be viewed as 'full access to the single market'). Such an arrangement (which remains to be negotiated) would enable the UK to maintain current levels of trading and gain full control of immigration from within the EU. In addition, the scenario assumes that the UK Government would achieve FTAs with 38[2] third countries currently trading with the UK under EU FTAs. The UK Government is proposing to offer FTAs to these countries on the same basis as the EU FTA they currently hold. Post Brexit the UK Government would also be able to enter into new FTAs with countries we had not previously traded with.

We have found this scenario difficult to explore as the variables surrounding so many different FTAs are difficult to model simultaneously. The debate around TRQs also comes into play in this scenario.

Any new FTAs with the likes of New Zealand and Australia will be strongly determined by their existing TRQ arrangements with the EU. The proposal to simply split the existing TRQs between the EU and the UK has already provoked a challenge within the WTO.

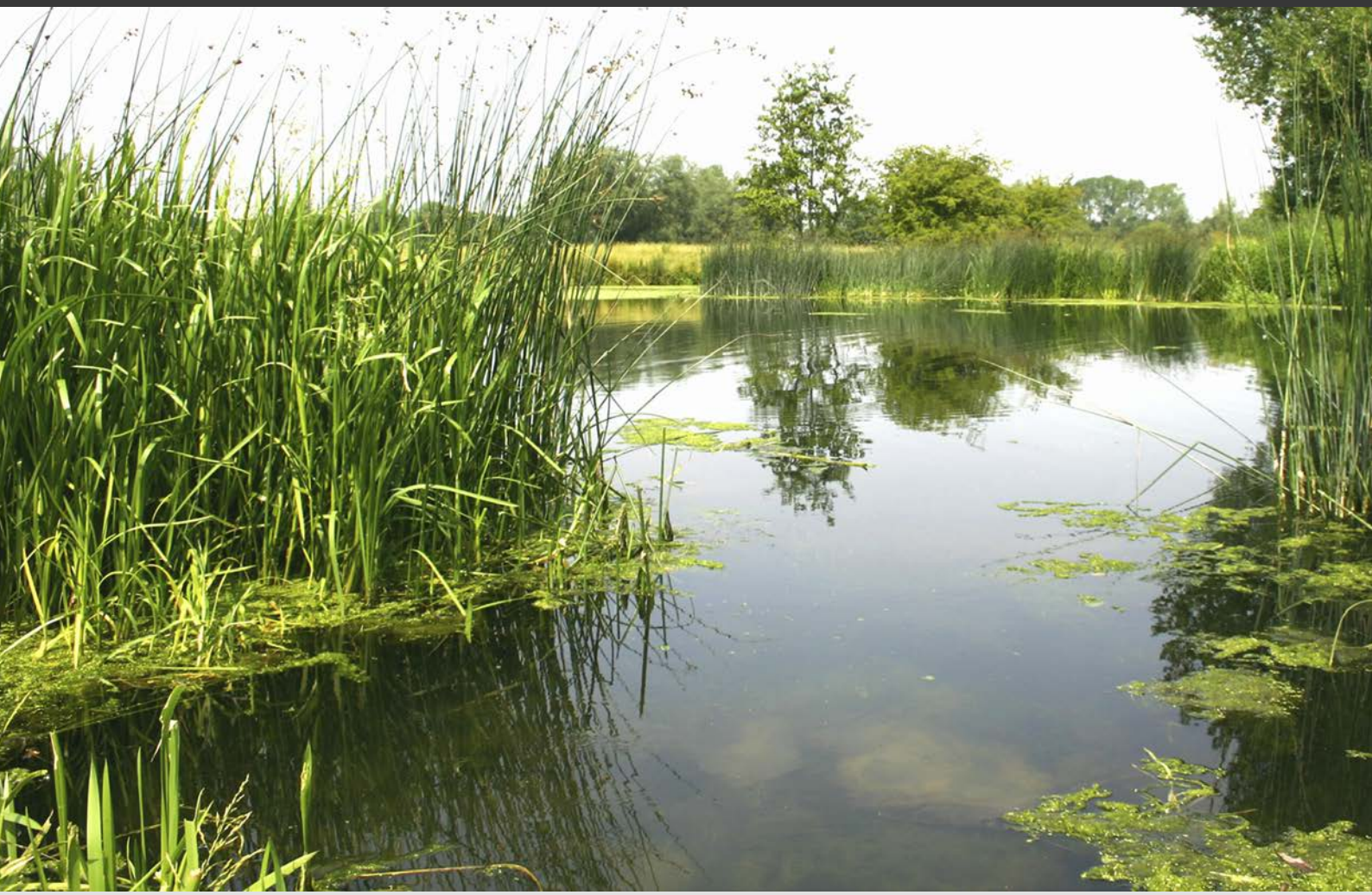
To move this analysis forward we chose to examine the possible impacts of FTAs with countries that appear to be willing and keen to enter into an early FTA with the UK, namely Australia, New Zealand, USA and Canada.

Timescales are also difficult to gauge in this scenario. There will be political pressure to secure a new FTA as quickly as possible to demonstrate that FTAs can be negotiated within a relatively short time frame. If this is the case, a quick deal with New Zealand or Australia would seem more likely as the number of goods traded and scale of UK trade with these countries is relatively small. Set against this is the argument that the UK is not empowered to negotiate its own FTAs whilst still a member of the EU.

In short, a broadly similar trade relationship with the EU is assumed, enabling the potential impacts of greater world market exposure on the sectors within the EPRA portfolio to be examined.

[2] The recent UK Government paper on trade suggests that the number of countries is now 38. https://publications.parliament.uk/pa/cm201617/cmselect/cmintrade/817/81708.htm see para 203.

Environmental impacts



Context

Wales' high quality natural resources have been recognised throughout our discussions as playing a vital role in providing the nation with clean water, air and recreational opportunities whilst at the same time underpinning food production. The social and economic well-being of Wales depends on maintaining those resources which will ensure that we have a healthy, diverse and resilient natural environment. The natural environment is our life support system – it provides us with everything we need to survive.

Wales' natural resources provide us with many economic, social and cultural benefits.

For example[3]:

- £385 million from agriculture to the Welsh economy every year. This figure underpins the £6.1 billion annual turnover and £1.55 billion gross value added attributed to the on-farm production and food manufacturing sector.
- 951 million litres of drinking water per day.
- 1.5 million tonnes of green timber per year, making construction easier and cheaper.
- £499.3 million from the forestry sector[4] to the Welsh economy.

[3] https://naturalresources.wales/media/682366/sonarr-summary-september-2016-edited-august-2017.pdf

[4] covers forestry and logging, manufacture of wood and products of wood and cork, and manufacture of paper and paper products

- 14 million tonnes of aggregates per year, for construction and other uses.
- 8,919 gigawatt hours of energy from renewable sources, and rising, creating a renewable energy industry employing 2,000 people.
- 410 million tonnes of carbon stored in soil to soak up emissions and protect against climate change.
- £2,870 million in tourism to Wales.
- 28% of adults meeting the recommended level of physical activity through outdoor pursuits.
- £18.2 million in health benefits to people from walking the Wales Coast Path.
- £840 million and 30,000 jobs from the historic environment sector.

This section of the report focuses on the direct impacts and opportunities for the environment across the three scenarios.

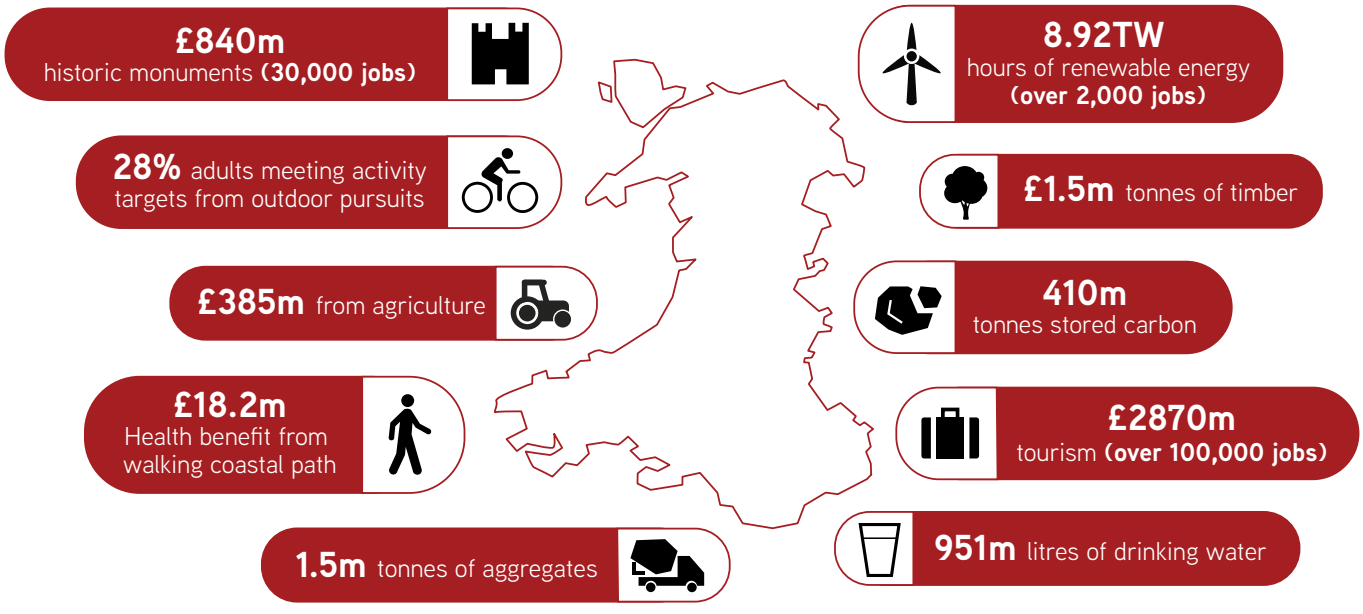
The environmental risks posed as consequence of the implications on sectors (i.e. the indirect risks) have been identified and included within the analysis for each sector.

Direct impacts

Following Brexit, many existing environmental mechanisms may no longer operate effectively in the UK without substantial adaptation. For example:

- Administrative, advisory and regulatory functions. There are currently some 500 EU based organisations which have a variety of technical and/or regulatory roles. It is not clear how quickly such expertise can be replaced within the UK or whether it will still be necessary for the UK to work closely with such institutions under future trading arrangements. Examples include the European Chemicals Agency (ECHA), the European Food Standards Authority (EFSA) and the Community Plant Variety Office (CPVO).

Key facts taken from the SoNaRR (State of Natural Resources Report) showing the economic, social and cultural contribution Wales' natural resources provide



- Current environmental protections being lost or weakened in response to political pressure for deregulation or "simplification" as businesses struggle to adapt to the post-Brexit trading environment. This could lead to a 'race to the bottom' in order to compete against countries with lower environmental standards than the UK.
- The implementation of environmental legislation is currently overseen by the European Commission, backed by the European Court of Justice which has powers to fine those Member States in breach of their obligations. Such mechanisms will no longer apply after Brexit, which risks a slowing of implementation and/or reductions in expenditure. Established domestic mechanisms for pursuing environmental grievances will continue to apply (including Judicial Review) but these have a more restricted role and can be costly to pursue. This particular issue has now been recognised by the UK Environment Secretary with a planned consultation on proposals to create a new independent, statutory body to advise and challenge government (and potentially other public bodies) on the implementation of environmental legislation[5].
- Loss of transnational co-operation over cross border habitat and species conservation. This is currently managed through the EU Habitats & Birds Directives and has underpinned an international approach to safeguarding migration routes and internationally important habitats at the country scale. These types of EU legislative frameworks enact aspects of international agreements such as RAMSAR, Convention on Biological Diversity, Bonn Convention, and Bern Convention, etc. Whilst the UK will remain a signatory to these agreements after Brexit, the EU has often put in place binding legislation (such as the Habitats Directive) to ensure more effective implementation through the use of timetables, targets and deadlines.
- Loss of a significant source of finance for environmental restoration and management. For example, the EU LIFE Fund has funded the majority of peat land restoration work in Wales to date. In addition, the Structural Funds (ERDF, EAGGF, etc.) have also been used to support green infrastructure investments and rural tourism enterprises.
- Potential loss and/or reductions in the scale of public sector support for environmentally beneficial management on farms as currently funded under the Wales Rural Development Plan e.g. agri-environment-climate schemes, organic farming, woodland planting and restoration, farm advisory services and farm investment measures.

Environmental opportunities

Both historic and current land use has resulted in some aspects of our natural environment being degraded or depleted and the SoNaRR[6] report established that none of the ecosystems in Wales are resilient.

Restoration is necessary if they are to continue to provide wider public benefits for future generations. Our ecosystems face many challenges to their effective functioning from the impacts of climate change and the continued decline of biological diversity alongside further human pressures such as the intensified use of land for agricultural production in many areas, land abandonment in others and further fragmentation of semi-natural habitats caused by urban development. The sustainable management of our Natural Resources is a principle

[5] https://www.gov.uk/government/news/new-environmental-protections-to-deliver-a-green-brexit

[6] https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en

established by the Environment (Wales) Act 2016 in addition to the Well-being Goals set out in the Well-being of Future Generations Act.

Some of the opportunities identified in our discussions were as follows:

- Development of sustainable management initiatives providing a diversity of income via partnership agreements to deliver food, fibre and improved environmental management whilst demonstrating economic and environmental business viability.
- Payments for Ecosystem Services (PES) schemes offer future potential opportunities, although to date have not been directly supported by Government. The public believe they already pay via taxation, but there are opportunities to develop funding streams via future markets. E.g. Resources for Change Report[7] and Carbon investment models. In particular, we need language change around terms such as subsidy by placing more emphasis on what farmers, foresters and other land managers deliver for society whilst at the same time developing mechanisms to address market failure and provide a safety net.
- Investment to incentivise land managers to gain professional qualifications so that the next generation is better equipped to deliver what the market needs. e.g. carbon market and work by the Wye and Usk Rivers Trust who have been operating PES in the form of an 'anglers bed tax scheme' for last 20 years. Anglers pay an extra percentage on their accommodation (where they stay in participating accommodation providers) that goes into restoration of the river.
- Carbon investment models that have been tested by Wildlife Trusts. Potential exists for further development of IUCN Peatland Codes following on from initial investment discussions with major private investors.
- Work within the scope of the WTO Green Box to develop a new approach to paying for public goods in future. For example, by supporting the fixed costs of running the kinds of land management enterprises that can deliver environmental benefits (e.g. suckler cow herds grazing on internationally important semi-natural grasslands) rather than focussing solely on the income foregone part of the Green Box equation[8].
- Opportunity to work more closely with third sector bodies such as RSPB, Wildlife Trusts and National Trust to better leverage public sector and voluntary sector resources against grant sources.
- Re-wilding as a purist concept would be difficult to achieve in most Welsh landscapes which have been managed by people for a long time and much of our wildlife is a feature of this managed land. However, there is significant scope for more natural systems to be restored in large parts of Wales – for example to support flood risk management and carbon sequestration, woodland creation and low intervention approaches which will benefit biodiversity, recreation and tourism whilst also providing employment opportunities – albeit ones that are different to those that exist at present.
- Focus on the circular economy and innovation will help to reduce production costs whilst simultaneously protecting the environment and tackling climate change. Such an approach will enhance the reputation of Welsh producers and will make for a strong market story as part of "Brand Cymru".

[7] http://www.r4c.org.uk/SoNaRR.html

[8] http://publications.naturalengland.org.uk/publication/5600949180563456?category=6237649992941568

Agriculture

Context

Wales has an agricultural area 1,867,000ha; 89% of the land in Wales is used for agriculture[9].

The value of aggregate agricultural output (gross output) in 2016 was £1,447 million (2016 forecast).

Production as a share of gross output:

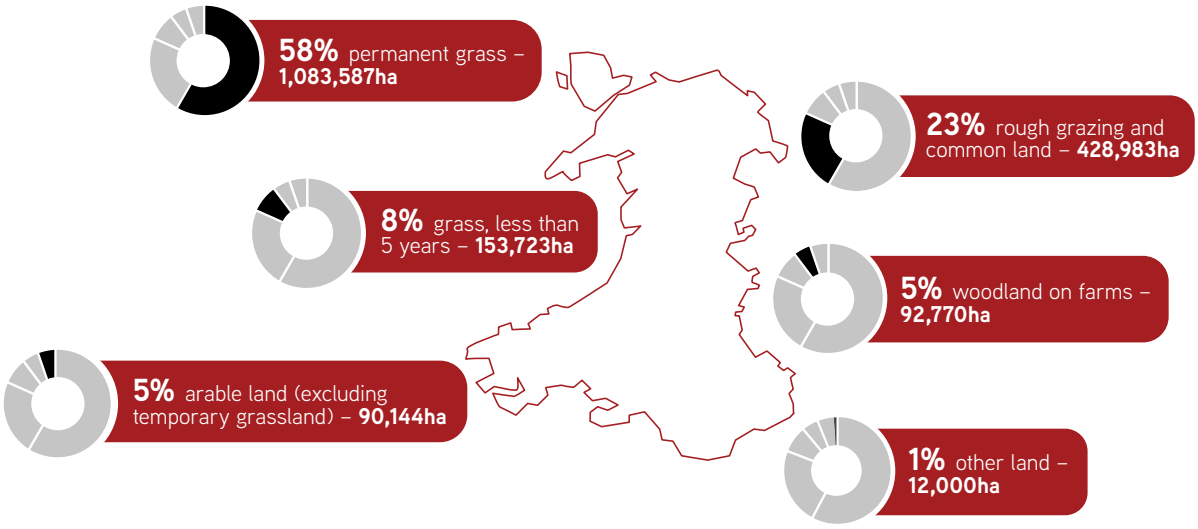
- Milk and milk products – **28.5%**.
- Cattle – **26.0%**.
- Sheep – **18.5%**.
- Poultry and eggs – **6.1%**.
- All crops and horticulture – **6.3%**.
- Other – **4.6%**.

Intermediate consumption (the goods and services consumed or used in the production process) amounts to £1,092 million leaving a Gross Value Added (aggregate agricultural output, less intermediate consumption) of £355 million. Total Income from Farming is £157 million (income from production and subsidies retained by farmers, it represents business profit to farmers).

Farm support:

- Basic Payment Scheme: £221 million paid to 14,800 businesses (average £14,932/farm).
- Glastir payments: £30.8 million.

[9] http://gov.wales/statistics-and-research/?subtopic=Farming&lang=en and: http://gov.wales/docs/statistics/2017/170620-farming-facts-figures-2017-en.pdf



The scale of Glastir payments indicates the significance of natural resource management even though actual needs far outstrip the scale of existing budgets[10].

Economically, agriculture is a relatively small sector in Wales. The combined GVA of agriculture, forestry (narrowly defined – excludes manufacturing) and fishing is estimated at £435 million, representing 0.7% of total Welsh GVA[11]. However, these three sectors, and in particular agriculture, are more important to the GVA in rural areas. For example in Powys, agriculture, forestry and fishing represents 3.4% of GVA and employs 16% of workers.

These sectors are also important because of the production of food and the management of land, supporting:

- Food/drink manufacture at 2.4% of GVA.
- Accommodation/food service at 3.2% GVA.

There are a large number of farms with a low turnover, each with a small land area and small number of livestock. For example, 21,200 farms (86% of farms) produce 29% of agricultural output but use 57% of the farmed land. There are 500 farms with a high turnover that contribute 33% of the output but only use 8% of the farmed area. The 2,800 farms classed as medium and large contribute 38% of output and use 35% of land.

When considering the variance in output per hectare, it should be noted that this is, to a large extent, related to the quality of the land farmed and the farming sector; around 75% of Welsh land is categorised as disadvantaged, with 81% of agricultural land made up of permanent grassland, rough grazing and common land.

Wales is also distant from markets which can reduce prices to farmers, for example milk price is between 1 and 2 pence per litre lower in Wales. But there is an advantage of a maritime climate, allowing Welsh farms to exploit the benefits of grass farming.

[10] http://publications.naturalengland.org.uk/publication/6216284715876352?category=6237649992941568

[11] https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Regional-Accounts/Gross-Value-Added-GDP/gvainwales-by-industry

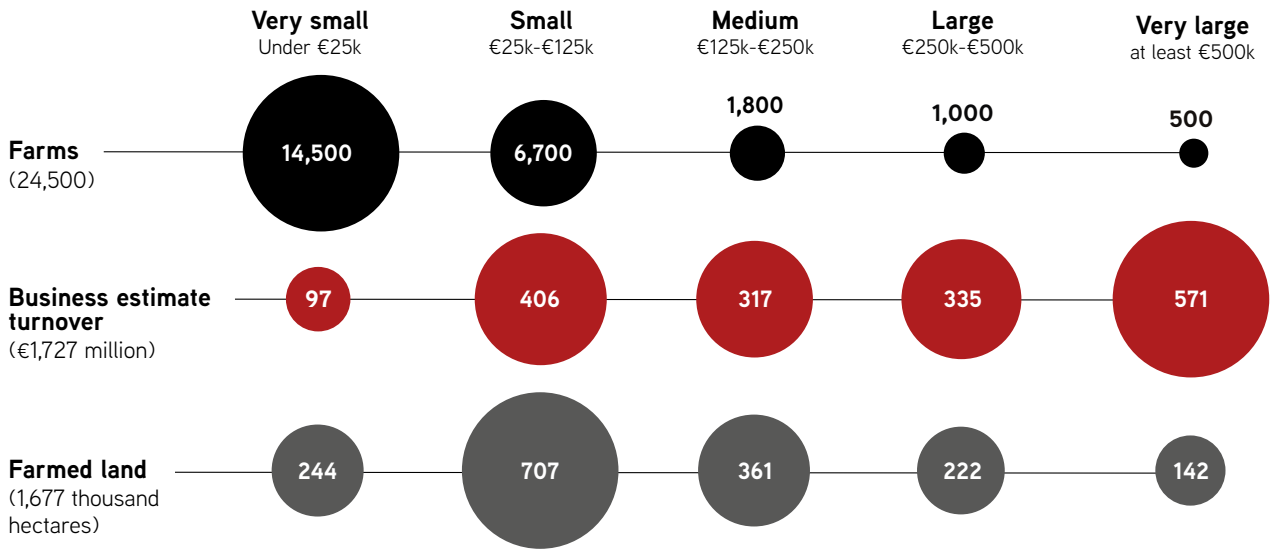
In Wales 27% of the land is farmed by someone other than the owner under a variety of tenancy arrangements, including Full Agricultural Holdings Act Tenancies, Farm Business Tenancies and short term grazing licences. These agreements usually stipulate that land can only be used for agriculture with the landlord's permission required for any other options.

The agreement may also require the land to be "left in good heart" which may be at odds with some habitat prescriptions. Coupled with this, the average length of Farm Business Tenancies is currently 4.5 years (RICS) which provides the tenant with little security of tenure, particularly if considering business investments or entering agri-environment schemes. All scenarios explored within this report will potentially mean change for agriculture and land management. In developing future policy options, the implications for the tenanted sector will need to be further considered to ensure tenant farmers can also make the most of future opportunities.

There are wide ranging implications for Welsh agriculture of leaving the EU. The impacts and opportunities for each sector are explored in the sector analysis that follows.

Number of farms, business turnover and farmed land - by economic size of farm, Wales 2016

The size groups used in this chart show farm businesses with an estimated turnover (standard output)



Sector analysis

Lamb

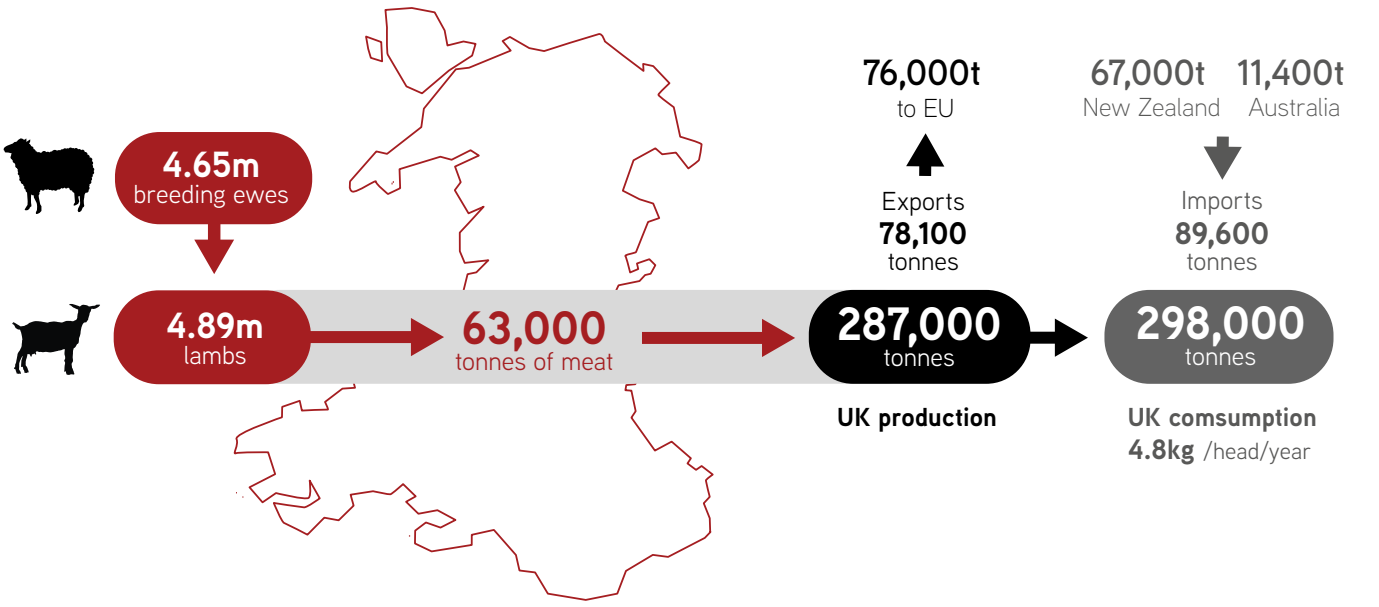
Context

Lamb is an "iconic" Welsh product with Wales having around 30% of the sheep in the UK. Welsh Lamb has PGI status and is a well recognised brand on UK and global markets. Wales has 4.65 million breeding ewes with 4.89million lambs on 14,023 holdings, an average of 700 sheep per holding.

Lamb trade (imports and exports) occurs throughout the year and exports are essential to the sector as it has the ability to mitigate seasonality and carcass balance issues. Over the last 15 years there has been an increased demand for Welsh Lamb in a number of key export markets, but 96% of exports are still to the EU-27 (France, Germany, Ireland, Belgium and Italy). These new and established export destinations allow for competition for product and consequently improve market returns.

Given that around a third of Welsh lamb is exported to the EU-27, a successful and buoyant export market is crucial to the sheep sector in Wales, and the supply chain cannot function by relying on the home market alone.

Traditional sheep production methods in Wales mean that the product is not available all year round. There is a seasonal uplift in supply during the autumn. With no export market there would be significant over supply at this time. This problem is further exacerbated as the UK consumer has a purchasing preference for certain cuts of lamb, leaving a large proportion of the carcase to be sold to other markets. In 2016, over 40% of the lamb purchased in GB was leg roasting joints but the leg accounts for only 20% of the carcass.



This potential carcass imbalance problem is one of the biggest issues concerning the loss of the EU export market as other member states have a preference for the loin and shoulder, complementing UK consumer demand.

Another consideration when looking at exports is the value and volume of fifth quarter and skin exports. With the decline of the tannery sector in the UK the vast majority of the 14 million sheep skins (ewes and lambs) produced in the UK would be exported outside the EU. Historically these would be mainly to tanneries in China and Turkey.

The light lamb trade has traditionally been associated with export to the Mediterranean region, particularly Italy and Spain. Losing access to this market would have a significant impact on prices for light carcasses which represent 15% of production and are associated with the hill regions of Wales.

Outside the changes that can be expected from Brexit, UK demand for lamb and sheep meat has been declining. In 2009 the average consumption of lamb was 5.5kg/person/annum, but this figure had reduced to 5.0kg in 2015[12].

Export is vital; however some imported lamb is needed. Meat processors see the import of lamb during late winter/early spring as essential for maintaining a strong UK market. Imported lamb covers the period when UK lamb is in short supply and of poorer quality, keeping a quality product available for 12 months of the year, important for securing consumer loyalty to lamb.

New Zealand has a Tariff Rate Quota[13] (TRQ) for lamb of 228,000 tonnes with the UK but while the UK is a member state, the quota can be placed in any EU state. The UK and the EU's current approach to splitting the quota post-Brexit is to take an average of the volumes sent to UK and the rest of the EU over the last 3 years and use this as a basis for dividing the quota. The quota has been significantly under-utilised over the last few years (only about 75% used) so in addition to the actual amounts sent to UK and the other Member States the unused quota will have to be allocated. Australia and New Zealand are pushing for an increase in the combined UK-EU quotas after Brexit, to avoid any reduction in trade with Britain.

The long term viability of sheep flocks all over Wales will be impacted by not only changes to lamb price but also reduced funding support, which would make many sheep farm businesses less viable.

No deal

If exports of sheep meat to the EU were subject to WTO tariffs then this would severely inhibit trade as the tariff rate would be high. Sheep meat is subject to an ad valorem tariff of 12.8% plus a fixed amount ranging from €902 to €3118 per tonne, depending on the cut. In many cases, this would be equivalent to a total tariff of 50 per cent or more on high value meat cuts, joints or processed product.

- Market disruption: It will be important to consider the timing of any EU announcements and the potential impact on the industry with a risk of over and under supply in the lamb market. Sudden change with market disruption will have serious implications for some farm businesses, causing potential economic, environmental, cultural and social issues.

  The particular vulnerability of the lamb market means that even moderate increases in tariffs could have severe impacts. For example, any tariff over 20% is likely to cause severe pressure or market collapse.

[12] Page 17: http://hccmpw.org.uk/index.php/tools/required/files/download?fID=6167

[13] https://ahdb.org.uk/brexit/documents/BeefandLamb_bitesize.pdf

The immediate response of sheep farmers would be to cut on-farm expenditure. They are likely to carry on in the same way or tighten their belts and ride out the storm. However, this would only be possible for a limited period and at the same time non-farming rural employment will be hit; for example, work and income for vets, hauliers and farm suppliers would be reduced. There is likely to be some immediate forced restructuring of farm businesses.

- Increases in "ranching" as a way of managing land and stock, with these resources under the control of fewer farmers, to reduce unit cost of production. This may result in destocking or land abandonment in hill areas if there is little or no viable return from sheep farming. These impacts may result in irreversible land management changes and any uncontrolled changes would be undesirable.
- The ability for individual farms to survive, at least in the short to medium term, will depend on their asset value relative to their liabilities; there would be implications for those farms where the asset value is based on high land values which may not be maintained.
- Land value and land use change. If land values fell there could be rapid change in land use, particularly in terms of land abandonment or afforestation. There may be commercial forestry opportunities with increasing confidence in the sector. The UK is a large importer of wood and wood products and these could be substituted in the longer term by home production. Land abandonment or afforestation by non-commercial species driven by conservation or wilding charities may also occur. Ownership of the land may pass to people, charities and corporate bodies from outside the local community.
- There may be longer term implications for rural communities and the culture as populations change or reduce. Many of the rural communities have a high percentage of Welsh speakers, with those from within the agricultural category making an essential contribution to the preservation of the language in terms of numbers.
- While a WTO scenario may only last for a relatively short period before more favourable trading arrangements are agreed, there is a danger that the sector would be irreversibly damaged during the interim period.
- Live export: Lower WTO tariff rates on 'live animals' relative to meat may renew interest in export of live animals under this scenario. Restrictions on immigration may also leave Welsh and UK abattoirs and meat processing plants without sufficient labour to operate.
- With the WTO scenario, where there are significant increased costs for transporting over borders, the combination of access to cheaper EU labour, access to the single market and the lowest tariffs incurred on live animal exports could lead to some processors moving their operations to other EU countries. British consumers would then be paying for the higher tariffs on the specific cuts they favour.
- Extending the period for which UK lamb is available to meet UK demand could displace some imports. However, the home lamb market has a different specification to some light lamb produced in the Welsh hills, so this may not be a direct replacement. Some Welsh farmers may be able to adjust lambing periods, both earlier and later to extend the season. However, topographical and other constraints limit this option for others. Improved processing and storage to give a longer shelf life to chilled product could also help cover the late winter period when there are less lambs on the market. Developing innovative lamb products that compete with pork and chicken, using less popular cuts and offal could help address the carcass balance issue.

- Innovate and co-operate: All farms, but particularly those depending on lamb sales, must look to be innovative, both in terms of on farm enterprises and other possible revenue streams. Businesses must spread the risks to make their position more resilient as they become increasingly exposed to global trade price volatility.
- Lowland (non-LFA lamb) production: Sheep farms in lowland areas would face similar market difficulties to those in the upland areas but total farm revenue may come under increased pressure due to a potential lack of options to supplement income through environmental (income foregone) opportunities. Lowland sheep farms may consider other more profitable options such as dairy or arable.

EU deal

- Access to the EU single market with Government funding levels similar to now would be closest to the current situation, resulting in least change on farms and within the supply chain. Production would have to comply with EU requirements (the concept of "equivalence") to continue supplying the EU market which would remain as the UK's largest export market.
- Trade with the EU-27 is anticipated to be similar to current levels. There would be additional "non-tariff" costs to trade estimated at between 5-10%. This level of change would have some impact on market returns, but these are of a similar scale to fluctuations in currency value which do not significantly impact on the flow of exports.
- The seasonal nature of lamb production means producers have little flexibility of when to sell lambs and have to accept the price available at that time. With the Welsh lamb market now returning higher prices because of the weak pound, EU demand is higher but it may be hard to sustain this in the future.
- Trade with New Zealand and Australia. This trading scenario is likely to restrain NZ and Australia lamb to the current TRQs, although New Zealand (along with six other countries) has formally objected to proposed changes to their UK/EU trade quotas. FTAs with New Zealand and Australia would not offer any export opportunity for Welsh lamb.

Free trade with funding

- Bi-lateral FTAs, possibly with NZ, Australia, USA and Canada would be unlikely to favour the Welsh lamb sector as these countries would not provide an export route that could replace the EU lamb market. It would be possible to develop lamb exports to North America but this is already an established market for other nations such as Australia and would therefore take many years to develop. There would be more export opportunities in middle and far eastern countries where some trade has already been established.
- If imports from NZ and Australia are increased then UK domestic lamb prices will fall, potentially driving a contraction in the sheep industry. New Zealand and Australian production costs are significantly lower than in the UK. This is partly due to climatic advantages, but in addition, New Zealand in particular has focused effort on the Chinese market to create an enviable carcass balance. Under this scenario the level of imports, particularly from New Zealand and Australia, is likely to have a major impact on the Welsh and UK lamb market as most consumers buy on cost and products from these countries are likely to be considerably lower than domestic produce. Australia has a relatively small quota for lamb into the EU compared to NZ and are seeking increased access to the UK post Brexit.

- With a decrease in the value of lamb in the domestic market, the outcomes described in the WTO scenario start to emerge. With a reduction in farms producing lamb and much lower numbers of animals grazing upland, and possibly lowland areas. With no constraint on NZ and Australian lamb imports lamb production would be dramatically reduced, with a few 'specialist' producers remaining, focusing on the 'buy British' market of high quality and premium. However, such a fall in production would also lead to problems in terms of achieving slaughterhouse throughputs which need to be above the critical mass to ensure the business is viable.

Environmental implications

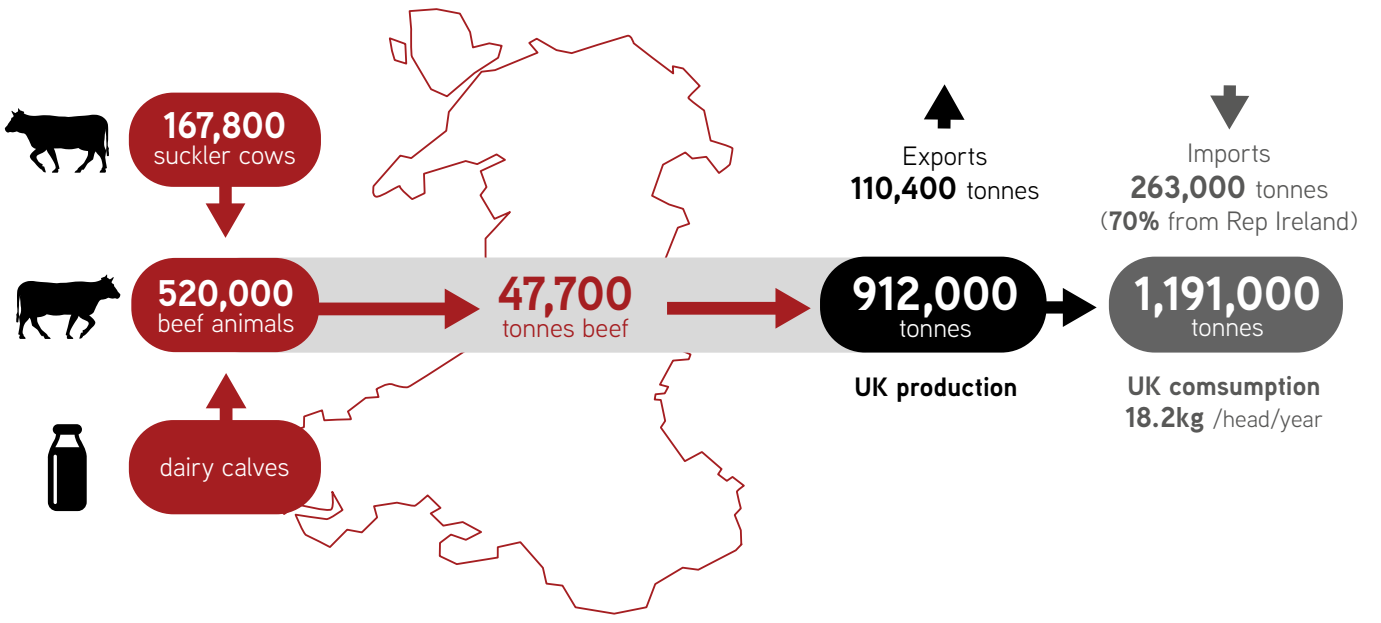
- Market disruption to the sheep sector could result in a reduction of on farm investment or restructuring with some upland businesses becoming non-viable. Risk of polarisation with some areas risking increases in grazing pressure and nutrient inputs and other locations risking under managed or abandoned all together with negative impacts on biodiversity.
- Land use change as a result of declining income in the sheep sector may drive change from agriculture to tree cover. Inappropriate afforestation could result in loss of existing valuable habitats. There are some opportunities for more native tree cover to extend and buffer existing high quality woodlands as well as opportunities for appropriately situated productive forestry that meets or exceeds UKFS best practice.
- With little public funding available, there is risk that sustainable management of natural resources (SMNR) will not be achieved because there will be fewer mechanisms and insufficient finance to deliver the vision set out in the Environment Act. Biodiversity will continue to decline and Designated Sites will degrade alongside further fragmentation of habitats, either because they are not being managed or – they do not have the stock/machinery. What potential environmental benefits there are from a reduction in intensive management of some habitats will take a very long time to accrue.
- This may have positive or negative impacts and which may be location dependant. For example, a reduction in overgrazing which promotes natural regeneration of heather and native woodland could in turn promote biodiversity and reduce erosion. Conversely, undergrazing can have a negative impact upon some particular habitats.

Beef

Context

There are 167,828 suckler cows on 7,435 Welsh holdings, giving an average herd size of 23 head. There are 520,000 other beef cattle on Welsh farms, these are finishing beef animals from the suckler and dairy herds. There are relatively few Welsh farms with just beef cattle; these farms will also have a dairy herd or sheep flock. The UK currently imports around 35 % of the beef and veal consumed at 263,000 tonnes annually. The dominant supplier has always been Ireland, with an import share of almost 70%. No other country accounts for more than eight per cent of UK imports. The Republic of Ireland and the rest of the EU supply over 90% of UK beef imports. No single non-EU country supplies more than 3% of the total.

In recent years, beef and veal exports have fluctuated between 100,000–120,000 tonnes, equating to 15–17 per cent of production. In 2016, over 90% of UK beef exports went to other EU countries. Ireland and the Netherlands are the most significant destinations, accounting for 55–65% of all trade. However, these export figures do not directly reflect the exports market. Much of the UK's capacity to process cow carcasses during the BSE years was lost and never regained. Carcasses are now exported and some of the meat returned to the UK after further processing – the so-called 'beef carousel[14]."



[14] http://www.uecbv.eu/UECBV/documents/BrexitMeatreport12373.pdf

There may be opportunities for import substitution in the beef sector as the UK is not self-sufficient: beef is in a different situation to the sheep sector. There are effectively two production systems within the sector – suckler and dairy beef. If dairy cow numbers expand then beef from the dairy herd will increase. The beef sector could face carcass balance issues, but to a much lesser extent than lamb, although supply of lower value cuts and offal could exceed UK demand.

In the period of uncertainty over future trading arrangements, farmers and processors would benefit from a collaborative approach. Both need to understand the opportunities and threats, work together to create change in the supply chain to ensure full advantage of the post Brexit trading environment is taken. A deeper mutual understanding of the specific challenges would lead to a quicker solution and benefit the red meat supply chain as a whole.

Beef imported from Ireland has come from farms with production systems similar to those in Wales. Alternative cheaper beef imports from other global sources could replace Irish beef, but trade from sources with different production models, with different standards, would undermine the UK price. Given the current import requirement for beef to satisfy consumer demand, it would be important for the Welsh and UK red meat supply chain to fully evaluate trade flows and the potential increased capacity for home production before entering any new trade agreements.

No deal

- A move to WTO trading would cause considerable disruption to current trade and established supply chains. It would disrupt the "Beef Carousel," where beef carcasses (often cow beef) are exported and processed in Ireland or the Netherlands, with products reimported into the UK. Any tariffs applied as beef crosses borders would disrupt this trade and make it unviable. There is a particular possible challenge with Northern Irish producers should their beef be diverted from Republic of Ireland for processing in GB.
- The on farm response to a changing market may be towards intensification, especially if there is an increase in dairy bred beef. Extensive suckler cow systems would require a high premium or some form of support payment to retain cattle on farms and provide for ongoing habitat management.
- Many countries currently cannot export to the EU due to the existing ban on the use of growth promoters, antibiotic and hormone treatments used in beef production systems. Under WTO trading rules, the UK would have to defend this position within any non-EU trade agreements. A change from the EU position within the UK on using these treatments could lead to significant trade issues, for example closing beef export to the EU or allowing cheaper beef imports from non-EU countries.
- Beef processors will be seeking to reduce tariffs and would move processing to the country where the beef is consumed (as tariffs are higher for processed products). This could cause a major restructuring of beef processing in Ireland and the UK. Anecdotally, companies are already exploring options for expanding meat processing in the UK. Depending on tariff structure, beef may be imported from Ireland into the UK 'live' or in basic cuts, for further processing for the UK market.
- Some farm restructuring may occur with perhaps the use of extensive low input systems with large herd size at the expense of small family farms. There will inevitably be a time lag before farms respond to change as they wait for the new market conditions to establish, in addition to which breeding cycles mean changes take time to have an impact on production. Farms may need to make investment or consider other sources of income to become viable. If beef margins come

under pressure, the traditional option of giving up cattle to keep more sheep, will no longer be viable alternative given the pressures on the sheep sector outlined above.

- Although there are significant challenges, a WTO trading environment would apply tariffs to imported products so there may be opportunities for import substitution, development of a premium brand; and perhaps innovative ways of using the whole carcass/5th quarter. Wales should consider beef carcass processing as an opportunity, to produce new and replacement products to those currently imported.

EU deal

- Access to the EU single market with funding levels similar to those applying now would be closest to the current situation, resulting in least change on farms and to the supply chain. Production would have to comply with prevailing EU regulation (equivalence) to supply the EU market.
- Trade with the EU-27 would be similar to current levels although the type of trade described under the "beef carousel" may change as additional "non-tariff" costs of 5-10% may make multiple border crossings uneconomic. Suckler cow beef is likely to continue in decline unless supported for habitat grazing. Supply chain shifts or responses are likely to take time to emerge as businesses take time to assess and make adjustments to the new trade and border processes.

Multilateral free trade

- The fate of the beef industry would be determined by any FTAs agreed with New Zealand, Australia, USA and South America. All of these countries would be beef exporters. Some limited access to the UK beef market may help competitiveness and tariff rates could give UK production an advantage. However, wholesale opening of the UK market to any or all of these exporters is likely to have a negative impact on domestic beef prices. Only the top performing producers will be able to compete. Time scales for such impacts are difficult to predict.

Environmental implications

- Restructuring of the suckler cow herd could result in the loss and removal of less intensive cattle grazing which is important to securing favourable condition of important semi-natural habitats such as marshy grassland.
- A potential benefit could be some reduction in Green House Gas (GHG) emissions and agricultural pollution to water if the sector contracts within Wales but if beef consumption levels are maintained then GHG emissions will be exported elsewhere.
- Land use change is likely if suckler cows are replaced by other enterprises ranging from dairy beef (mainly indoor) to forestry and energy production.

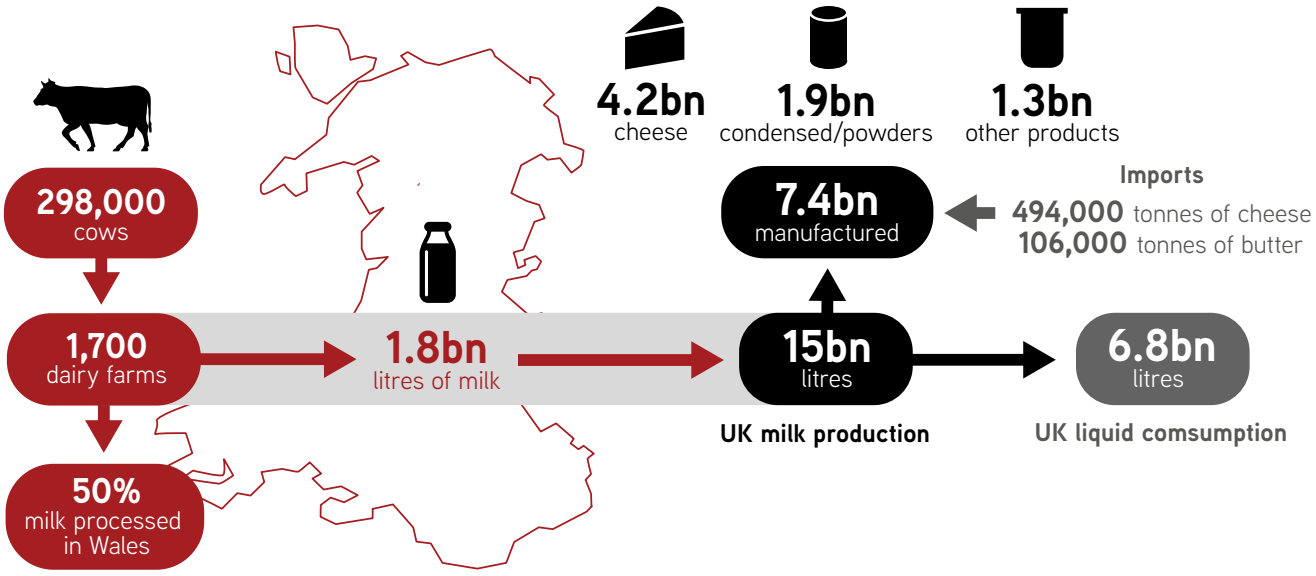
Dairy

Context

The dairy sector in Wales produces 1.8 billion litres of milk from 298,100 dairy cows on 1,700 dairy farms. Milk contributes 31% of total Welsh agricultural output. There has been significant restructuring in the last 20 years, the number of dairy farms has halved but the Welsh dairy herd has expanded such that average herd size has doubled. The UK is a net importer of dairy but export is important. Exports amount to £1.31 billion, imports £2.51 billion, leaving a trade deficit £1.2 billion (2014). Overall the UK is 75% self-sufficient in dairy with imports of commodity cheese and butter, but also premium high value processed products. Milk processing capacity in Wales is limited, 50% of Welsh milk is exported to England with 50% processed, mainly into cheese. Production in the UK is expanding and there will need to be investment in milk processing to meet this growth and to maintain efficiency[15].

The future for the sector will depend on the trade arrangements put in place post Brexit. With a relatively low level of dairy self-sufficiency and a strong UK market based on fresh product, the sector could grow and thrive. Dairy consumption is increasing, with increasing population and affluence, the growth trend is an increase of 2% per year.

Any market disruption caused by change in current trade arrangements would cause some market instability and milk price volatility in Wales and the UK. The dairy supply chain is complex and impacts can be serious if production, processing and markets are not lined up. This was highlighted in the milk price challenges of recent years, where a disruption in trade flows in to Russia had severe price implications for European producers, including the British dairy sector.



[15] https://dairy.ahdb.org.uk/resources-library/market-information/adhoc-reports/the-feasibility-of-a-dairy-producer-organisation-in-wales-report/

There could be a major challenge depending on the final position of Northern Ireland and the border with Southern Ireland. Currently a significant volume of Northern Irish milk is processed in the Republic of Ireland. Should a hard border between the North and South be implemented, along with the introduction of tariffs, exporting liquid milk to Wales/GB for processing is a more viable option. Should any change happen quickly there is potential for a "milk crisis," with insufficient milk processing capacity within the UK for any additional volume. There is already pressure on processing capacity in the spring months when production is high. Production in Ireland is much more seasonal than in GB.

Dairy farmers have historically been disadvantaged in milk contracts with farmers taking a disproportionate level of risk from supply and market fluctuations. This is an issue outside Brexit but will be an important factor under changing trade arrangements. Future risk of variable prices should be shared along the supply chain. Dairy farmers need better, long term contracts to avoid the "boom and bust" conditions experienced over recent years.

No deal

- WTO tariffs, applied to imports and exports, would favour Welsh and UK production as imports would become more expensive, allowing home production to substitute for imported product. Consumer prices for dairy products would increase. Dairy export to the EU is small but significant, there would need to be some restructuring of processing and markets to move exported dairy products to home consumption.
- Once the sector was certain the UK would be operating under WTO rules there could be investment in processing as import substitution would be profitable. There may be milk processing investment from Northern Ireland milk if processing in Southern Ireland becomes unviable with tariffs to move milk out of the UK then import product from the EU.
- There could be some increase in input costs, e.g. feed and fertiliser, where these are primarily sourced from or via the EU.
- With possible changes to beef markets, the dairy sector should also be aware of opportunities that may appear for beef. More attention to dairy beef from surplus calves and cull dairy cows will be important if beef price increases and if dairy expands.

EU deal

- As with WTO trading, the dairy sector will be less impacted by border tariffs because of the strong home market. Under FTAs with the EU the current business models are likely to persist; this is closest to the status quo. There may be shifts rather like the beef sector, with processing for the UK market moving to the UK, processing for the EU market moving into the EU although this will be limited as raw milk is both perishable and bulky thus making it expensive to transport. This may result in higher value processing, such as puddings and yoghurt moving into the UK but processed from UK milk. The impact on the dairy farmers is likely to be more neutral.
- This scenario would not significantly change the Welsh dairy industry. Welsh milk remains some distance from the main markets and as such is likely to continue to be used as 'reserve' source of milk for the 'liquid' milk market. The Welsh dairy industry would benefit from significant investment in processing and adding value to develop a more robust business model.

Multilateral free trade

- Export of dairy products is important to the sector but imports are larger in both volume and value. FTAs with USA, Canada, Australia and NZ are likely to favour imports rather than offering much export opportunity. The only significant dairy export would be chocolate. Further opportunities to export would depend on the terms of any trade agreements but developing home markets and import substitution are likely to be more important. There may be opportunities to export dairy products to China. There is already import of infant formula and some novel dairy products. Historically their dairy consumption has been low but the large and growing population, with a growing affluence, makes China a possible market for UK exports.
- AHDB modelling predicts an economic downturn under this scenario with a significant fall in Farm Business Income compared to the current baseline.

Environmental implications

- Further expansion and intensification of the dairy sector as result of improving economic viability needs to be sustainably managed under WTO and FTA scenarios. Careful planning (siting and design) should be considered to mitigate the risk of poor slurry management where investments aim to increase supply to achieve greater home production as a substitute for imports.
- Increased problem of nutrient management with risks that livestock numbers will exceed carrying capacity of land in terms of both nitrogen and phosphorus.
- Risk of increased GHG emissions due to increased numbers of cattle/improved productivity. Possible impact on international trade depending on extent to which trading partners demand equivalence of environmental standards to ensure a level playing field.
- Opportunities to develop more place-based and tailored solutions to nutrient management which can complement regulatory approaches based on fixed “no spreading” periods for slurry, manure and N fertilisers as well as minimal slurry storage requirements.

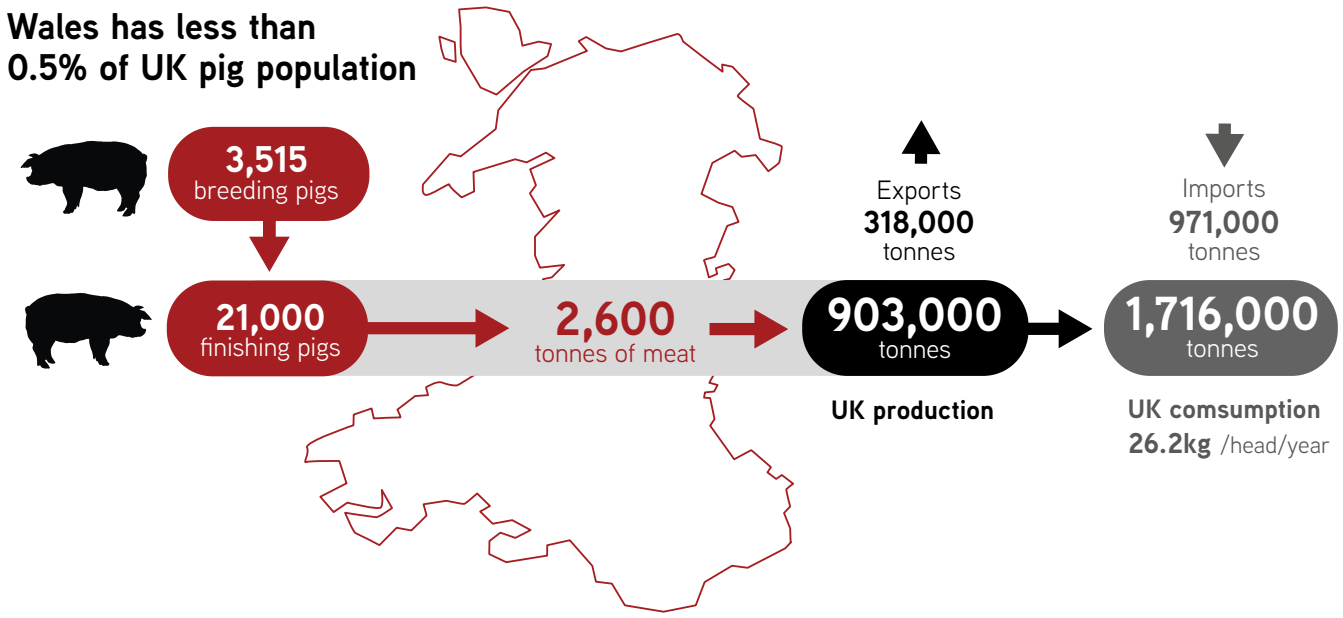
Pork

Context

The pig sector in Wales is small; there are 3,515 breeding pigs and 21,000 fattening pigs on 1,369 holdings. Wales has less than 0.5% of UK pig population and is only 5% self-sufficient in pork. The UK is a net importer of pig meat, importing approximately 60% of consumption, mainly of high value products, such as bacon[16]. Virtually all imports are from the EU with Denmark, Germany and Netherlands accounting for over 60% of UK imports. Pork imported into the EU is subject to a tariff, although there is very little pig meat coming into the EU from global trade. Accounting for imports and exports, the UK is 55% self-sufficient in pig meat. Imports include substantial quantities of bacon, gammon, ham and sausages.

There will be an opportunity to increase the pig sector in the UK and within Wales under all trading scenarios. As with beef and lamb, trading allows issues around carcass balance to be addressed, particularly the export of offal.

Pig farming in Wales has some disadvantages, such as distance from arable feed crops, distance from consumer and soil/climatic conditions which rule out low capital outdoor systems. However, there are opportunities to develop more mixed farm types in Wales, utilise human food waste streams and to develop short food chains supplying Welsh pork to Welsh consumers.



[16] http://www.uecbv.eu/UECBV/documents/BrexitMeatreport12373.pdf

Consumption of pork and pork products continues to expand; per capita consumption of pork exceeds lamb and beef combined; although it is lower than chicken.

Pig farmers receive little support from Pillar 1 payments but are likely to remain profitable under WTO or FTA trading arrangements. Pork products to UK consumers would increase in price unless there was a FTA with low import tariffs which allowed trade at global prices. Low import tariffs on pig meat would be a threat to the sector as would a change in red meat consumption e.g. consumption switched from pork to chicken, beef or lamb.

No deal

- Tariffs on pork and pig meat products are high, preventing any non-EU pig meat from entering EU markets, keeping prices high in the EU. Production costs and trade prices are lower with the main global exporters of pig meat: the USA, Canada and Brazil. Under a WTO trading scenario the UK pig sector would grow to supply home markets as imports from the EU increase in price. Exports would reduce, however, creating problems around carcass balance.

EU deal

- EU imports into the UK would continue but non-tariff costs would help the home market grow and self-sufficiency should increase. Current business models are likely to persist; this scenario is closest to the status quo. Issues around carcass balance will not be as significant as lower value cuts and offal can be exported under trade agreements while the increased costs of trade will favour home production.

Multilateral free trade

- The impact on the sector would depend on which countries and the trading conditions of future FTAs. The USA and the Mercosur (Latin American) trading bloc could export pig meat to the UK under an FTA in their favour, especially since their production costs are lower than in the UK. This is a possible outcome if there was a UK Government policy to hold down consumer food prices.

Environmental implications

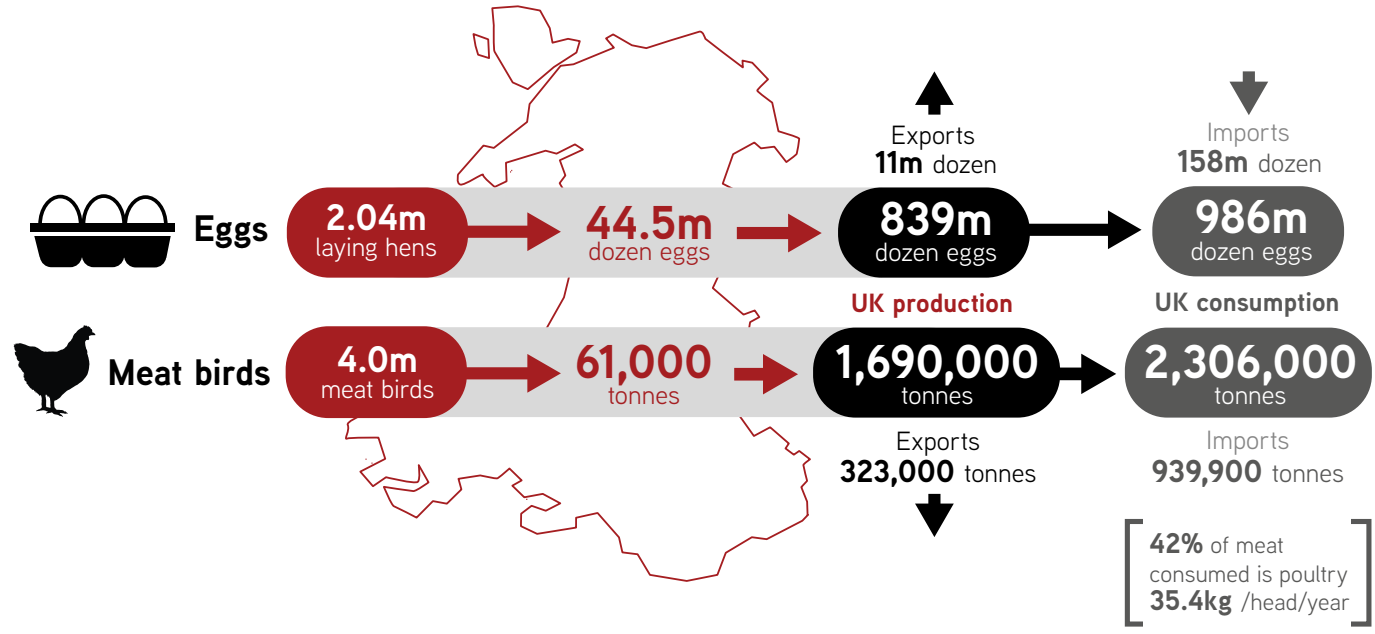
- Any intensification or building of new units needs to be designed, located and managed to ensure no negative impacts on the environment, thereby mitigating increased risk of water pollution due to manure management issues as well as increased risk of air pollution from spreading which leads to ammonia deposition on sensitive habitats.

Poultry

Context

The poultry sector is large economically but is concentrated on a small number of large units, it continues to grow with expanding demand although the UK is not self-sufficient in either poultry meat or eggs.

	UK (2016, millions)	Wales (2017, millions)	Wales % of UK
Total poultry	172.6	7.74	4.5
Layers	38.1	2.04	5.3
Breeding flock	12.7	1.48	12.0
Broilers	110.6	4.00	3.6
Other	11.2	0.23	2.0



Imports of poultry meat into the UK valued at £2.0 billion per year and if current trends continue, this will increase. Exports valued at £350 million are mainly dark meat and offal. Consumption of poultry meat is high, 42% of all meat consumed in the UK is poultry meat and expansion is expected to continue.

The UK is an important hub for the trade of poultry genetics and for breeding stock across Europe.

Non-UK labour in the sector is around 60% and so restrictions on immigration could have considerable impact for this sector.

Poultry units have aligned supply contracts with processors and retailers. Supply to market and costs are closely controlled and the margin per unit output is small. Farms are therefore relatively large and there is considerable capital investment in infrastructure. Poultry production has no direct EU subsidy.

The sector could expand quickly if economic conditions are favourable. Considerable investment is however required in housing and there are important planning considerations to be made.

In Wales, the poultry sector has maintained a steady population of between 7 and 9 million birds but there has been considerable investment in new sheds, mainly close to the Welsh-English border. Although this expansion has been noticeable, the poultry in Wales has not significantly increased and remains below the percentage of human population. The growth of the free-range poultry sector in Wales has provided a valuable diversification opportunity for farmers making their farm businesses more resilient. As the sector has grown there is concern over the possible impact on water and air quality.

Trade in poultry and poultry products create a higher risk of importing poultry diseases. Increasing self-sufficiency within the UK could allow the UK to respond to disease threats independently. Conversely there is a risk to supply if the UK has a disease outbreak. There is also an opportunity to expand game bird production, given the current levels of imports of eggs and day old chicks from France.

No deal

- The EU applies tariffs to non-EU poultry meat although there is some import under TRQs. WTO trading with tariffs would significantly impact on trade, making poultry meat in the UK more expensive. There would be an opportunity to increase home production but unless the UK can find alternative third-country markets for dark meat, offal and spent hens, it will be difficult to offset the low return for these products.
- Poultry meat supply can be increased rapidly but depends on high capital investment in facilities. These high setup costs with volatile and tight margins may be a barrier to expansion. The poultry meat price in the UK would probably increase possibly allowing the continuance of imports, even with tariffs, and/or a reduction in consumption with growth in red meats.
- There is trade in eggs and egg products with the EU. Eggs sold in shell are mainly home produced with a high level of confidence in the UK "British Lion" egg brand under which 90% of UK eggs are sold. UK egg imports are mainly of processed products or liquid eggs which are used in manufactured products.
- The threat to the UK egg market would be from trade with countries outside the EU which have lower welfare practices (e.g. battery cages) and lower health status.

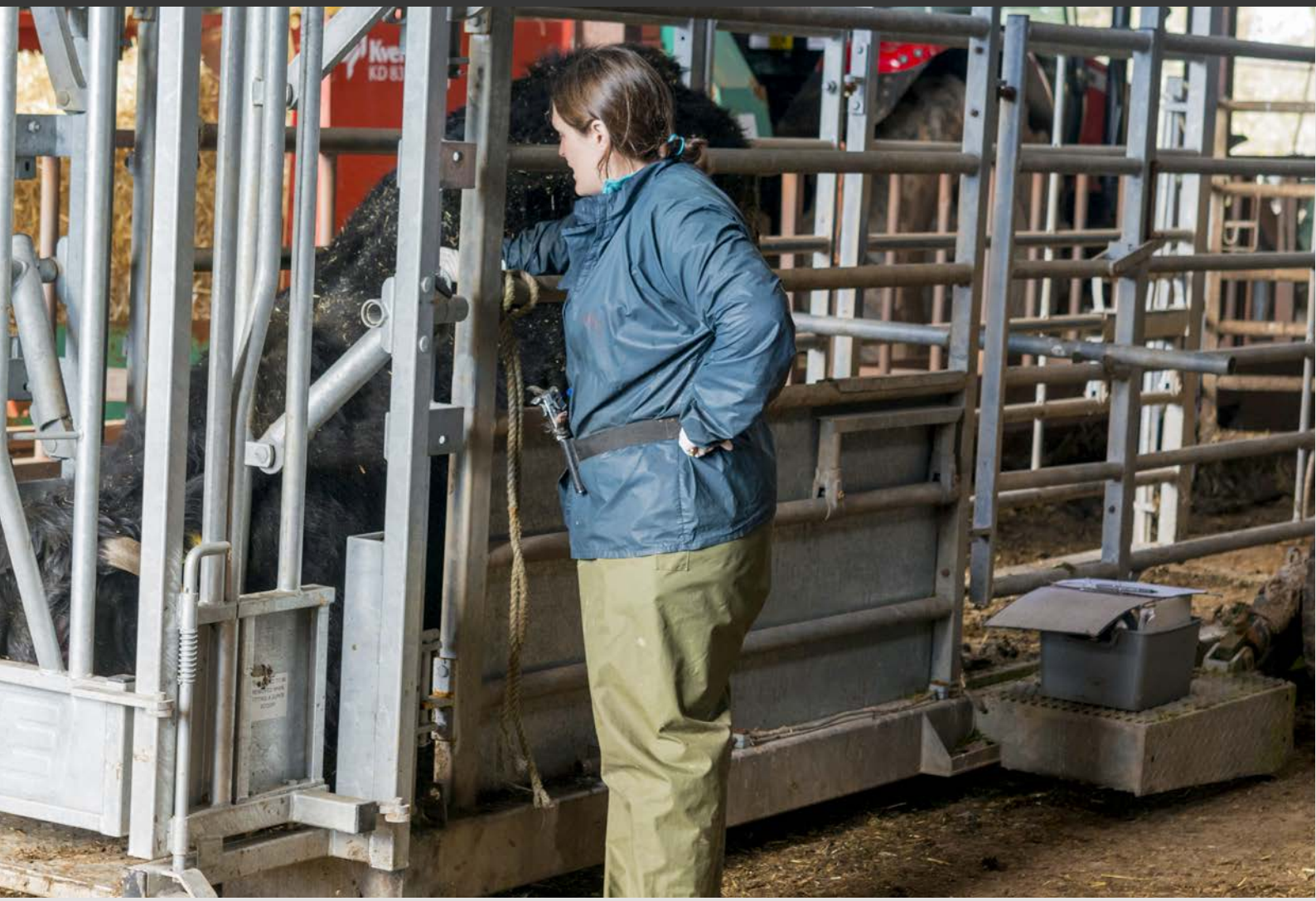
EU deal

- The EU is self-sufficient in poultry meat and eggs but there is significant trade with non-EU countries. As in the UK, the EU consumer has a preference for white meat; dark meat and offal are exported. The UK poultry sector depends on this trade continuing.

Multilateral free trade

- Brazil, USA and Hong Kong are the main exporters of poultry meat. An FTA between the EU and the Mercosur countries would increase their market access to the EU.
- Trade with the USA requires an agreement on sanitary and phytosanitary measures including chlorine washing which may prove a challenge.
- FTAs with poultry and egg exporting countries, like the USA and the Mercosur countries, would allow consumer prices to be held down but would likely put substantial pressure on UK producers.

Animal health and welfare



In Wales, we aspire to raise the standards of animal health and welfare whilst recognising the implications for the environment and society as a whole. **The Wales Animal Health and Welfare Framework**[17] sets out a plan for continuing and lasting improvements in standards of animal health and welfare for kept animals, whilst also helping to protect public health and making a contribution to the economy and the environment.

The benefits of high standards of health and welfare are clear:

- animals have a better quality of life
- more productive
- more efficient
- more resilient
- more profitable.

The UK's decision to withdraw from the European Union is likely to have a profound impact on agricultural policy, including farm animal welfare, and the trade in agri-food products.

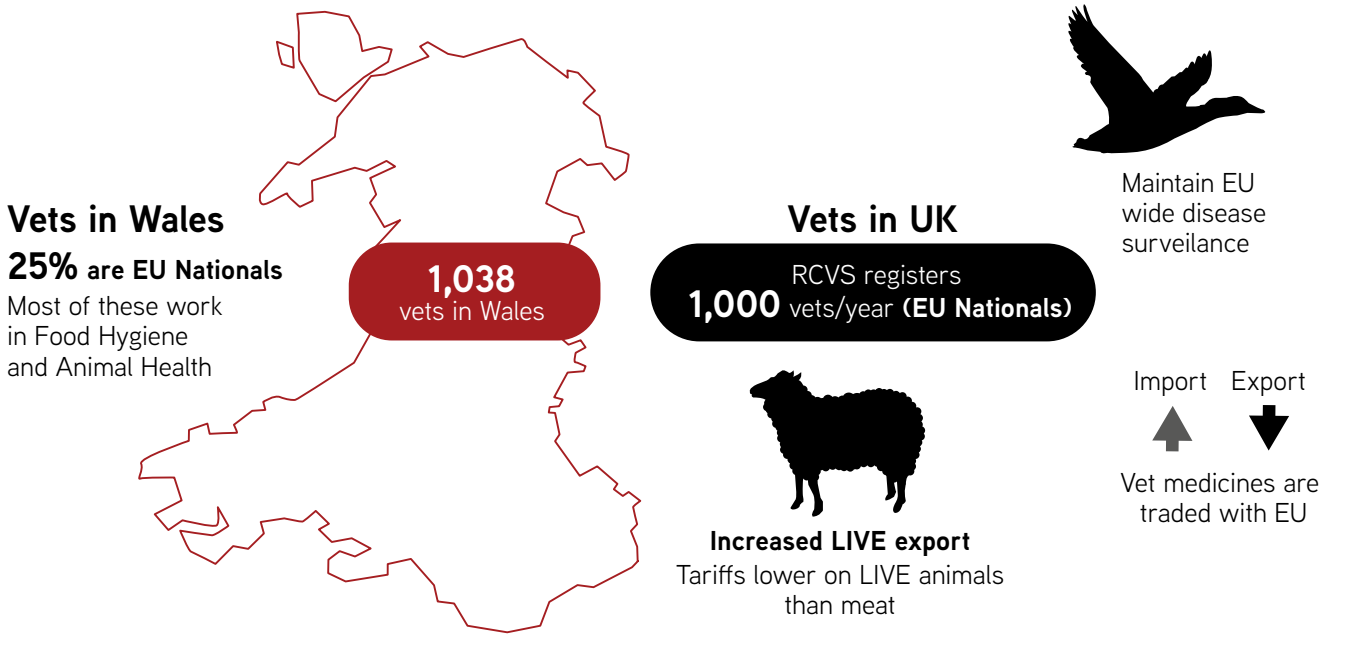
[17] http://gov.wales/topics/environmentcountryside/ahw/wales-animal-health-welfare-framework/?lang=en

The Prime Minister told the House of Commons on 8 February 2017 that "We should be proud that in the UK we have some of the highest animal welfare standards in the world—indeed, one of the highest scores for animal protection in the world. Leaving the EU will not change that.[18]"

Some EU legislation which currently applies in Wales puts in place requirements necessary for animal and human health protection and food chain security. We will need to uphold these requirements and standards regardless of EU obligations to avoid significant risk to the general public, to the future environment and to the Welsh economy[19].

The British Veterinary Association's approach to Brexit is that existing animal health, animal welfare, public health, veterinary medicines, workforce, and environmental protection standards must at least be maintained at the same level, or a level equivalent to current EU standards, while seizing the opportunity to improve standards in accordance with evidence-based risk analysis of animal health, welfare and ethics.

Animal welfare is a concern amongst other pressing concerns including climate change, biodiversity loss, antimicrobial resistance and food security for a growing human population. Ensuring the health and welfare of sentient animals is important as a marker of social progress, as well as for the role it plays in achieving other sustainability objectives. The UK must promote good animal welfare as an important sustainable development goal. Trade acts as a means to achieving this.



[18] https://www.parliament.uk/business/committees/committees-a-z/lords-select/eu-energy-environment-subcommittee/news-parliament-2017/brexit-farm-animal-report-published/

[19] Securing Wales Future: Transition from European Union to a new relationship with Europe http://gov.wales/about/cabinet/cabinetstatements/2017/eutransition/?lang=en

Post Brexit, maintaining consistency in welfare standards across the devolved regions of the UK could also pose a challenge. Standards may diverge and this could have a detrimental impact on animal welfare as well as the disease risk and response capability for the UK. Our overarching call is therefore for the four constituent parts of the UK to continue to work together for the good of animal health and welfare, and public health UK citizens place high value on the welfare of farmed animals. However future trade deals may undermine these values. The House of Lords European Union Committee noted the "greatest threat to farm animal welfare standards post-Brexit would come from UK farmers competing against cheap, imported food from countries that produce to lower standards than the UK." Where opportunities are available to improve the welfare of farmed animals, these should be considered in all future trade deals.

No deal

- WTO tariffs are lower for live animals. The expected potential increase in live imports increases the risk of importing disease. There will be a continued need for collaboration with the EU for areas such as disease surveillance (e.g. ongoing membership of the Animal Disease Notification System), access to the EU vaccine bank and further Research and Development on animal disease.
- Market disruption under this scenario could increase in the number of welfare issues unless a transitional period is agreed.

Veterinary workforce

- Veterinary surgeons working as official controllers at farms, food premises and other settings in Wales carry out official controls (inspection and audit). These Official Veterinarians (OVs) work collaboratively with private practitioners in Wales. Based on the outcome of this effective working relationship, OVs both certify and supervise the import and export of animals and animal products to and from third countries. The role of veterinary surgeons in trade, protecting public health, food safety and animal welfare, is recognised as essential throughout the EU and around the world.
- The demand for veterinary certification is increasing and will grow significantly following exit from the EU. Nigel Gibbens, The Chief Veterinary Officer for the UK, has suggested that this could lead to the volume of products requiring veterinary export health certification increasing "by 325%."
- Ensuring the UK has a veterinary workforce sufficient to meet this demand will be critical to ensuring the UK is able to exploit the opportunities for trade in agricultural produce, and this applies to Wales as much as anywhere else in the UK . Therefore, the Government must ensure that an appropriate number of veterinary surgeons can be recruited from overseas, whether from the European Union or from outside the EU, to ensure this essential veterinary work continues.
- Veterinary certification is applied to live animals, as well as products of animal origin. These are defined as any products derived from animals or products that have a close relationship with animals.
- It is essential to maintain an adequate veterinary workforce to ensure that animal health and welfare do not suffer after Brexit, in particular those providing essential services in rural areas.
- Statistics provided by the Royal College of Veterinary Surgeons (RCVS) reveal the dependence of the UK on non-UK EU vets. RCVS currently registers around 1,000 overseas vets per year, of which non-UK EU nationals make up the clear majority. In both 2015 and 2016, RCVS registered more non-UK EU vets than UK graduates. Currently, of the 1,038 vets working in Wales, almost a quarter are EU-graduates.

- Estimates suggest 95% of Official Veterinarians (OVs) who are responsible for verifying and auditing meat hygiene in abattoirs graduated overseas with the clear majority of these being non-UK EU graduates.
- In the short to medium term, it will be impossible to meet this demand using UK nationals. Any increase in UK veterinary students may be a long term and gradual position but there is a significant risk that this will leave the profession with an acute workforce shortage in the short term. Animal health and welfare will suffer unless provision is in place to ensure that manpower is sufficient after Brexit.

Skilled and other labour

- A significant proportion of the workforce working in a public health role in the food industry, including abattoir workers, are also from the EU. There is a serious risk to many businesses if current staff do not stay or access to non UK workers is lost.

EU Animal Health Law

- EU Member States, including the UK, recently agreed a Regulation on transmissible animal diseases providing the means to streamline the current rules into a single law which has been welcomed as more flexible, risk-based and proportionate. Despite this more strategic approach, there has been little broadening of scope and the new rules will only be applicable once the subordinate legislation (including Delegated and implementing Acts) has been agreed. This is unlikely to take place before April 2019.
- EU Animal Health Law is recognised as well thought out, practical and flexible base-line legislation to which the UK's contribution was significant. It provides a platform for the reform of the legislative and policy detail of disease control as obligations for Member States and farmers in respect of surveillance and standards on farm.
- Consideration should be given to whether the EU Animal Health Law will be copied across into domestic legislation or whether separate UK legislation will be needed.
- Adopting EU Animal Health Law, or significant parts of it, is likely to facilitate trade with the remaining EU member states.

Veterinary medicines

- A number of veterinary medicines are sourced from within EU but trade is in both directions. Both the UK and the EU need to maintain this capability.
- Continued access to veterinary medicines is essential for animal health and welfare in the UK. It is therefore important that any new regulatory measures allow the continued use of existing products authorised under EU systems without additional regulatory burdens and costs, whilst avoiding the necessity to reapply for marketing authorisations in the UK for EU-approved products used safely for many years.
- Medicines commercially available for the treatment of animals need to meet standards that ensure safety, quality and efficacy. In addition, medicines used in food-producing animals need to be regulated and used in such a way that residues of the active ingredients are not present in the food at a level harmful to human health. Within the EU, this is ensured by the Veterinary Medicinal Products Directive 2001/82/EC (as amended). This sets out controls on the manufacture, authorisation, marketing, distribution and post-authorisation surveillance of veterinary medicines applicable in all EU Member States according to agreed technical requirements for quality, safety and efficacy thereby avoiding any barriers to trade in animal products derived from animals treated with such products. UK controls on veterinary medicines are set out nationally in the Veterinary Medicines Regulations (VMR), issued by the Veterinary Medicines Directorate (VMD).

- Currently, there are three channels for the authorisation of veterinary medicines in the UK. Firstly, there is national authorisation by the Veterinary Medicines Directorate (VMD) when an applicant has applied to the UK only, and has no desire or intention to license and commercialise the product in any other Member State. The second is the centralised procedure, under which an applicant submits a dossier to the European Medicines Agency (EMA) and a product is then licensed for use throughout the EU. Thirdly, the mutual recognition or decentralised procedure by which an applicant submits a dossier to one Member State which undertakes the authorisation. In this third procedure, other Member States may approve the product by mutual recognition of the original marketing authorisation. Any new trade deal should maintain the link with the current EU veterinary medicine approval systems.
- Further research is required around potential implications of tariffs on imported veterinary medicines.

Antimicrobial resistance

The UK Government has demonstrated strong leadership at home and globally in tackling the issue of antimicrobial resistance.

The UK Five Year Antimicrobial Resistance Strategy 2013 to 2018 notes:

- There are few public health issues of greater importance than antimicrobial resistance (AMR) in terms of impact on society. This problem is not restricted to the UK. It concerns the entire world and requires action at local, national and global level."
- Antibiotic reduction targets set by UK Government are being met and further sector focused reduction initiatives set by industry stakeholder groups are in place as part of a continual improvement programme.
- Despite not being a devolved responsibility, the Welsh Government is playing a key role in collaboration with other stakeholders to ensure that this matter is addressed effectively in Wales.
- Raising the standards of animal health and welfare, effective health planning and control of major endemic diseases (e.g. BVD) and other major production diseases (e.g. sheep lameness, cattle lameness, mastitis etc.) will reduce the requirement for antimicrobial medication in the livestock sector.
- Responsible farm antimicrobial use must be incorporated into future trade deals to ensure progress on responsible antimicrobial use is not undermined.

Disease surveillance and disease threats

Post Brexit changes may increase the number of "part time" smaller farms, with more "under the radar animals" posing a risk to animal welfare at farm level and leading to wider animal disease outbreaks

There is a risk that there will be increased import of animal derived feed pending a lowering of import requirements after Brexit. This will open up the potential for the incursion of disease.

There will be a need to continue to work closely with EU on disease surveillance. The UK enjoys an increasingly good animal health status, but maintaining this requires a continuing commitment to effective veterinary surveillance, comprehensive preparedness and sophisticated and scalable responses to incidents and incursions. As part of the commitment to the global ''One Health'' Strategy it's important to recognise the importance of maintaining standards of environmental protection (e.g. the EU Directives on Birds and Habitats) and human health. "One Health" is generally defined as 'a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment' (One Health Initiative, 2017).

As well as addressing exotic diseases, such as rabies, avian influenza (AI), foot and mouth disease (FMD) and African horse sickness, the Strategy includes measures to address endemic diseases such as bovine brucellosis and bovine tuberculosis. In addition to control programmes for endemic disease and the capability to respond to exotic disease, surveillance for new and emerging disease (a policy which is not mandated by EU legislation), and for the incursion of disease exotic to the UK, are important elements of animal health policy and its implementation. Diseases don't recognise boundaries whilst certain disease vectors are windborne and can be transmitted over considerable distances.

PETS scheme

The movement of small animals (e.g. dogs, cats and ferrets) is covered by EU Regulation No 576/2013 (the so-called Pet Travel Scheme or PETS). Commercial movement is dealt with under EU Directive 92/65/EEC (the 'Balai Directive'). PETS has made the transport of pets between the UK and mainland Europe easier and more cost effective for owners. Consideration will need to be given to the status of the UK for the purposes of the Pet Travel Scheme to facilitate a smooth transition post-Brexit. The UK may be required to become a listed country or the EU could continue to recognise UK pet passports in the same way it does for Switzerland, Norway, Andorra and others. One of the key considerations from a UK perspective will to prevent the incursion of diseases not currently present within our borders. These include diseases such Rabies and certain parasitic species ticks and tapeworm.

EU deal

- The UK currently has the high welfare standards. There is concern that pressure from farmers to remove or change the current regulations and achieve equivalence with the EU would have an adverse effect on animal health and welfare.
- The UK is part of the UN OIE (World Organisation for Animal Health), which sets standards for trade in animals, that aligns with EU standards. The UK view is that they could pull back from some of these standards, especially on TB, but this would not work for policy alignment in Wales. The standards do have different aspirations across developed/developing countries but both Wales (and the UK) should be seen to be setting a standard and leading the way. Such an approach would play into the 'Brand Wales' messaging around sustainability and high standards of production.
- Impact of disease status will play a part in any FTA negotiations. The UK will need to work with EU & OIE to ascertain which diseases would still be statutory.
- Drug Authorisation – processes would need to continue to be authorised for use. Medicines manufactured outside the EU (and cheaper) couldn't be substituted for current authorised products, unless specifically agreed within any FTAs. In this scenario the FTA would have been put together over 2 years and is unlikely to be able to consider future currently unauthorised products. Therefore, the EU maintains it grip over the medicine use, for as long as the EU is the main market.
- Impacts don't just apply to trade – movements of other animals, like horses, dogs and other pets would need to be considered. There is currently a tri-partite agreement which covers issues like pet passports and movements.

- BIP (Border Inspection Ports) would need to be set up in Wales. These posts are inspected regularly and if given port clearance can become points that allow trading through the port and onwards throughout the EU.

Multilateral free trade

- Trading with a number of different countries may mean that the agricultural industry would have to produce to more than one standard across the UK – e.g. EU and possibly different standards for specific countries outside of the EU. Further work with industry will be required to co-ordinate the supply of various markets. There would be higher costs if we have higher standards than necessary for a given market.
- In the absence of the UK properly replacing the type of systems currently policed by the EU Food and Veterinary Office, there is an increased risk of diseases being imported in food from Third Countries which have lower standards of animal health and traceability.

Arable

Context

The arable sector in Wales is small and occupies 4.7% of the total land area of Wales. Wheat and Barley are the predominant crops by area accounting for 50% of the arable area.

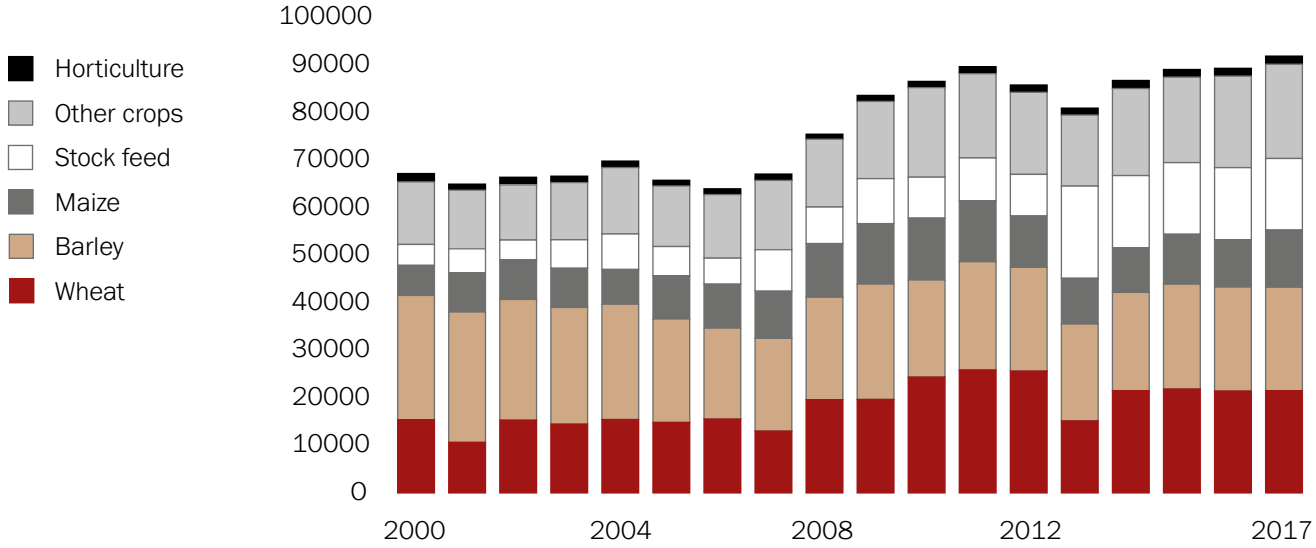
There are 260 farms classed as arable holdings, with an additional 92 classified as general cropping and a further 398 classified as mixed (cropping with various types of livestock enterprise).

The area cropped area in Wales has increased since 2008, the CAP rule which required some arable land to be 'set-aside' from production ended and cereal prices also improved[20].

Arable and horticultural crops are grown predominantly on better quality lower lying land in Monmouthshire, the Welsh Marshes, Vale of Glamorgan, Flintshire, Denbighshire, Pembrokeshire, Gower and the coastal plains of North Wales and Cardigan Bay.Welsh Agricultural Statistics give the area of arable land as 87,650 ha (5% of agricultural land) but this figure does not include temporary grassland of 157,000 ha (8%) Combining these gives a total area of 246,000 ha (13%) of Welsh land under cultivation.

[20] http://gov.wales/docs/statistics/2016/161124-survey-agriculture-horticulture-june-2016-en.pdf

Chart 4: Area of arable crops and horticulture (thousand hectares) in Wales 2000-2016



Area under crops 2016 (Wales)

Crop	Ha
Wheat	21,410
Winter barley	8,132
Spring barley	13,757
Other cereals for combining	6,136
Potatoes	3,140
Maize	9,951
Crops for stock feeding	15,147
Oil seed rape (winter & spring)	5,080
Other crops	3,628
Bare fallow	1,272
Total	**87,653**

Arable and grain trading was touched upon during discussions. As a member of the working group, AHDB supplied evidence and reports[21, 22] and which have been drawn upon for the summary below.

No deal

- The UK is currently a net exporter of wheat. In the event of tariffs it is likely we will move to become a net importer as our production is relatively high cost.
- The critical issue for UK wheat and barley production is its competitiveness in the UK market. While high quality milling and malting products will continue to be exported, the trade in feed quality grains is dependent on beneficial exchange rates and market access.
- UK produces a surplus of grain in good harvest years with the vast majority is currently exported to the EU. Under a WTO scenario, UK grain would face a tariff barrier when entering the EU market. In years of surplus, the UK would have to work harder to be competitive within export markets, both EU-27 and non EU because costs of production tend to be higher in the UK which makes exports less competitive.
- The UK has a relatively small volume of grain to offer the world market. This could well present an issue in a trade that is dominated by high volumes (which are needed to generate sufficient margins for those involved).
- Within Wales the small amounts of the grain produced are mainly used for animal feed. Given the tariffs applied to imported crops such as maize, there may be a further displacement of wheat and barley in favour of Welsh farmers growing crops such as maize.
- From a UK perspective there may be opportunities to add value to grains by supplying niche products for export.
- The loss of EU preferential treatment post Brexit could also reduce or remove UK access to some markets, such as Morocco, where the EU's advantage is considerable in some seasons.

EU deal

- Since much of the surplus grain produced by the UK is exported to the EU, there is an assumption that the UK could continue to supply the same markets. The key issue is whether the future tariff level can be absorbed within the competitiveness of the current arable industry.

Multilateral free trade

- New export opportunities but market access presents less of a hurdle than the global dynamics of the cereal market.
- Global trade in grain has become a 'numbers game,' driven by high volume, low margins and dominated by relatively few multinational companies. The high volume nature of grain exports are evidence on a country basis as well as company level.
- Trading requires a product of the right price and specification, such as moisture and protein content. In addition, distance to some importing countries requires large load sizes, further constraining opportunities for export. Shipping to distant markets may require co-operation to fill the ship.
- From a UK perspective there may be opportunities to add value to our grains prior to export.

[21] https://ahdb.org.uk/documents/Horizon_Brexit_Analysis_june2017.PDF

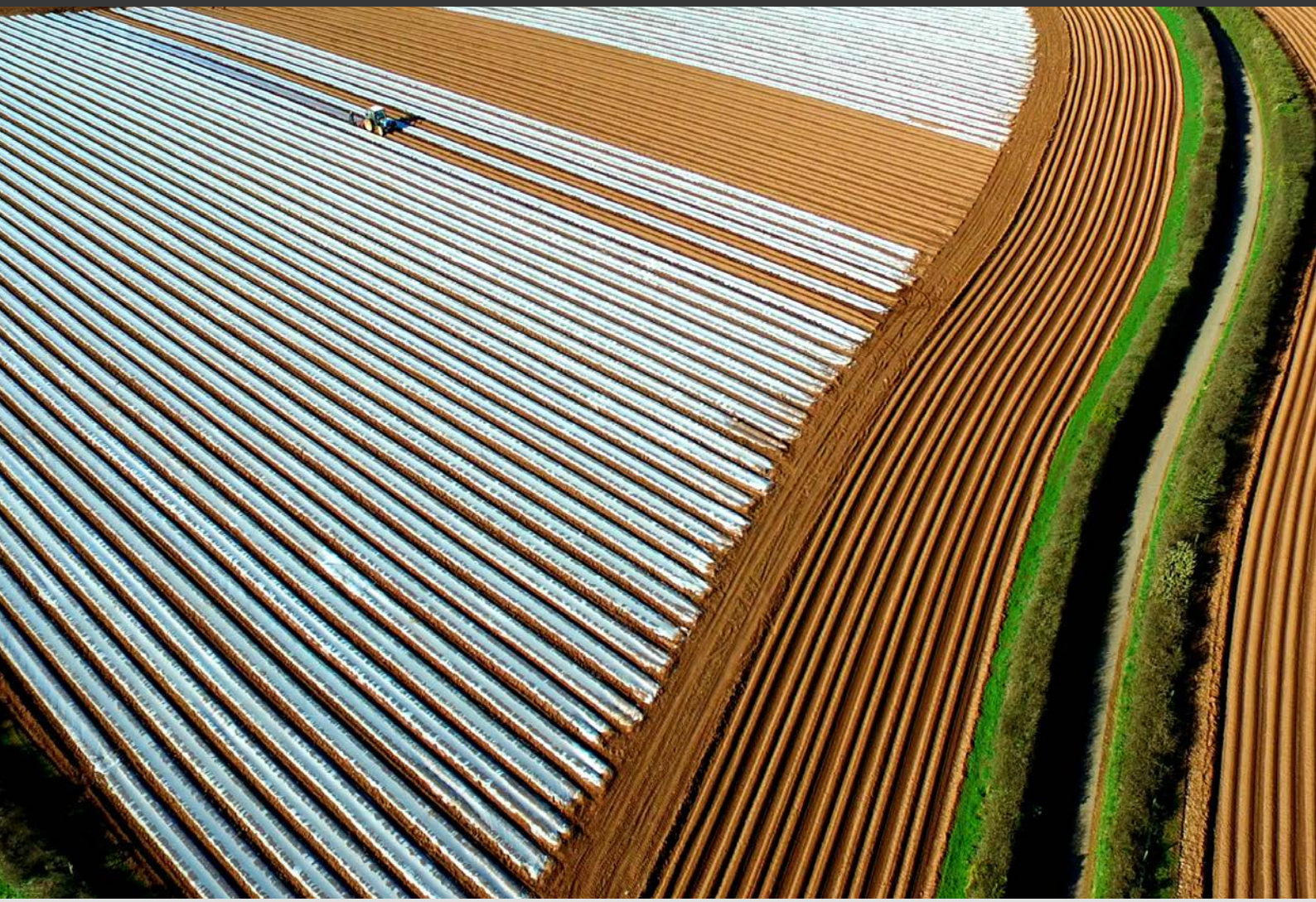
[22] https://ahdb.org.uk/brexit/documents/Horizon_BrexitScenarios_11oct17.pdf

- The top 5 countries for UK grain export are Algeria, USA, Tunisia, Thailand and Japan. Currency fluctuation, tariffs and transportation costs are likely to combine to further reduce the UK's competiveness in export markets.
- In the longer term, global population growth (particularly in China and South East Asia, Africa and India), coupled with a increasing numbers of middle class consumers(particularly around the Asia Pacific) will increase international demand for cereal grains.

Environmental implications

- Pressure to intensify may result in ploughing closer to field boundaries and the removal of field margins and buffer strips – unless effective measures are put in place to retain these features. The costs of agri-environment schemes may increase if cross compliance measures are removed and arable enterprises become more profitable.
- Precision farming and low tillage systems may be adopted to reduce costs. If adopted at scale these will have significant environmental benefit in the longer term from the perspective of water quality, soil health and reduced GHG emissions. Changes in economic and regulatory framework
- The cropping of both maize and protein feeds could increase as farmers seek to counter any increase in costs of imported livestock feeds and improve business resilience. Such land use change could have negative impacts on biodiversity and water quality, with increased pollution by soil particles and plant protection products which usually follows an expansion of maize production. Some benefits to farmland birds, arable weeds and GHG emissions depending on production methods, especially in case of protein crops.
- In addition any large scale increase in energy crops is also likely to have variable impacts on biodiversity, soils, water quality and landscape, with much depending on where such crops are located and how they are managed.

Horticulture



Context

The horticulture industry includes a broad spectrum of crop enterprises including fruit and vegetable production, ornamental plant production (including floriculture), novel crops, landscaping and growing of turf. Accurate baseline statistics on the sector are lacking, largely because not all horticultural businesses are registered with the Welsh Government.

Horticulture cropping output is £41 million of agricultural output, 3% of the Welsh total.

Horticulture in Wales has been in long term decline, as it has in the rest of the UK. Only 0.04% of Welsh agricultural land is under horticultural production, although this figure rises to 0.2% if potatoes and field scale vegetable production are included. The UK decline in output from vegetables has increased our reliance on imports which have increased sharply, largely driven by demand for out of season vegetables and for products that can not be grown within the UK. Domestic production contributed 73% of total supply in 1995 but had dropped to 58% of total supply by 2014.

Geographical location and the predominantly small scale nature of Welsh horticultural businesses present a logistical challenge.

Horticulture is a labour intensive industry with many employed seasonally or as casuals and the sector is heavily reliant on migrant workers. Brexit therefore poses a significant risk for a number of horticultural businesses.

On the other hand horticulture is not as reliant on CAP payments as is the case with much of the livestock sector.

No deal

- More volatile food prices likely to be experienced by consumers. As we are reliant on imports for a significant volume of vegetables and fruit, increases in costs and disruption to supply are more likely. This raises some concern in relation to healthy diets as any increases in price of fruit and vegetables tend to reduce consumption.
- Imports of horticultural produce into the EU are generally subject to import tariffs. In most cases, these are ad valorem tariffs of below 20 per cent and for some products they vary seasonally. It is clear from the levels of imports which occur that these tariffs are not sufficiently high to prevent imports.
- Access to labour is the biggest challenge for the horticulture sector under this scenario as there is some dependency on EU workers. The lower value of Sterling has already reduced the supply of EU workers.
- Relaxation of current restrictions on the use of crop-protection products would seem unlikely provided the UK and the Devolved Governments wish farmers to retain the image of high-quality, high-standard food producers.
- The UK horticulture sector is mainly focused on supplying the domestic market, with minimal exports. Given increased costs of imported produce (current tariffs are lower for fruit and veg – around 10-15% for things we can produce) there may be some opportunities for import substitution. Increased opportunities are likely to emerge for the horticulture sector in suitable locations where production is economically advantageous, e.g. access to water, closer to market/peri-urban locations.
- Alternative longer term opportunities may be available which are not dependent on distance from market e.g. production of strawberry runners, growing of seed potatoes in uplands.
- Field scale potato and vegetable production will provide opportunities especially where tariffs are applied on imports. Such products are bulky to transport, although the most likely outcome is that established farmers will expand as the set up costs of specialist machinery for new entrants may be prohibitive. Whilst we don't import many fresh potatoes we do import a lot of frozen chips and other frozen potato products. Processing opportunities are already being realised in the UK with the recent announcement by McCains of a chip processing plant in Scarborough.
- Vertical farming presents a future opportunity with the greatest potential for sites closest to market, with good water, energy and transport links. (E.g. along the M4 and A55 corridors).
- There may be opportunities for some import substitution where crops could be grown in Wales to supply UK food manufacturers where costs of obtaining ingredients from outside the UK increase. For example, onions for processing which may not meet the aesthetic requirements demanded by supermarkets or flowers for the biopharmaceutical industry. Producers would need longer term contracts to be able to make the investment and commitment.

EU deal

- Likely future arrangements will add costs and complexity to the trading environment, which could be an opportunity for import substitution, although if a 5-10% tariff on EU produce is assumed, it is likely the UK consumer market will absorb these price rises.
- Opportunities are therefore seen across this sector, although the growing of more crops within glasshouses is unlikely under this scenario. Glasshouse production requires significant investment and Wales is unlikely to be able to compete with producers in the South East, who already have significant infrastructure.
- There are opportunities to increase field vegetable production across all the scenarios and the sector should start exploring ways of linking growers with food processors. Long term contracts for growers would enable them to invest in the equipment needed.

Multilateral free trade

- Increase in production opportunities for the horticulture sector under this scenario but profitability is likely to be offset by increased labour costs.
- Access to labour and associated costs are likely to be the main challenge under this scenario. In the longer term, the automation of picking and packing may help mitigate reduced availability of labour and consequent increases in labour costs.
- Relaxation of current restrictions on the use of crop-protection products would seem unlikely provided the UK and the Devolved Governments wish farmers to retain the image of high-quality, high-standard food producers.

Environmental implications

- Any horticultural expansion /intensification associated with developing production within the UK will need to consider appropriate siting and cultivation methods to mitigate potential environmental impacts.
- There is potential for an increase in GHG emissions resulting from increased cultivation and possible risk to water quality depending on location. Increased pressure for water abstraction and irrigation could increase risks to river ecology and fish stocks at times of low flow. Potential environmental impacts from use of plastics and increased air pollution are issues, so regulation may be required. Also impacts on soil fertility need to be considered.
- Land use change coupled with increase in fertiliser, machinery and inputs of plant protection products could have impacts on biodiversity. Some benefits to farmland birds and arable weeds may be possible depending on production methods.

Fisheries

The Welsh Fishing industry is diverse, ranging in scale from seasonal fisheries to hand gathering, small businesses to full time and aquaculture producers. The industry plays a key role in the long term sustainability of many coastal communities and employs 851 people on 298 fishing vessels, 30 of which are over 10 metres. Fishing tends to be a livelihood first and business choice second with many 2nd or 3rd generation fishermen as entry costs can be prohibitive. There are 28 aquaculture producers employing 73 people and 220 cockle licences. Wales also has 22 processors employing 130 people worth £7.1 million.

Landings are 25,300 tonnes with a value of £38.8 million; £25.8 million of this is shellfish and £13 million seafish, including sea bass, megrim and monkfish.

Exports are worth £23.22 million from Welsh ports, 57% of trade is with Spain[23].

High dependency on shell fish (e.g. whelks/scallops) 90% of which are exported straight to EU with a percentage exported onwards via 38 extended trade agreements with the EU. £5.2million of processed whelk exports go to the Korean market, for example. For whelks there would be a 20% tariff on this

[23] https://businesswales.gov.wales/foodanddrink/fisheries

product but it is considered a luxury good and the market can probably absorb the price increase. The FTA for Fisheries products to Asia is via the EU market extended trade agreements.

France, Spain, Italy and Portugal are also traditional buyers of Welsh shellfish and crustacean produces some of which they then trade within the EU single market and extended Asian markets. These products are however not branded as Welsh but taken as live and processed products. Buyers in Europe tend not to be concerned about the provenance. Whelks and other products from Wales are generally cooked and/or fresh/frozen for export by Welsh processors.

No deal

- Immediate impact – 90% of shellfish caught in Wales is exported to the EU for processing and freezing, much for the Asian market. It is not clear how important the Welsh fishery is to these European businesses. Because of increased costs of the Welsh products resulting from tariff barriers and currency exchange rates, it is assumed that buyers will switch their sources to elsewhere in the EU. In this scenario the loss of the main market would mean this sub sector would cease to be viable, and do so quickly.
- Trade disruption of only 4 to 6 weeks will have devastating implications for shell fish production and the Welsh inshore fleet. These are not large businesses; mainly consisting of SME's and self-employed fishermen. Fishermen do not usually get paid until the buyer receives payment for the product, therefore an efficient, reliable and dynamic supply chain model for seafood products will need to be maintained to avoid business failures.
- Export of shell fish products to the EU market is live in vivier lorries (lorries with water tanks). Therefore, delays at UK and EU ports would also have significant impacts on the supply chain. Any delay would result in mortality/loss and waste and the income/revenue would disappear overnight. Strict standards apply to distant markets, including country of origin quality control, and product certification requirements to access Asian markets.
- Imported fish will also be affected which will have wider national implications/opportunities. Tariffs of 20% apply for live exports but processing increases tariffs up to 33%.
- Fin fish – there are currently limits to the continuity of supply due to limited quota/Total Allowable Catch (TAC)[24] in Welsh waters.

Quota changes present risks and opportunities. Under the current EU model the majority of Welsh fishermen don't own a quota entitlement. Instead they fish against a pooled resource managed by WG of approximately 100 tonnes of mixed Total Allowable Catch (TAC) species per year for Welsh waters and divided between the Welsh under 10 m and non-sector fleet. If quota is successfully repatriated to Wales this would present significant opportunities for Welsh fishermen and seafood businesses to benefit from an increase in economic activity without placing further pressure on Fisheries resources. Draft findings of a Wales Centre for Public Policy Report presented to Wales Marine Fisheries Advisory Group and Seas and Coasts Subgroup 2017[25] indicates potential for quota repatriation of mixed species to Wales could be in the region of 14,600 tonnes.

[24] Total allowable catches (TACs) or fishing opportunities, are catch limits (expressed in tonnes or numbers) that are set for most commercial fish stocks. In Wales, the under 10metre fishing vessels (around 426 vessels) makes up about 90% of the Welsh fleet, but have only 3% of the total UK fishing quota in Welsh areas of interest.

[25] https://www.wcpp.org.uk/single-post/2018/02/13/Implications-of-Brexit-for-Fishing-Opportunities-in-Wales

Continued access to UK waters is important to the EU and will likely form part of the EU Exit negotiations[26].

This scenario raised the question of the importance of the fishing industry in Wales. Economically it is small (£38.8 million annually, with 1,223 people employed), however culturally socio-economically the downstream value of fishing, aquaculture and seafood sector was seen as high. Visit Wales were alarmed at the loss of fishers as a feature of small Welsh coastal communities as well as the secondary processing currently adds a further £7.1 million to these local communities

There is an opportunity to look at the domestic market. Demand is established but not fully utilised/ serviced with possible UK market opportunities to substitute expensive imports.

- Are there opportunities for a 'Brand Cymru' linked to Visit Wales' Year of the Sea, for example
- There is little processing in Wales and there is significant potential for growth in this area – but would need industry appetite, investment and infrastructure.
- As there are currently no domestic market producer organised groups for fish and shell fish in Wales, (pockets of merchant distributors and processors), there is an opportunity to create better co-operation for the marketing of Welsh seafood products.
- Repatriation of the beneficial quota ownership to Wales is potentially 14,600 tonnes (currently landed by non UK vessels) and is a significant opportunity to reinvigorate fishing communities and ports in Wales.
- Need to ensure that we push the message that UK is the leader in Seabed mussel production. Main competitors are Ireland. Wider global trade – NZ and Australia are all major exporters in their own right, mainly to Asia.
- We need to maintain our high quality marine environment but need to broaden discussion to cover tourism and how to promote our marine protected areas, blue growth, energy, aggregates.
- If fishing alone becomes unviable, fisher operators could explore other responsibilities in Welsh waters, such as monitoring of fishing activities (particularly in MPA's), environmental factors (water quality and biological indicators) and mobile species.

EU deal

- Under this scenario there is no immediate impact or change.
- In the longer term fishing exports continue, with increased pressures on reducing costs. Potential Tariffs and Non Tariff Barriers are likely to cause the concern for the sector; Support may be needed through any transition period to mitigate the impact these may have on the sector in the short term.
- Fishing for some species may cease. There is a lack of understanding of the detailed tipping points for the fishing industry sectors which is likely to vary with species, (expert opinion suggests that crab has a low tipping point, but lobster will be higher, other species caught here but not consumed in the UK are even less well understood).

[26] Through the development of the Common Fisheries Policy and each year in negotiating fishing opportunities in Europe, the Welsh Government has worked with the UK Government and Devolved Administrations to negotiate the best deal for our respective nations and for the UK as a whole.

Multilateral free trade

- In this scenario the Welsh shell fishers can continue to supply EU companies as they have done. 90% of the product goes to the EU, so there is little incentive or capacity to seek other markets.
- However, a FTA with Canada could upset this balance. If Canada was able increase its exports of lobster to the UK, UK lobster producers would struggle to compete as Canadian lobster is likely to be cheaper. This could impact individual businesses that have focused on the UK market. There may also be knock-on impacts on exports to the EU, depending on how the EU reacts. For instance, the EU may ban imports of some types of lobster from the UK to protect itself from proxy Canadian imports. Or it may impose significant 'country of origin' checks on UK lobster imports. This may not initially reduce demand for live exports to the EU, but is likely to increase waiting times at borders. For products such as lobster, delays cause greater proportion of product spoil. The producers are paid at the point of delivery, so Welsh fishers would incur the financial and ecological risk of mortality for live exports.
- Culturally Wales sees itself as a fishing nation; any wide spread failure of the fisheries market could create a public reaction. This provides a marketing opportunity to develop a sustainable local fishery to supply local markets and tourism outlets. Repatriation of the beneficial quota ownership to Wales is potentially 18,300 tonnes (currently landed by non UK vessels) sustainably managed this opportunity would generate much needed investment and beneficial growth within Wales for current and future generations.
- Brand Cymru' is particularly critical to developing a sustainable fishery in Wales. There is a need to examine procurement and local fish needs to become a feature of the Welsh food offer, particularly in food outlets on our coasts.
- Development of ecotourism could provide opportunities to take visitors to see Wales rich wildlife, this could begin through promotion in Visits Wales- 'Year of the Sea' in 2018-19. This is however a limited and seasonal opportunity for diversification only.

Wales' marine environment

Fisheries are one of the main economic drivers for our coastal communities. There are also numerous and often competing demands on our marine ecosystems. These include renewable energy production, aggregate extraction, pipelines/cables, tourism and recreation. Therefore, we need to ensure a plan led approach to managing activities in our seas is implemented following the introduction of the first Wales Marine Plan. Investment in eco-tourism is required and is a growth area, government procurement in these communities could stimulate a sustainable fishery (food) which would enable the cultural identify to the sea. Further research is required to look at the potential opportunities arising in areas such as ecotourism.

Wales is committed to the sustainable management of our marine natural resources.

- Deliver requirements of the Marine Strategic Framework Directive (MSFD), achieving Good Environmental Status in our waters through the application of an ecosystem based approach.
- Ensure an ecologically coherent and well managed network of Marine Protected Areas (MPA's) across the UK.
- Ensure EU Exit outcomes are fully compatible with WFG and Environment Acts specifically ecosystem resilience and the ecosystem approach.

The 3 points above are statutory devolved obligations which are already upheld within the regulatory framework and will continue under the Withdrawal Act/Continuity Bill.

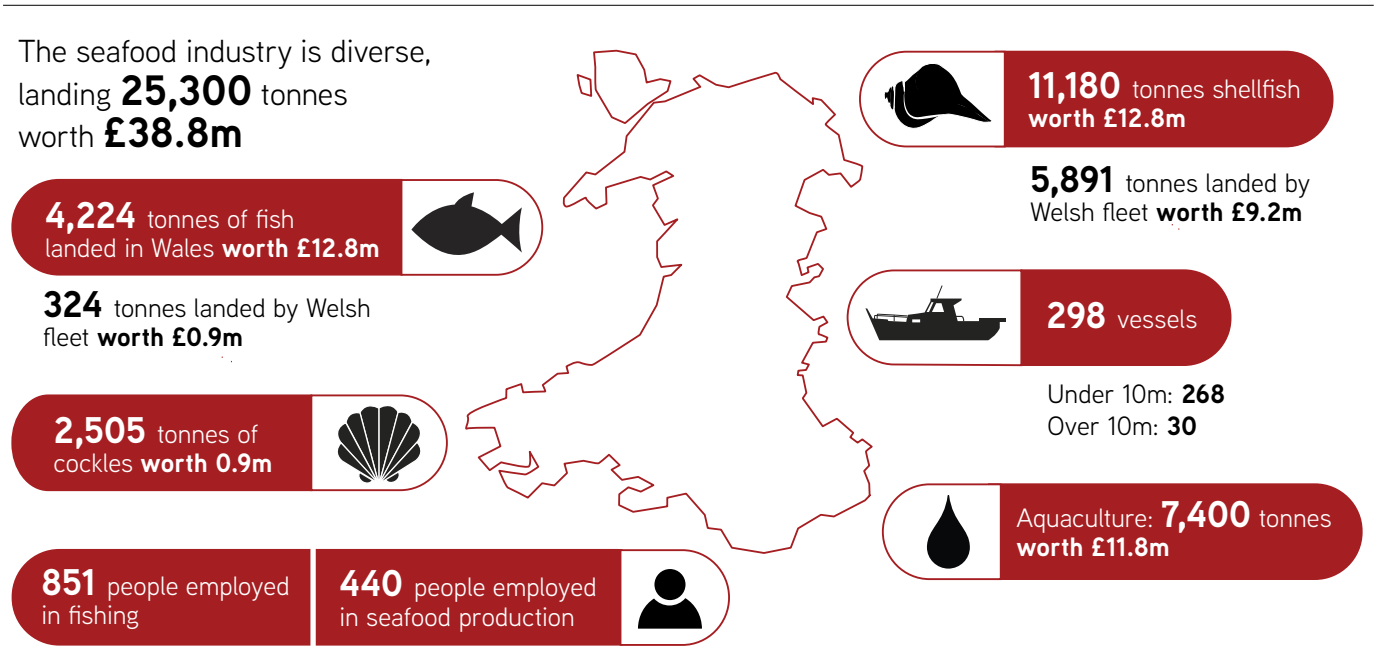
The Seas and Coasts subgroup has identified 5 key strategic priorities;

- Look to the long-term: being clear on our strategic vision for sustainable management of Wales' seas.
- Ensure continued unfettered access to single market and the free movement of people, goods and services.
- Take a positive approach to collaboration, working in true partnership within Wales and, wherever we can, across the UK.
- Help to secure the long-term viability and prosperity of Welsh fishing communities.
- Uphold Wales' commitments to the sustainable management of Wales' marine natural resources.

Environmental implications

- Canadian lobster are an Alien Invasive Species if released alive in UK waters, they carry Gaffkemia that kills native UK lobster. Increases in Canadian lobster could see potential environmental impacts.
- Access to 'fairer share' of fishing quotas may result in Wales developing offshore fisheries. This needs to apply an ecosystem based Maximum Sustainable Yield (MSY). An ecosystem based approach supported by an adaptive framework is required to allow for improved evidence and the effects of a changing climate.

There remains uncertainty over the long term level of protection for designated sites under European legislation and Treaty of Lisbon Principles if enforcement is weakened at a domestic level, however, the Withdrawal Bill or Continuity Bill together with the unique legislation under the Wellbeing & Future Generations Act (2015) and Environment Act (2016) will support Welsh specific frameworks with sustainable development and use of natural resources at is heart.



Forestry

Context

Forestry in Wales is a significant sector in terms of land use in Wales with 306,000 ha of forest/tree cover comprising 49% native broadleaf and 51% commercial conifer plantations. This is 15% of the area of Wales. There are 92,770 ha of woodland on farms and 213,000 ha of forestry, this includes the Welsh Government woodland estate (WGWE) of 126,000 ha.

While the GVA of the forestry and logging sector in Wales is £22.3m, manufacture of wood and products of wood and cork the GVA is £172.6m and the manufacture of paper and paper products it is £333.7m[27]. The forestry sector GVA of £528.6m is 0.9% of Welsh GVA and supporting approximately 2,000 jobs with further employment in timber processing.

In terms of the structure of the market, UK and Wales timber mainly competes in the sawn softwood, particle board and fibreboard markets. Welsh supply is highly integrated into the England and Wales supply chain and cannot readily be disaggregated. But domestic demand outstrips productive capacity by a ratio of 5:1 and there is and will continue to be demand for imported timber.

[27] Woodlands for Wales Indicators Release 2015-16

Imports accounted for 82% of all wood (production + imports) in the UK in 2015. The total value of wood product imports in 2015 was £7.5bn, while the value of exports was £1.6bn[28].

The UK relies on imports from the EU. Sweden (45%), Latvia (16%) and Finland (14%) provided the majority of imports of sawn softwood to the UK; Germany (23%), France (21%) and Ireland (14%) are the major importers of particleboard; and Ireland (35%), Germany (21%) and Spain (11%) are the principal sources of fibreboard imports. There are also imports from other parts of the world.

Because of the integration of the sector between Wales and England, many businesses trade across the border with England and much of their income is received from end users in England where the majority of customers are.

Overarching implications

The immediate impact of the referendum has been positive for parts of the forestry sector. This is principally due to the value of sterling falling which has had a direct impact on timber prices which are driven by import prices. In essence imports have become approximately 20% more expensive in the domestic market.

At the same time, land values for forest land continue to appreciate as the market anticipates a decline in agricultural land values, higher timber prices and low investment returns elsewhere. Between 2010 and 2017 values for forest lands in Wales have grown from around £2,000 per hectare to around £8,000 per hectare.

There are likely cost increases to industry and consumers across all scenarios seen across pallets and packaging, paper, board products, furniture and flooring. Currently access to machinery, plant and processing equipment, and the servicing of these items is largely bought from EU countries. The fall in the value of Sterling has added 20% to costs. This is having negative impacts for both UK based businesses and consumers. The businesses that are likely to be most affected by the change in currency value are those that import timber to produce products for the UK market as their raw materials cost will increase significantly more than competitors that use UK raw materials, for example, and they may not be able to pass on increased costs due to competition.

Impact of funding

Limited funding may impact future planting, and woodland management maintenance. Future payments may need to focus on areas of greater public good which may include small scale woodland creation on farms, PAWS[29] restoration and native woodland creation. There should also be space for greater private investment in well managed, well-designed woodland that delivers both public and private benefits. Historically the UK has also had access to significant research funding via membership of the EU, for example Forest Research received £531,000 in income from the EU in 2015. Forest Research and universities in the UK also had access to Horizon 2020, the EU's research and innovation programme, which has a budget of nearly £80 million over 7 years to 2020.

[28] (This figure includes reselling of imported products and potentially masks products that are landed and reshipped without being 'processed' in the UK in any way. This may drop significantly if there are barriers to moving products to and from the EU as it could become uneconomic to use UK ports as EU entry points.)

[29] PAWS are ancient woodland sites where the semi-natural woodland has been replaced with a plantation.

No deal

- Increased import costs for timber and raw materials for timber processing would affect profitability and put short term pressure on domestic timber resources. The extent to which this happens depends on currency fluctuations and barriers to movement of products across borders as WTO tariffs for unprocessed materials are very low.
- There is unlikely to be a reduction in imports. In fact increasing demand will probably mean an increase in imports despite increased costs to UK buyers. An increase in costs of importing products will increase the demand for UK products, which given the huge disparity between supply and demand will likely result in higher prices for what is available. Our ability to respond to this demand is constrained however by the 15-20 year or longer lag between planting and availability of supply meaning a greater incentive to plant more now and protect what we have from over exploitation.
- Seasonal labour particularly in the nursery, sub-sectors requires access to EU labour.
- In general, primary products have low/no tariff, processed products have bigger tariffs. This is a potentially incentive to increase limited processing capacity in Wales to add value to products that we would otherwise import with a high tariff if imported.
- Opportunities for substituting imports with UK production are limited as there is insufficient forest area to supply volumes and the species of timber required. At present Wales has 14% forest/ woodland cover but only 50% of this is stocked with species that can be used to produce these commodities.
- If incomes start to fall e.g. in upland lamb production, farmers looking to diversify or exit the industry could have the effect of more land becoming available for forestry planting, where regulation allows.
- There remains a question mark over the type of planting that would/should occur and what the ownership would look like. The economic impact of Brexit is likely to result in some landowners seeking to move over to an economically driven model of forestry. This will provide some support for local economies in rural areas, as does agriculture but there could be some unwelcome cultural impacts. A business and economic model that enables existing landowners to benefit by managing woodland as an economic activity could minimise these impacts while leaving landowners free to choose between a range of options.
- Timber required for house building is supplied from imports which supplement supplies from Welsh woodland. The construction industry is investigating increased use of Welsh hardwood and softwood timbers in construction as a more sustainable low carbon product.

EU deal

- High reliance on imports of timber and wood products from the EU means that this scenario could be favourable for forestry, where it enables continued access to EU supply and skills, workforce and ancillary products and services. It would reducedemand for and the prices of, UK produced timber if import costs increase by less than under WTO scenarios.
- With funding levels maintained at current levels there is scope to adjust the incentives available to landowners for more woodland creation.

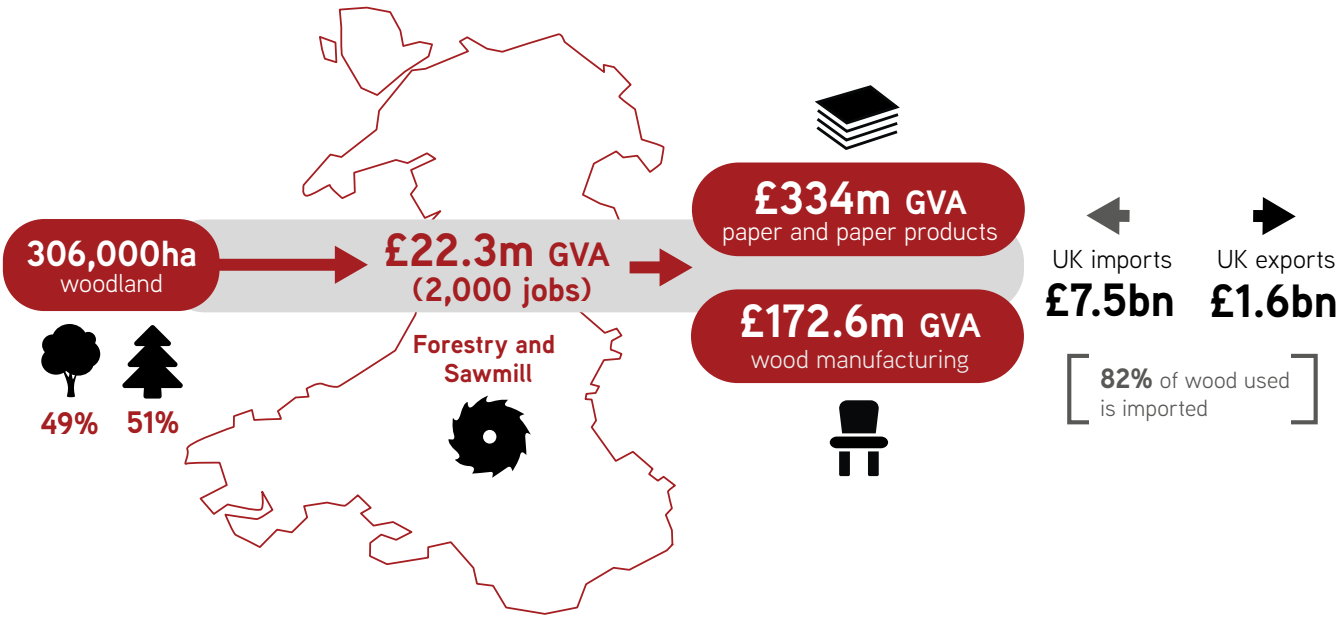
There is some flexibility under this scenario to tailor rural development type schemes to deliver more effectively against Welsh natural resource management and de-carbonisation policies. For forestry that could be through incentivising sustainable afforestation and farm woodland which could for example assist with meeting carbon budgets.

Multilateral free trade

- The eventual trade relationship and currency exchange rates with the EU and globally will be very influential in the success or otherwise of the forest based industries in Wales. Future FTAs will have the potential to impact the direction of change within the domestic timber market.
- Timber products are major export products for Canada and the USA. The EU is also a major exporter yet our domestic prices have risen for the last 3 years. Timber is a global commodity so individual FTAs are unlikely to result in straightforward changes to the global and therefore local value of timber and timber products. An increase in supply in one area creates increased demand somewhere else and a counter factor to any price changes. However, global demand for timber is likely to increase in the future due to increased demand in countries such as China and India. This is likely to exert a global pressure on prices in the medium term.
- We are less likely to see forest abandonment as once established the capital value of the site will continue to increase annually until harvesting, for forests that can be managed economically. If timber and forest products and services prices all drop significantly we may see forest owners not manage (thin) their forests and rely only on clear felling at whatever age is most marketable.

Environmental implications

Forests, based on maintaining the current area provide a range of ecosystem services, the values of which are summarised in the table below. It's therefore of considerable significance in terms of Wales' economy now and post EU exit.



	Annual value of "service"	**Net present value of these services over 50 years**
Timber extraction*	£28.3 million	£690 million
Carbon sequestration**	£108 million	£3900 million
Recreation***	£84 million	£2100 million
Air quality****	£285 million	£11,200 million

* Discounted NPV using HM Treasury appropriate discount rates.
** This is the "stumpage" value, i.e. net of harvesting and transport to the primary processor it is the "return to the grower" of the trees.
*** This is the physical volume of carbon removed by the trees, annually or the present value of 50 years of carbon removal, combined with the non-traded carbon price estimate by BEIS.
**** Based on a new ONS recommendation, recreation values were estimated using expenditure data reported by respondents to the Wales Outdoor Recreation Survey. Latest data available are for 2014.
***** Air quality estimates are based on DEFRA air quality damage cost guidance combined with estimates of the Wales woodland ability to absorb particulate matter (PM10) and sulphur dioxide (SO2) at 2015 prices. The estimate can be broken down by conifer and broadleaves, rural and urban areas and are available for the years 2011 to 2015.

Food and drink

The Food and drink supply chain in Wales iIncludes primary production, manufacturing, retail, wholesale and non-residential catering:

- Employed 240,200 people in 2016.
- Involved 27,575 business units in 2016.
- With a turnover of £19.1bn and GVA of £4.5bn (2015).
- Exports of £0.363bn in 2016, (up 19% from £0.306bn in 2015).
- Ireland, France, Netherlands, North America and Asia were the top 5 export destinations.

The sector in Wales represents:

- 18% of all employment in Wales
- 22% of the total number of business units
- 18.4% of the turnover of the non-financial business economy (UK average is 13.5%)
- 4.2% of the turnover of the UK food and drink sector
- the majority (85%) of food and drink business units in Wales are micro and employ fewer than 10 people. There are 75 Welsh Food & Drink businesses employing more than 250 people.

Food and drink processing beyond the farm gate has been a constant theme throughout discussions in the working group. Given the importance of this sector and the need to address additional processing capacity and adding value in Wales, further work will be undertaken to look at the potential impacts and opportunities coming from Brexit for the wider food chain.

Overarching messages for rural sector across Wales

Change is the only certainty and therefore we need to create new, innovative and sustainable markets, using the principles of sustainable management of natural resources (SMNR) for the benefit of future generations in Wales.

Prepare for the change

In all scenarios the scale of change for the economics of businesses in the land and sea primary production sectors within the portfolio could be considerable. These changes could have a profound impact on the environment, economic, cultural and social structures in rural Wales. There is significant risk that rapid unmanaged disruptive change in the economy as a result of Brexit could have negative impacts on rural communities, social structures, the Welsh economy and our environment, further exacerbating pressures on natural resources and reducing ecosystem resilience.

Food prices are likely to increase in all scenarios (with exception of the unilateral tariff free trade scenario) but caused by different drivers. In practical terms this will affect consumers and consumption habits, especially for those on lower incomes. Such impacts would be exacerbated if Brexit also added to economic pressure on consumers. In the case of a tariff free trade scenario, whilst food coming into Britain may be cheap, it may also have the embedded costs of damage to ecosystems in other countries, animal health and welfare costs and potential human health impacts if such food is of lower quality if lower standards are applied.

Brexit means choppy waters for all businesses with potentially devastating impacts for some sectors and businesses under a number of scenarios, and uncertainty regarding the final outcome making it difficult to plan. This means businesses will need to plan for a range of possible scenarios. To do this, they need to establish an understanding of individual and collective business strengths and weaknesses, and a detailed understanding of costs and outputs in preparing for change.

A transition period will be imperative to help businesses and industry in making the necessary changes required to adjust to the new trading environment and conditions. Until we have defined our future legislative framework and funding mechanisms, it will be difficult to negotiate trading agreements outside the UK.

The UK's departure from the EU provides an opportunity to embed the new legislative framework Wellbeing of Future Generations (WFG) and Environment (Wales) Act within Wales. We need to enable people in rural Wales to deliver the management and restoration of the natural environment in order to provide the ecosystems services (benefits from our natural resources) that society needs from the land, including sustainable food, timber and environmental enhancement and management.

Rural communities will need leadership, clear direction and new skills to adapt to the changes on the way.

Further research is needed into the potential and scope of "Brand Cymru" linked to quality standards and assurance. Wales could offer a high value brand based on delivering high environmental and animal welfare standards with sustainable management of natural resources. There is a risk producers may be operating under higher standards with increased costs, but without a commensurate increase in the prices paid by consumers. In considering this potential outcome we need to ensure that no new

trade barriers are created within the UK as well as avoiding the risk that production is exported to countries with lower human rights, animal health and welfare, and environmental standards. All of these would breach the principles underpinning the Wellbeing of Future Generations Act as well as leading to a net fall in global standards

Specific challenges

- The level of pressure on each sector varies across the various scenarios, with the potential loss of EU export markets, lower levels of rural support, possible tariffs and/or competition from across the globe threatening the viability of large numbers and possibly the majority of farm businesses. The sheep sector in Wales is the most vulnerable to such threats, with the hill sheep sector likely to be most vulnerable.
- Loss of the EU market for the shellfish sector would make this industry unviable, while any non-tariff barriers which add to delivery times would represent a significant risk given the perishability of such exports.
- The majority of farm businesses in Wales are heavily reliant on current farm support payments, from Pillar 1 and Pillar 2 of the CAP will be particularly exposed. Farm businesses which are heavily reliant on the income from beef and sheep production and with high levels of debt to service are also exposed.
- Future uncertainty in markets could drive significant land use change that could be detrimental to the environment (land abandonment or unsustainable intensification).
- Restrictions on immigration are likely to impact on the food processing sector in terms of the availability of both skilled and unskilled labour; any labour shortages could threaten the future of processing facilities in Wales.
- Wales currently exports many of its agricultural, forestry and marine products to other parts of the UK as well as to the EU. Shellfish, milk, beef, lamb and water all leave Wales for others to process and gain the 'value added'. A concerted effort is needed to realise the full value of what is produced in Wales.
- A combination of smart regulation and incentives that can address the wide range of issues that are likely to emerge post Brexit are going to be needed. The majority of issues are extremely difficult to anticipate other than in extremely broad terms as the future trading environment is still very uncertain and how individual businesses across the supply chain will react is far from clear.
- Despite the framework provided by the WFG and Environment Acts, there is a risk that the level of environmental protections may be weakened at UK level as businesses struggle to adapt to the post-Brexit trading environment. In addition, there may be a reduction in the level of public sector support for more environmentally beneficial management across the rural economy. Financial support will be required to deliver the ambition of Sustainable Management of Natural Resources, which will require new investment in restoration as well as on going management practices.
- Post Brexit, there are likely to be numerous opportunities to develop new models of funding coupled with more flexible and outcome orientated approaches to environmental management. The development of these new approaches is likely to require a significant investment of time and resources on the part of both the private and public sectors.

Conclusions and recommendations

It was not in the Sub-group's remit to provide ideas for seizing the opportunities and minimising the risks from Brexit that are identified in this paper. Despite this our discussions inevitably strayed into this area. As part of our closing remarks we have presented some of the key issues and ideas that emerged during the debates. These issues are not explored further in our report, but the Group's membership are keen that they be subject to further development and discussion, probably by other Sub Groups of the Roundtable in most cases.

- All interventions and investment decisions should have a clear link to the vision of Wales set out in the WFG and Environment Acts.
- Be imaginative. We shouldn't be afraid to change existing processes and should look to work in more innovative and joined-up ways.
- Consider the role that public funding can play in maximising the delivery of public goods. The concept of "market failure" currently applies to a wide range of the environmental services provided by our natural environment. As a result, the continued provision of these services would be threatened by the long term degradation of the ecosystems supporting their delivery.
- Welsh agriculture has a key role to play – indeed a responsibility- in feeding the people of Wales and contributing to global food security now and in the future. Investment will continue to be required to maintain the productive potential of Welsh agriculture.
- Deeper analysis of the indirect (or secondary) impacts of the immediate changes likely to arise post Brexit would improve the evidence base for the key risks and opportunities arising in areas such as environment, animal health and both rural and coastal communities.
- It will be important to thoroughly investigate and model the impact of all policy changes and interventions on businesses and supply chains as far as possible. This will help to minimise the risk that well-meaning aspirations result in unforeseen and adverse consequences.
- Many of the direct and indirect impacts likely to arise from Brexit will manifest themselves in different ways across Wales. Further analysis of the likely spatial impacts of Brexit would be beneficial in order to ensure that policy interventions can be more finely tuned.
- The likelihood that budgets will be even more constrained in future points to the necessity of constructing a joined up programme of interventions which can deliver multiple benefits.
- The concept of Brand Cymru should be developed in a way that applies to more than just food products. Developing a brand that embraces all of products and services from across Wales will require building on the vision described in the Well-being and Future Generations Act.
- Investment in people and skills will help to deliver natural resource management and underpin the benefits provided by ecosystem services. Such investment needs to be linked to the development of Brand Cymru and any emerging ecosystems services markets.
- All Interventions need to be flexible enough to respond quickly where it seems that the outcomes of Brexit will threaten particularly vulnerable sectors or cause damaging secondary impacts to the environment, animal health and/or rural communities.
- A variety of support mechanisms coupled with a sufficiently long transition phase will be required to enable businesses and people to adapt to future changes.

- Support for businesses can be delivered through a range of interventions including business assessment, targeted investments and support for innovation and diversification to improve both business resilience and competitiveness.
- Investment in infrastructure, innovation and processing will be needed to develop new products and 'add value' to primary production in Wales. This will help to ensure we have the right product mix in a post Brexit trading environment.
- Targeted support will be required to improve the uptake of benchmarking and drive improved performance within farming, food processing, timber production and processing.

Annex 1

Energy, Planning and Rural Affairs (EPRA) Roundtable – Evidence and Scenarios Sub-Working Group

The EPRA Roundtable Group established a series of thematic and cross cutting groups to take forward work on developing our EU exit negotiation position and shaping the policies and actions that will deliver the vision of the Wales we want in relation to the environment and rural affairs; the Evidence and Scenarios Sub Working Group is one of these groups.

Scope of the working group

Given the amount of change predicted, there is a great need for robust evidence to support decision making. For many parts of the portfolio there will be a requirement to collect evidence that has not been necessary in the past. The challenges of leaving the EU meant that the existing evidence base needs to be re-assessed, augmented and used in different ways to inform our future direction. This group is gathered together to assist the Cabinet Secretary and Welsh Government officials with expertise and leadership in:

- Assessing the ramifications of different potential Brexit outcomes.
- Helping to identify the robustness of existing evidence, evidence gaps, and potential evidence sources.

Group membership

The Chair and Secretariat of the Evidence and Scenarios Sub Working Group is provided by Welsh Government. Other members include:

- Agriculture and Horticulture Development Board
- Animal Health and Welfare Framework member
- Country Landowners Association
- Farmers Union of Wales
- Hybu Cig Cymru
- National Farmers Union – Cymru
- Natural Resources Wales
- National Sheep Association
- Royal Society for the Protection of Birds Cymru
- Welsh Fishermen's Association
- Welsh Local Government Association
- Wildlife Trusts Wales
- Technical experts also contributed as necessary.

Annex 2

Evidence reports

FAPRI: Impacts of Alternative Post-Brexit Trade Agreements on UK Agriculture.

Sector Analyses using the FAPRI-UK Model Specific scenario analysis of the potential economic impacts of alternative post-Brexit trade agreements on UK agriculture has been carried out by the Food and Agricultural Policy Research Institute FAPRI report[30]. Three scenarios have been modelled – intended to enable a broad, illustrative assessment of the likely bounds of potential impacts under alternative theoretical trade arrangements. The scenarios are not necessarily intended to reflect the most likely outcomes from the UK/EU negotiations. Specifically, the scenarios reflect:

(i) Bespoke Free Trade Agreement (FTA) with the EU.

(ii) World Trade Organisation (WTO) default Most Favoured Nation (MFN) tariffs.

(iii) Unilateral trade liberalisation.

AHDB 'Brexit scenarios: an impact assessment'

The Agriculture and Horticulture Development Board (AHDB), who are represented on the membership of the Evidence and Scenarios workgroup, commissioned a recently published report entitled 'Brexit Scenarios: an impact assessment[31]' The report has been produced using modelled England Farm Business Data.

While the report has been produced using modelled English Farm Business Survey Data, it provides important insights for the industry in Wales, particularly for Wales' most significant agricultural sectors.

A further report has now been commissioned by the Welsh Government which will model the Welsh Farm Business Survey Data to provide a more – relevant analysis for Wales. This report is due early in 2018.

The FAPRI and AHDB reports both confirm the anticipated impacts of different Brexit scenarios on key agricultural sectors, as discussed in this document, while also providing estimates of the scale of those impacts which should be of particular concern for Welsh policy makers.

RSPB

RSPB commissioned a report from Cumulus Consultants, The potential impacts of Brexit for farmers and farmland wildlife in the UK[32].

The report considers Brexit scenarios with: trade relationships, regulation, funding and policy variables. It considers the possible impacts on farm income and farm wildlife. The report is limited in that it only considers 4 farm types, cereals, mixed farms, lowland and LFA livestock. All scenarios and all farm types modelled show a decrease in farm business incomes (FBI) post Brexit for all four UK administrations.

[30] https://www.afbini.gov.uk/sites/afbini.gov.uk/files/publications/FAPRI-UK%20Brexit%20Report%20-%20FINAL%20Clean.pdf

[31] https://ahdb.org.uk/brexit/brexitpublications.aspx

[32] http://www.cumulus-consultants.co.uk/documents/The-potential-impacts-of-Brexit-for-farmers-and-farmland-wildlife-in-UK-23.10.17.pdf

Wales is considered separately (section 5.2, pages 64-69), although there was only sufficient data to consider lowland and LFA livestock farms. The report concludes that there may be negative impacts on biodiversity, soil and water if grazing enterprises are intensified. LFA farmer response would be mixed, so impacts would be mixed, depending on whether the farm intensified or reduced stocking density. There would be positive and negative impacts associated with either response.

Potential implications of leaving the EU for UK agriculture and the rural environment – Land Use Policy Group

This report was commissioned by the Land Use Policy Group[33] as a contribution to the debate on future policy trajectories in the UK for the agricultural sector once outside the CAP and the implications these have for the rural environment. The report illustrates a series of exploratory scenarios, setting out alternative pathways for the agricultural sector in the UK over the next ten years and beyond. The scenarios provide a framework for discussing some of the key environmental risks and challenges which lie ahead. The report concludes with a summary of the implications of these findings for future negotiations and discussions within the UK as well as some suggestions on next steps.

[33] https://ieep.eu/uploads/articles/attachments/d7d7514a-49d9-4a12-bb26-dcba65e931ca/IEEP%20Brexit%20scenarios%20report%20-%20final%20280817.pdf?v=63671395644

Annex 3

Glossary

Ad Valorum Tariff	A tariff that is not a percentage (e.g. dollars per tonne) may be estimated as a percentage of the price — the ad valorem equivalent (AVE).
Amber Box	Domestic support for agriculture that is considered to distort trade and therefore subject to reduction commitments. Technically calculated as "Aggregate Measurement of Support" (AMS).
Animal Disease Notification System	ADNS is a notification system designed to register and document the evolution of the situation of important infectious animal diseases. It is a management tool that ensures immediate notification of alert messages as well as detailed information about outbreaks of these animal diseases in the countries that are connected to the application. This permits immediate access to information about contagious animal disease outbreaks and ensures implementation of early warning which enables for a prompt response for controlling the epidemiological situation. This has a direct impact on trade of live animals and their products both for the internal market as well as for international trade with third countries.
Barnett Formula	A population-based formula for determining changes to the Scottish, Northern Irish and Welsh Block Grant. The size of the Welsh block grant is set in advance for periods of three years (known as spending review periods) as part of the UK Government's spending review process. In addition, the Welsh Government receives European Structural Funds, which are unaffected by the operation of the Barnett Formula. http://gov.wales/docs/icffw/report/090708barnettfullen.pdf
Beef Carousel	Beef carcasses are exported and the meat returned after further processing, the so called 'carousel effect'.
Blue Box	Amber Box (see above) types of support, but with constraints on production or other conditions designed to reduce market distortion. Currently not limited.

Carcass balance	In the last 10 to 15 years domestic and export markets have moved away from purchasing whole carcasses to specific cuts and this trend is continuing. In 2015, over a third of all sheep meat exports from the UK were sent in cuts, this compares to 13% in 2005. This has been a result of changing consumer preference, the need to maximise carcass value, technical developments and emerging new markets. An imbalance can pose a challenge to the industry particularly when one market may have a preference for specific cuts. For example the UK lamb market has a strong preference for leg cuts (see table 4), leaving a large proportion of the carcass to be sold into other markets. As a result processors have the continued challenge of achieving lamb carcass balance, with the cuts that have lower home market demand potentially being sold at a discounted price which in turn devalues the whole carcass. Export markets with a preference for these cuts, such as loin, forequarter and the fifth quarter, are key to balancing carcass utilisation, increasing the value of the whole carcass. Carcass balance is an issue for all livestock, not just lamb.
Coastal State Agreement	Between UK and EU (UNCLOS).
Customs Union	Custom Union members apply a common external tariff (e.g. the European Union).
Country of Origin	Rules to establish the country of origin of imported and exported goods and to help identify those which qualify for lower or nil customs duty.
Free Trade Area	Trade within a group of countries is duty free but members set their own tariffs on imports from non-members.
Fifth Quarter	Parts of an animal that do not form part of the carcass, for example offal, head, hides and skins.
Geographical Indications	Place names (or words associated with a place) used to identify products (for example, "Champagne", "Tequila" or "Roquefort") which have a particular quality, reputation or other characteristic because they come from that place.

Green Box	Domestic support for agriculture that is allowed without limits because it does not distort trade, or at most causes minimal market distortion.
INNS	An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live.
Market Partition	Supply chains will change and either a focus on home markets or export. Tariffs may encourage food processing to move to the country or trading block where the product is consumed.
Marine Protected Areas (MPA)	A marine protected area is any area of sea or shore that is protected by law for the conservation of habitats, species or other natural features. In Wales we have 132 MPAs which protect species and habitats.
Maximum Sustainable Yield (MSY)	The maximum sustainable yield (MSY) for a given fish stock means the highest possible annual catch that can be sustained over time, by keeping the stock at the level producing maximum growth. The MSY refers to a hypothetical equilibrium state between the exploited population and the fishing activity.
Mercosur trading block	The EU has been in negotiations with the Mercosur trading block the main South American exporters for many years, see: http://ec.europa.eu/trade/policy/countries-and-regions/regions/mercosur/
Most Favoured Nation	Most-favoured-nation treatment (GATT Article I, GATS Article II and TRIPS Article 4), the principle of not discriminating between trading partner, tariff rate applied is the same for all countries traded with.
Most Favoured Nation Tariff	Normal non-discriminatory tariff charged on imports (excludes preferential tariffs under free trade agreements and other schemes or tariffs charged inside quotas).
Official Veterinarians (OVs)	Official Veterinarian (OV) is the term used to describe private practice veterinarians who perform work on behalf of an EU member state. The work performed by Official Veterinarians is normally of a statutory nature (i.e. is required by law) and is often undertaken at public expense.

Total Allowable Catch (TAC)	Total allowable catches (TACs) or fishing opportunities, are catch limits (expressed in tonnes or numbers) that are set for most commercial fish stocks. TACs are set annually for most stocks (every two years for deep-sea stocks) by the Council of fisheries ministers. For stocks that are shared and jointly managed with non-EU countries, the TACs are agreed with those (groups of) non-EU countries.
Sanitary and phytosanitary (SPS) measures	SPS measures can be applied to protect human, animal or plant health within the territory of a country from risks arising from plant pests (insects, bacteria, virus), additives, residues (of pesticides or veterinary drugs), contaminants (heavy metals), toxins or disease-causing organisms in foods, beverages or feedstuffs, and diseases carried by animals.
Trans-shipment	The shipment of goods or containers to an intermediate destination, and then from there to yet another destination. For example, commodities may appear to be imported from the Netherlands but may be a trans-shipment in Rotterdam. This is sometimes referred to as the "Rotterdam Effect"
PAWS	Plantations on Ancient Woodland Sites, ancient woodland sites where the semi-natural woodland has been replaced with a plantation. There has been interest in identifying and prioritising PAWS under coniferous plantation for converting back to native woodland species.
Payments for ecosystem services (PES)	Payments for ecosystem services (PES), also known as payments for environmental services (or benefits), are incentives offered to farmers or landowners in exchange for managing their land to provide any ecological service.
The Precautionary Principle	The precautionary principle describes a way of approaching policy and decision making in the absence of full scientific certainty.
Public Goods	A public good is a good that is both non-excludable and non-rivalrous in that individuals cannot be effectively excluded from use and where use by one individual does not reduce availability to others. Public goods include: fresh air, knowledge, official statistics, national security, common language (s), flood control systems.

Trade Barriers (tariff and non tariff)	Non tariff barrier is a form of restrictive trade where barriers to trade are set up and take a form other than a tariff. Non tariff barriers include quotas, embargoes, sanctions, levies and other restrictions. They are usually put in place to protect markets in the home country.
Tariff Rate Quotas (TRQ)	An import quota for a certain amount of product is set, once the quota is exceeded any further imports are charged at the tariff rate set by the World Trade Organisation.
Single Market	An association of countries trading with each other without restrictions or tariffs.
SMNR	Sustainable management of Natural Resources. https://naturalresources.wales/media/678317/introducing-smnr-booklet-english.pdf
SoNaRR	State of Natural Resources Report. https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en
"Ranching"	There is no definition. In this paper the term has been used in connection with an increase in the size of livestock farms with less direct management of stock. It may result in an increase or decrease in the stocking rate (number of livestock per unit area).
World Trade Organisation	The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to help producers of goods and services, exporters, and importers conduct their business. https://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm