



**A Nuffield Farming Scholarships Trust
Report**

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AHDB Pork



**Growing the
British pig industry**

Angela Kirkwood

October 2019

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A Nuffield (UK) Farming Scholarships Trust Report



Date of report: October 2019

*"Leading positive change in agriculture.
Inspiring passion and potential in people."*

Title	Growing the British pig industry
Scholar	Angela Kirkwood
Sponsor	AHDB Pork
Objectives of Study Tour	To highlight some of the best practices of pork production worldwide and to offer recommendations to encourage sustainable growth of the British pig industry.
Countries Visited	China, Philippines, Singapore, Japan, USA Germany, Denmark, Netherlands, Ireland
Messages	<ol style="list-style-type: none">1. The challenge is to produce pork at a competitive price relative to other meats and pork producing countries; giving consideration to economic and environmental sustainability, climate change resilience and good animal husbandry.2. Straightforward strategic aims and aspirations coupled with stakeholder collaboration to educate and mentor the next generation will create a progressive and sustainable future.3. Business prosperity, tax incentives and/or grant aid may be required to stimulate investment in infrastructure and environmental improvement.4. Given the above tools, the pork industry will strive to become one of the major flagship industries for 'Brand Britain'.

EXECUTIVE SUMMARY

Highlighting some of the best practices in pork production worldwide, this report offers recommendations to encourage sustainable growth of the British pig industry, illustrating that there are major opportunities for investors to embrace as pork continues to be the most consumed meat protein in the world.

Globally, agriculture is recognised for its importance in assisting to deliver a buoyant and stable economy by adding a significant benefit to a country's GDP. The UK must appreciate that a healthy, progressive agricultural industry is essential for a country's economic prosperity.

A transformation is now required, leading towards creating an industry which will leave a legacy for future generations. By gaining an understanding of global agricultural investment, this report promotes positive thought processes; in turn bestowing confidence to future pork producers. Thought provoking case studies from China, USA, Philippines, Japan and some European countries focus the mind on how agriculture is adapting to address global challenges of a growing population and climate change.

Risks are part of any dynamic, successful and progressive business. Historically the pig industry has been and will remain volatile. Over the past four decades there have been a whole host of new regulations imposed from not only an animal welfare perspective but also regulation common to other industries. The UK pork industry has been plagued with an influx of imported meat produced to standards lower than that legally permitted in the UK, and business concerns have consolidated as part of that economic process. Future UK domestic agricultural policy must not stifle the industry.

Straightforward strategic aims and aspirations, coupled with stakeholder collaboration to educate and mentor the next generation, will create a progressive and sustainable future for the British pig industry. The UK is currently 52% self-sufficient in pig meat with unquestionably ample home and export market growth potential. The challenge is to produce pork at a competitive price relative to other pork-producing countries and other meats, with consideration for economic and environmental sustainability and climate change resilience, with emphasis on protection from extreme weather occurrences.

It is apparent that modern society has a clear perception that it is necessary to achieve good environmental targets. There is debate as to how best these targets are attainable. Prosperity of the businesses, tax incentives and/or grant aid may be required to achieve such targets.

Given the tools to promote investment in infrastructure and environmental improvement, the pork industry can become one of the major flagship industries for '*Brand Britain*'.

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DISCLAIMER

The opinions expressed in this report are my own and not necessarily those of the Nuffield Farming Scholarships Trust, or of my sponsor, or of any other sponsoring body.

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1. PERSONAL INTRODUCTION

Farming runs through my veins. The daughter of a pig farmer based in East Yorkshire, I have been involved with the agricultural industry from a young age.

My career in agriculture started at the age of six when my pet pig, Blackie, gave birth to her first litter of piglets, an enjoyable and memorable part of my youth. Today I take an active role in the day-to-day management of our fully integrated farming business.

Passionate about food provenance and field-to-fork supply chains, the business incorporates pork production from a pig breeding and fattening herd, arable farmland to produce grains to supply our own feed mill, with the entire farm powered by on-farm renewable energy. A retail butcher's shop, East Riding Country Pork, promotes the opportunity to engage and sell directly to the consumer and understand retail challenges.



Figure 1: The author, Angela Kirkwood

My interest in global farming practice is thanks to the Young Farmers Club movement when, in 2009, I was given the opportunity to visit farms in Canada. Upon my return I joined my father to help manage the family farm and was appointed a business partner in 2014.

Recent business investment has targeted cash flow to minimise costs from external sources. This has enabled the business to become broadly resilient to volatile pricing and input costs. Capital investments include the purchase of land, property, renewable energy projects, upgrading milling equipment and improving productivity and animal health.

My appointment as County Chairman of the NFU York East Region was as a result of having held positions at the NFU for 7 consecutive years. NFU Members recognised my willingness to engage with policy makers and steer positive, effective and economically beneficial agricultural policy. This enthusiasm was also recognised by the Worshipful Company of Farmers in 2014 when the organisation offered me the opportunity to take part in the Challenge of Rural Leadership.

I owe gratitude to the late Jill Willows NSch who encouraged me to apply for a Nuffield Farming Scholarship; to my father and the team on the farm for allowing me the time to study, and to AHDB Pork for sponsorship funding.

"If everyone is moving forward together, success takes care of itself". Henry Ford



2. BACKGROUND TO MY STUDY

Go no further if you are hoping to read a study based on “scientifically proven data”, citations or endless lists of AHDB references. The truth is, volatility of both input and market prices would make any costings appear out of date the moment my report was published. So, I write anecdotally and subjectively about what I have learnt over the last 18 months.

The purpose of this report is to provoke thought, highlight investment opportunities and clearly illustrate that there are major opportunities for investors to embrace within the pig industry. It is time to lead a transformation towards creating a British pig industry which will leave a legacy for future generations.

This report should be of interest to the following stakeholders:

- politicians
- policy makers
- next generation agriculturalists
- academics
- processors
- retailers
- producers
- allied industry

Initial desktop research revealed that the UK was 52% self-sufficient in pig meat. Four decades of free trade with the EU accompanied by a whole host of new regulations imposed from not only an animal welfare perspective but also regulation common to other industries has resulted in a pig herd half the size in terms of breeding sow numbers compared to 40 years ago.

see Figure 2 overleaf - graph showing UK female pig breeding herd – Source AHDB Pork

UK pork producers have struggled to contain costs and remain globally competitive. Financial pressures have included high feed costs, production inefficiencies, health challenges, and increasing costs to employ skilled labour.

Restricting environmental and planning legislation coupled with the constant influx of cheap EU imported meat, produced to standards lower than those of the UK, has stifled investment in the British pig industry. Resilient pig producers have strived to establish a UK point-of-difference, often by maximising on unique selling points such as “outdoor reared”.

The question resonates: what is next for the British pig industry? I hope that will be answered in this report.

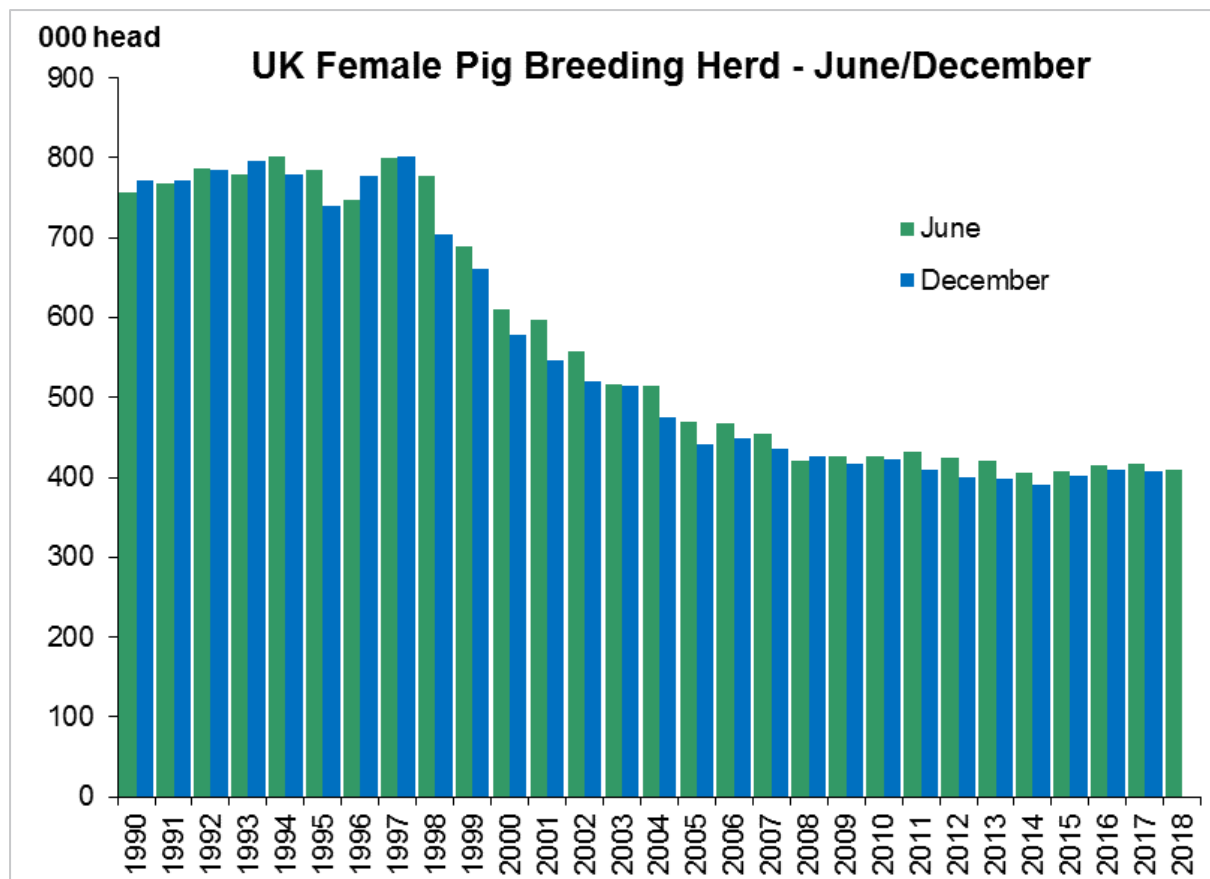


Figure 2: Graph showing UK female pig breeding herd – Source AHDB Pork



3. MY NUFFIELD FARMING TRAVELS

Where/When	Reason
Netherlands April 2018 – 4 days	To follow-up contacts made at the Contemporary Scholars Conference (CSC). The small country that thinks big.
Ireland June 2018 – 4 days	Infrastructure investment and how young entrants are inspired.
China September 2018 – 3 weeks	Viv China Understand the country, culture and pig industry and to learn about export opportunities
Philippines October 2018 – 10 days	Agri Link Trade Show Pig social responsibility projects and industry collaboration
Singapore October 2018 – 3 days	Exporting opportunities and high end butcheries
Japan October 2018 – 2 weeks	Marketing of high value food and exporting opportunities
Germany November 2018 – 3 days	Eurotier Trade Show – product development
Denmark November 2018 – 3 days	Agromek Trade Show Danish Genetics, farm and processor visits
USA May 2019 – 12 days	Alltech Conference Understanding the US pig industry, costs of production and production systems.



4. PIG INDUSTRY STRUCTURE

No two UK pork producing businesses are the same. This is a result of the diversity and variability of the UK agricultural industry.

Generally speaking, the pork industry falls into two different production systems: indoor and outdoor reared. 60% of the UK breeding herd is housed in specialist indoor facilities, similar to that of the rest of the world. The remaining 40% of adult breeding pigs live outdoors on sandy, free draining soil.

The UK's variable soil types and relatively mild maritime climate enables successful outdoor commercial pig breeding. This is unique to the British pig industry and has allowed producers to maximise on niche, high value sales opportunities.

Outdoor commercial pig breeding is unique to the British pig industry and has allowed producers to maximise on niche, high value sales opportunities.

Over recent years consolidation of ownership and vertical integration of business has been witnessed. This shift towards corporate agricultural business ownership is a global trend. Processor-owned pigs now dominate the growth and investment in the UK pig industry. These larger concerns have the benefit of economies of scale and, with a large proportion having other major business concerns, can spread the risk of price volatility and provide stability to the overall business.

The UK pig industry is not directly financially supported by the basic payment scheme.

Case Study: Political Agricultural Support

I visited Westminster to lobby MPs about the future of food, farming and the UK pig industry. This is especially important with UK domestic agricultural policies being discussed relating to post-BREXIT UK agriculture and food production.

I wished to highlight to MPs the importance of a prosperous agricultural industry and its role in assisting the delivery of a buoyant and stable economy by adding significant benefits to a country's GDP. Globally it is thought that a healthy, progressive, agricultural industry is essential for a country's economic prosperity.

I was disappointed to learn from one UK MP that he had no interest in agriculture; his reasoning was that he only had one farmer in his constituency. I responded with my opinion that I expect every constituent eats food and farmers produce food; therefore it was extremely important that MPs engage with the agricultural industry.

Evidence from my study has shown that countries with growing wealth such as China and USA appeared to benefit from government understanding and clear agricultural growth strategy that recognised the economic benefits of a thriving industry.



4.1. Key outcomes of Chapter 4

- Diversity of the British pig production system is an asset to the industry; offering a range of marketing opportunities and ability to produce pork at both the value and premium price points, thus fulfilling the demands of the UK consumer.
- Some MPs do not appear to recognise the importance of UK agriculture for the country's economic prosperity or its ability to feed a nation.

A UK Nuffield Farming Scholarship consists of:

- (1) A briefing in London.
- (2) Joining the week-long Contemporary Scholars' Conference attended by all new Nuffield Farming Scholars worldwide, location varying each year.
- (3) A personal study tour of approximately 8 weeks looking in detail at the Scholar's chosen topic.
- (4) A Global Focus Tour (optional) where a group of 10 Scholars from a mix of the countries where the scheme operates travel together for 7 weeks acquiring a global perspective of agriculture.

The Nuffield Farming Scholarships scheme originated in the UK in 1947 but has since expanded to operate in Australia, New Zealand, Canada, Zimbabwe, France, Ireland, and The Netherlands. Brazil, Chile, South Africa and the USA are in the initial stages of joining the organisation.



5. STRENGTHS, WEAKNESSES, OPPORTUNITIES and THREATS

Throughout my study I engaged regularly with a diverse range of industry stakeholders including farmers, processors, allied industry groups, nutritionists, veterinary consultants and suppliers, to identify strengths, weaknesses, opportunities and threats (S.W.O.T) faced by the UK pig industry.

Below is a summary of responses:

Strengths

- Diverse types of production systems suited to supply pork at all price points.
- Farm auditing and traceability procedures
- Reputation for good animal welfare
- Vast knowledge within the industry with resilient and innovative pig producers
- Genetics to achieve excellent productivity that could be competitive when trading globally
- Supportive and established industry groups: for example, Agricultural and Horticultural Development Board (AHDB), National Pig Association (NPA) and National Farmers Union (NFU)

Weaknesses

- Volatile farm gate prices
- Volatile feed costs due to commodity feed pricing
- Ageing farm infrastructure
- No clear strategic direction for the industry
- Import half of the pork products consumed in the UK
- Dependence on export of sow meat
- Unstable disease status
- Limited access to skilled labour
- Reducing number of processing facilities resulting in fewer buyers who were possibly controlling the market
- Reducing number of smaller, family farms
- Regulation indirectly increasing COP and not comparative to global competitors
- Producer division to protect competitive advantages (e.g. outdoor/indoor/straw/slats)
- Susceptibility to productivity issues caused by extreme weather occurrences
- Bad public image as the industry is appearing to be secretive

Opportunities

- Consumption growth to improve domestic self-sufficiency and export opportunity
- Improve productivity, efficiency and control of costs with the use of technology
- Promote fairness of profits throughout the whole supply chain
- Create clear aims for the industry to stimulate capital investment
- Promote the use of British produce in the food service sector
- Promote environmental benefits of pig farming
- Review and improve resilience to extreme weather
- Improve social responsibility within the whole supply chain
- Invigorate new entrants with support, training and mentoring
- Product development to increase demand for heavier weight pigs. e.g. cured meats, UK charcuterie and 'the wonky chop'.

Threats

- Pig health and disease outbreaks
- Erratic consumer behaviour and trends
- Reputational damage
- Food fraud
- Climate Change
- Exporting trade restriction



Despite the aim of this report being to build on positive strengths and opportunities for the pig industry, it is necessary to address identified threats and recommend solutions to overcome them.

5a. Supply Chain Collaboration

Threats identified will concern every pig producer in the UK and are regularly discussed in industry publications. I soon realised that very little can be done by individual farm businesses to overcome major threats faced by the industry. Resolution would require collaboration of the whole supply chain including industry bodies, politicians, producers, processors and retailers.

5b. Pig Health

A major threat to the UK pig industry is African Swine Fever (ASF). During my tour of China in October 2018 the Chinese government admitted they were struggling to contain a deadly outbreak. ASF is a viral disease that is highly contagious and can cause 100% pig mortality.

If ASF were to be found in the UK pig herd all export agreements would cease with immediate effect. Huge devastation would be caused to the industry as a result of substantial animal and financial losses. It remains unknown as to how long it would take to re-establish trade agreements.

Throughout my travels ASF limited my ability to visit pig units, farm bio-security being a top priority to prevent the spread of the virus. Similar action is urgently required in the UK to prevent the pig herd being affected and potentially decimated by ASF. Country border bio-security needs to be closely monitored; education of staff and visitors along with clear signage would also be advantageous. A similar border control system to that evident in New Zealand and Australia would reduce risk to the UK agricultural industry.

A similar border control system to that evident in New Zealand and Australia would reduce risk to the UK agricultural industry.

Poor animal health status affects the efficiency of a pig herd. Producers in the UK already work closely with vets to improve animal health. PRRS (Porcine Reproductive and Respiratory Syndrome) and reducing antibiotic resistance has been the primary focus over the last four years. Progress has been made to reduce antibiotic use. The success of this initiative has been the result of industry collaboration, although further research and development is required to combat the fast changing strains of the PRRS virus.

5c. Consumer Behaviour and Trends

"A Taste of Generation YUM" by Eve Turow is an interesting insight into how the millennial generation identify as 'foodies'. It details how we differentiate ourselves by the type of food that we eat and our relationship with food.

The food we consume is becoming as trendy as the latest fashion clothing brand.



Social media platforms are being exploited for both positive and negative images and messages about farming practice in the UK. My research identified that potential investors are not willing to risk reputation by investing in commercial pig farming.

Throughout my study the plant-based diet was a prevalent trend in urban areas of Western Europe.

Throughout my study the plant-based diet was a prevalent trend in urban areas of Western Europe.

Converts to these diets were doing so on several grounds: alleged animal cruelty concerns; personal health beliefs; and perceived higher output of human food from growing vegetables as opposed to converting vegetable matter into meat before it is eaten. Figure 3 below details how analysts at Barclays, Euromonitor, have predicted that the global market for animal-free meat substitutes could grow more than tenfold over the next decade and potentially reach \$140 billion by 2029.

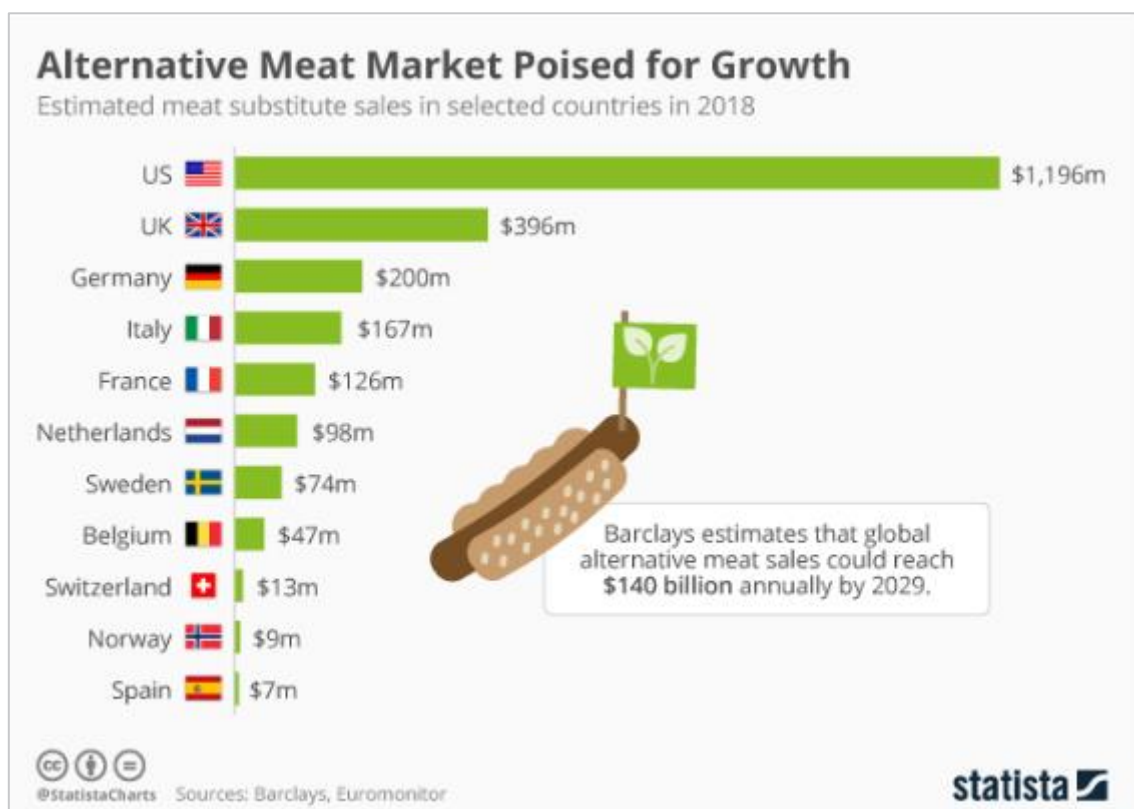


Figure 3: Alternative meat market poised for growth- source: Barclays, Euromonitor

The growth of alternative meats is inevitable, as is population growth and increased meat consumption and demand in developing countries.

see overleaf for Figure 4: Global Meat Consumption

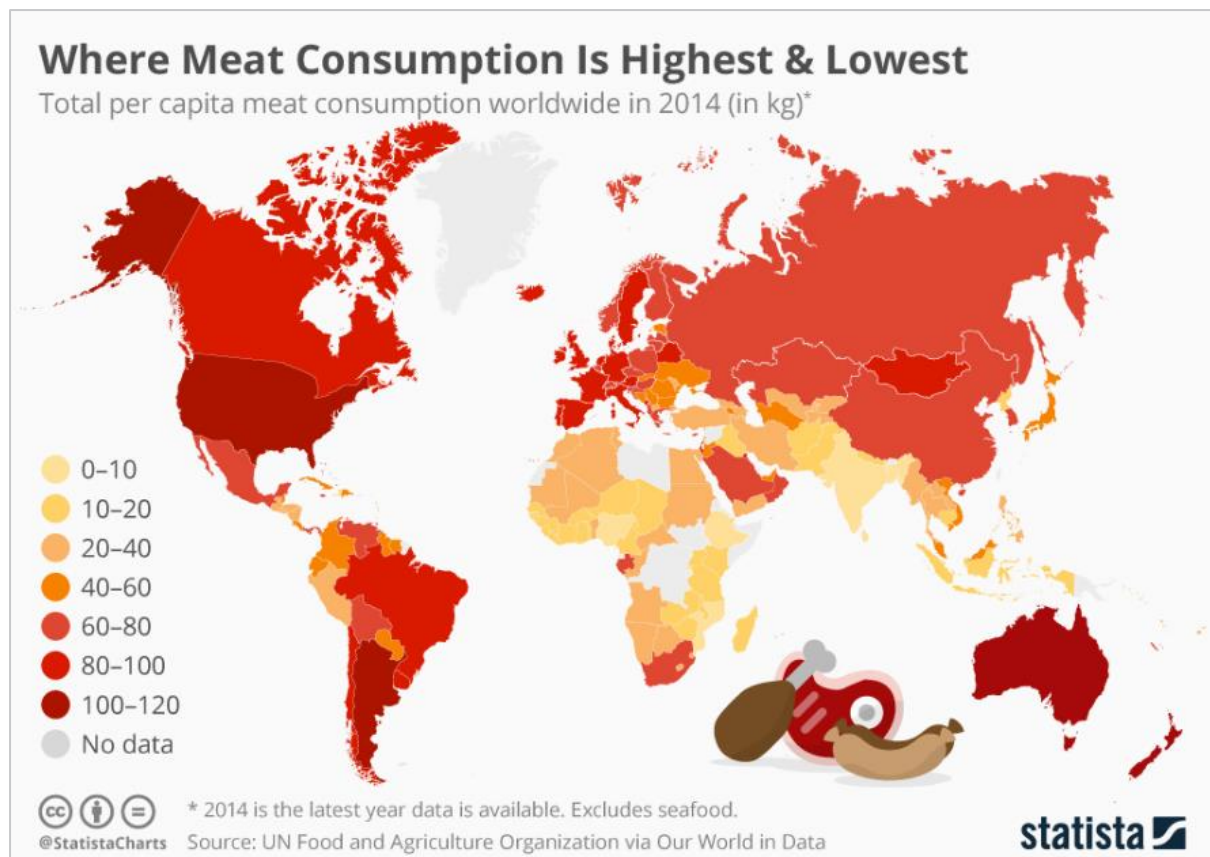


Figure 4: Global Meat Consumption source: UN Food & Agriculture Organization via Our World in Data

To resolve these points the supply chain must collaborate to communicate the positive messages about UK meat production:

- Possibly half of the UK is unsuitable for vegetable production
- Food provenance and clear country-of-origin labelling is required to understand legislation including animal welfare and food safety
- Reduced food miles will decrease CO2 emissions and environmental impact
- Climate and soil type determine what food can be grown where

It was very interesting to be introduced to a book called “PIG 05049” by Dutch author Christien Meindertsma, which chronicles the many consumer products that were made from a pig called 05049.

The book offers an insightful and thought-provoking look into how this one animal provides raw material for a vast number of everyday objects such as: ammunition, paracetamol, photo paper, cigarettes, hair conditioner and bio diesel.

UK processors predict that as meat consumption in the UK decreases animal bi-products will become increasingly more valuable.

UK processors predict that, as meat consumption in the UK decreases, animal bi-products will become increasingly more valuable.



5d. Food Fraud

The National Farmers Union has identified food fraud as a threat to the UK agricultural industry. On the 15th January, 2015, DNA tests on some frozen beefburgers confirmed undeclared traces of horsemeat. While undeclared meat is not a health issue, the scandal revealed a major breakdown in the traceability of the UK food supply chain. In 2017 food service supplier Russell Hume was whistle blown for serious non-compliance with food hygiene regulations.

Case Study: Philippines Food Fraud

The Filipino pig industry was buoyant during my visit in 2018, driven by high demand for pork and clear government strategy.

It was reported that a change of government had resulted in a reduction of corruption within the food industry. Pig smuggling and mis-declaration of imported pork products had previously put Filipino pig farmers at a competitive disadvantage. The government reviewed regulation, declaration of imported pork, and carried out traceability testing to reduce food fraud.

I recommend that cross departmental collaboration is encouraged to limit anti-competitive practices within the UK supply chain. Technology may be the answer to improved and fair payment structures. Opportunities to enhance supply-on-demand livestock trading, as well as reducing food waste and improving traceability of food, will aid transparency in the UK food supply chain.

UK producers boast of resilience and should remain optimistic about the strengths of the industry. The reduction of antibiotic use illustrates how, with collaborative support and action, the industry can achieve good things.

Threats are challenges, yet resilient producers will overcome these challenges. The next chapter illustrates the major opportunities for investors to consider.

5.e. Key outcomes of Chapter 5

Strengths and opportunities for the pig industry outweigh weaknesses and threats: stakeholder collaboration is required to overcome challenges.

- It is paramount that both country border and farm bio-security are closely monitored to prevent the UK pig herd being affected and potentially decimated by animal disease outbreaks.
- Cross departmental collaboration is required to limit anti-competitive practices within the supply chain.
- Investors should not be deterred by negative media rhetoric and fast changing consumer trends



6. PRODUCTIVITY, EFFICIENCY and COMPETITIVENESS

6.1. Costs and Margins

AHDB Pork produces market intelligence reports to provide useful reference information on costs of production and net margins. Historically, the pig industry has experienced extreme economic volatility, not uncommon to other commodity industries.

During my 18-month study, pig prices plummeted, hitting a low in February 2019 at 135.08p/kg. Costs of production rocketed to an estimated £156p/kg with feed representing 62% of the cost of production. Net margins for many pig producers were running at a loss for at least a 4-month period. In comparison a peak price of 164.75p/kg was experienced in July 2017, highlighting the income uncertainty faced by the industry.

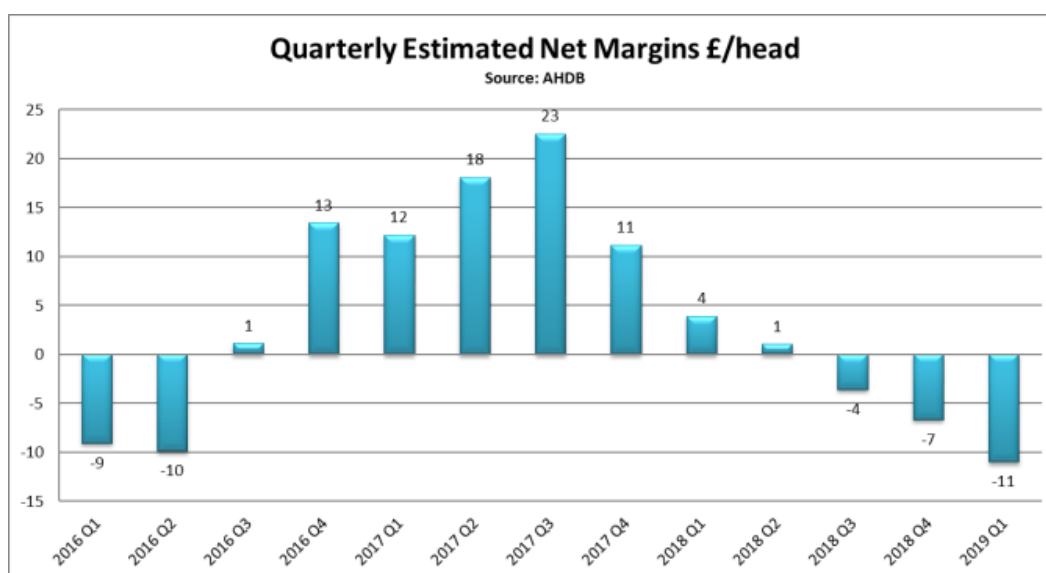


Figure 5: Quarterly Estimated New Margin £/head source: AHDB Pork

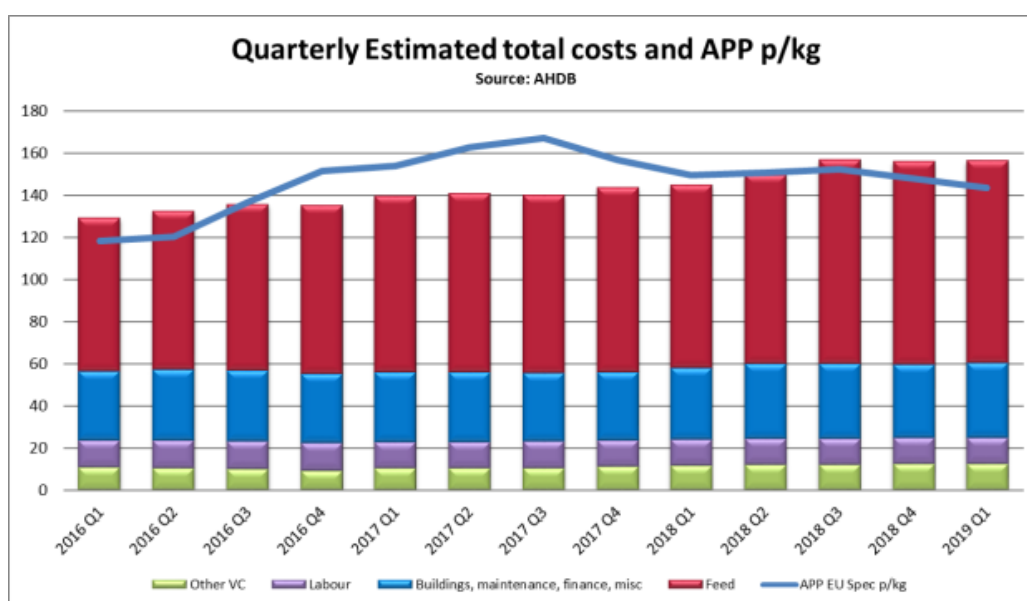


Figure 6: Quarterly Estimated total costs and APP p/kg source: AHDB Pork



Despite volatility there are investment opportunities for next-generation pig producers. A shortage of pig finishing accommodation in the UK may prove to be a lucrative investment for those wishing to start out in the pig industry.

Case Study – White Rose Farms, Yorkshire

I met with the business production director, Harvey May, to find out how White Rose Farms are inspiring investment in the British pig industry.

Q. Tell me a bit about White Rose Farms and its aspirations?

A. White Rose Farms has the ambition to be market leaders in pig performance with a desire to achieve an industry-low cost of production.

When rebuilding units our key focus is on animal and staff welfare. We currently have three sites located in Yorkshire and Lincolnshire all of which are under redevelopment - these sites are specialist breeding farms that will produce 35kg pigs. Our business requires contract pig finishing facilities so that we can take pigs up to optimum finishing weight. This creates a perfect opportunity for us to support a new generation of pig farmers.

Q. What advice would you give to someone considering investing in the UK pig Industry?

A. The easiest and lowest risk route for a new entrant to get into the pig industry is through what is known as bed & breakfast pig keeping. The term “Bed & Breakfast” is used to describe a system where the farmer looks after a group of pigs until they reach the desired weight. The farmer never outright owns the pigs, nor will have to purchase any of the feed, or supply vet and medication, sundries etc. the farmer will supply the building, labour and services.

Q. What Capital investment is required and what return on investment should be expected?

A. White Rose Farms is looking for fully slatted accommodation: this will give better performance and produce a consistent animal. The typical build-cost for a finisher building is currently in the region of £305/pig place. White Rose Farms offer a 10-15 year contract depending what suits the farmer. Payment is per place per year and then paid every month in equal instalments depending on how many places are on the farm. This offers a risk-free investment, with a 12% return on investment including the value of the slurry.

Q. In your opinion what is the optimum sized farm?

To keep economy of scale I would advise a building that would take 1000 or 2000 pigs. This would also keep businesses under the environmentally permitted level. The latter involves added cost and is a lengthy procedure to obtain. To maximise slurry use, a 2000 place building would need 200-250 acres of land for spreading.

Q. What kind of person/business is suited to pig keeping?

A. The ideal agri-business to invest in contract pig finishing, from my past experience, is not necessarily fronted by someone who has stock experience, although this would be an advantage as the pig husbandry comes more naturally.

If the business owner has a sibling or son/daughter who wants to work on the family farm after college, or has been working away and needs another venture and income to support their return into the business, this would be an ideal opportunity. Contract pig finishing could buffer an arable income as basic payment schemes are phasing out over the next few years, it is a great diversification opportunity.

To find out more about contract pig finishing at White Rose Farms, contact Harvey May - Harvey.May@whiterosefarms.co.uk



The White Rose Farm case study highlights opportunities for medium to long term partnership agreements with integrators. These larger concerns have the benefit of economies of scale and ability to spread risk: to reduce volatility and guarantee a return on investment. Legal advice should be sought before signing in to contracts, and options to seek guarantors from parent companies explored.

Whilst these agreements are suited to those with an established farm connection, this option still remains difficult for those without existing connections in farming, or those with limited financial resource. Should any party be desirous of a career in the pig industry they will be reliant on being an employee of an existing concern. This should not be a barrier for those with an interest in pig keeping. A career in the pig industry will be without a doubt rewarding, challenging and diverse. Potential career opportunities are highlighted in Chapter 10 entitled 'Inspiring People'.

6.2 Global Competitiveness

EU Countries including Denmark, Netherlands, Spain, Germany and Italy are major competitors to UK pig producers. Future trade deals and their effects on the UK pig industry post BREXIT are yet to be established. Changes to trade agreements may impact the global pig industry, which made me wonder if the UK industry was competitive globally.

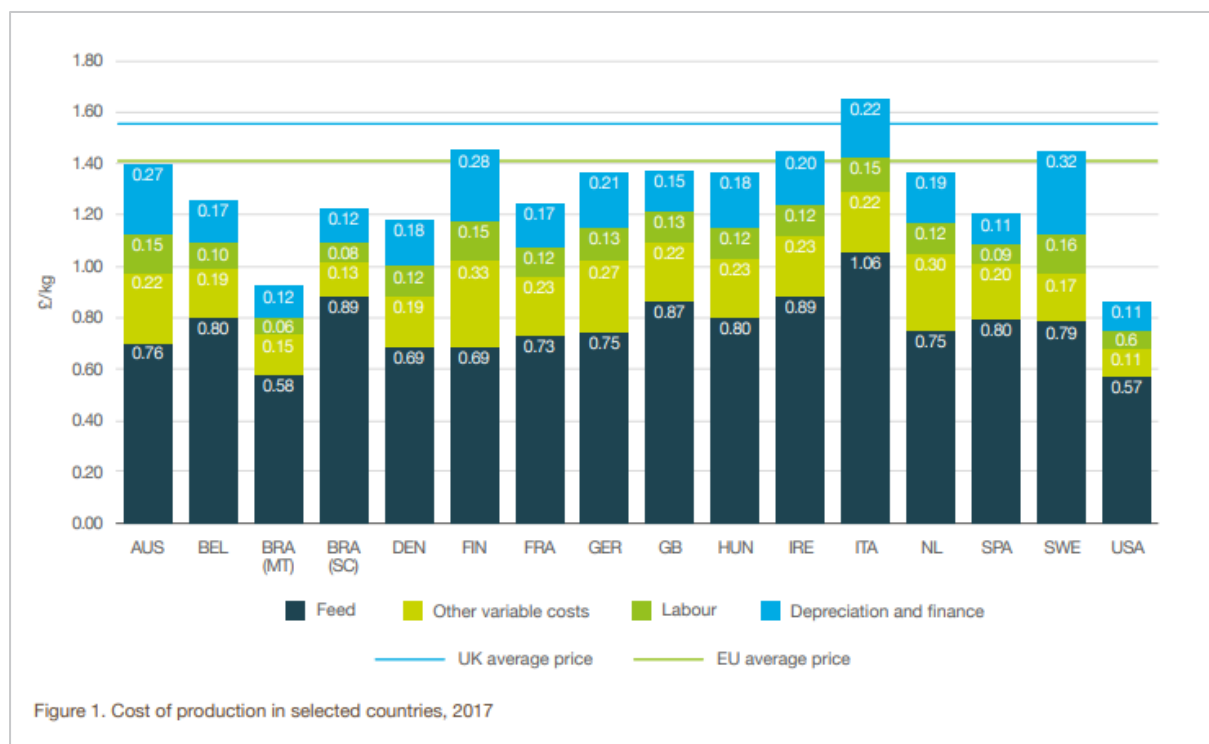


Figure 7 – Cost of Production in selected countries, 2017. Source: AHDB Pork

The above graph indicates that we would be unable to compete against the USA should the UK be competing directly without tariffs or support. This evidence prompted my visit to the USA.



Case Study – USA

I visited the USA in May 2019 with the aim of understanding their agricultural support mechanism, costs of production and issues facing the US pig industry.

Financial Support for USA Agriculture

Agriculture is the Number 1 industry in North Carolina; contributing \$87b to the state's economy (www.ncagr.gov). Agricultural support is in the form of an \$876billion farm bill.

"The 2018 Farm Bill provides support, certainty, and stability to our nation's farmers, ranchers, and forest managers by enhancing farm support programs, improving crop insurance, maintaining disaster programs, and promoting and supporting voluntary conservation."

About the US pig Industry

With over 9 million pigs, North Carolina is the 2nd largest pig producing state in the USA, behind Iowa. The pork industry in North Carolina employs more than 46,000 people throughout the pork production, processing and distribution chain. It is an important industry for the economy.

The US pig industry had experienced vertical integration with a large part of the NC hog industry owned by a small number of key players including Murphy Brown LLC, a subsidiary of the Chinese-owned Smithfield Foods (<http://www.murphybrownllc.com>).

Family farmers owned the land asset and buildings, whilst the integrator owns feed systems and livestock. These business agreements were described as *"a marriage rather than a business relationship"* by pig farmer Bill Warren who fattened pigs for Prestage Farms.

Moratorium Restricting Growth

I was surprised to learn that a moratorium had been placed on the NC pig industry in the mid 1990s, restricting expansion of the pig herd. This was made permanent in 2007.

Initially this restriction appeared to be a disaster for the industry. As time passed the increased asset value of farms with slurry lagoon capacity has created financial benefits for US pig farmers.



Figure 8: A ‘selfie’ with pig farmer Bill Warren (left), my host; Archie Griffin (back) his fiancée Zannah Webster and Mr and Mrs Webster in Clinton, North Carolina.



Figure 9: “Save our farms” signage on a housing estate in Clinton, NC



Figure 10: “No Farms, No Food” road side signage in Clinton, NC

6.3. Why has the US got lower costs of production compared to the UK? My Observations

The US producer’s main focus was to be as efficient as possible - this is where I believe the difference between UK and USA costs of production lies.

The pigs I visited were in very good health and condition; productivity and genetics were similar to those of the UK. Below I outline some of my observations in the USA, which in my opinion, result in low costs of production and efficiency.

see table on next page



<p>Farm Assurance & Regulation</p> <p>The USDA (United States Department of Agriculture) has its own branding on food products. The ministry standards are highly regarded and trusted by US consumers and each State is accountable for the implementation of farm regulation. In line with all of the countries I visited during my study, the production systems I saw would be illegal in the UK and would not pass the UK Welfare Standards. These more efficient systems and lower regulation burden offers US pork producers a cost-of-production advantage.</p>	<p>Housing</p> <p>All of the commercial pigs are housed indoors. The use of gestation stalls is the norm; this allows for individual sow care and feeding although some may question if this allows the pigs to express their 5 freedoms. Slat widths were a standard width and wider than the legal allowance in the UK.</p>
<p>Feed</p> <p>The farmers I spoke to were contract rearing so did not know the exact inputs and costs of feed. They did report a contract change due to a change of feed not achieving growth rates.</p>	<p>Labour</p> <p>Individual sow care was less labour intensive than some UK systems. The use of Mexican labour was widespread – this was not cheap labour but it was reported that they worked efficiently.</p>
<p>Health</p> <p>Teething, tailing and castration of piglets was widespread and seen as necessary for pig welfare and eating quality. Pig toys and enrichment was not evident.</p>	<p>Ventilation</p> <p>A lot of emphasis was placed on ventilation to achieve optimum growth rates. Extreme temperatures were well managed using cooling walls and strategic fan and vent placement along with automated curtain sides in some finishing accommodation.</p>
<p>Weights</p> <p>Processing facilities were requiring pigs at 140kg live weight. These heavier pigs improve on-farm efficiency: meat eating quality was maintained due to castration.</p>	<p>Waste Disposal</p> <p>Automatic irrigation systems emptied slurry lagoons reducing the cost of waste disposal. These were all fitted with sim cards for activation by phone apps. Composting systems were used for carcass disposal.</p>

Comparisons between the UK and US pig industries proved useful to understand how differing interpretation of regulation impacted an industry and its progressiveness, and helped me understand how UK regulation restricts global competitiveness.

The American industry is experiencing negative rhetoric not uncommon to the UK, yet the US continues to operate with some of the lowest costs of production (as detailed in figure 7) with the exploitation of marginal gains.

It poses the question: If the UK pig industry improves its efficiency and global competitiveness, will there be sufficient market opportunities? This will be answered in the next chapter.

see next page for Key Outcomes of Chapter 6



6.4. Key outcomes of Chapter 6

- Volatility of pricing and increasing input costs will continue the trend of consolidation of ownership and vertical integration in the UK pig industry.
- In order to sustain/grow the British pig industry medium to long term partnership agreements with integrators will provide investment opportunity for the next generation of pig producers, including guaranteed return on investment; these agreements will dominate the short to medium term growth of the pig industry.
- Capital investment is required to gain production efficiencies that will improve UK pork competitiveness in the global trading environment.
- Regulation imposed on UK pork production increases costs of production impacting on the industry's capability to compete globally.



7. POPULATION GROWTH = MARKET OPPORTUNITIES

It is well documented in the media and previous Nuffield Farming reports that both the UK and global population is growing. Currently the UK population is 66 million; this is projected to increase to more than 74 million by 2039. Alongside reducing food waste farmers must also rise to the challenge of producing more from less.

Surprisingly, countries like China and Japan were experiencing economic pressures due to reducing and ageing populations, citing 'reducing population' as a restricting factor to their economic growth.

The United Nations has released statistics about global population growth, stating that by 2100 it is estimated that the planet will have to sustain 11 billion people.

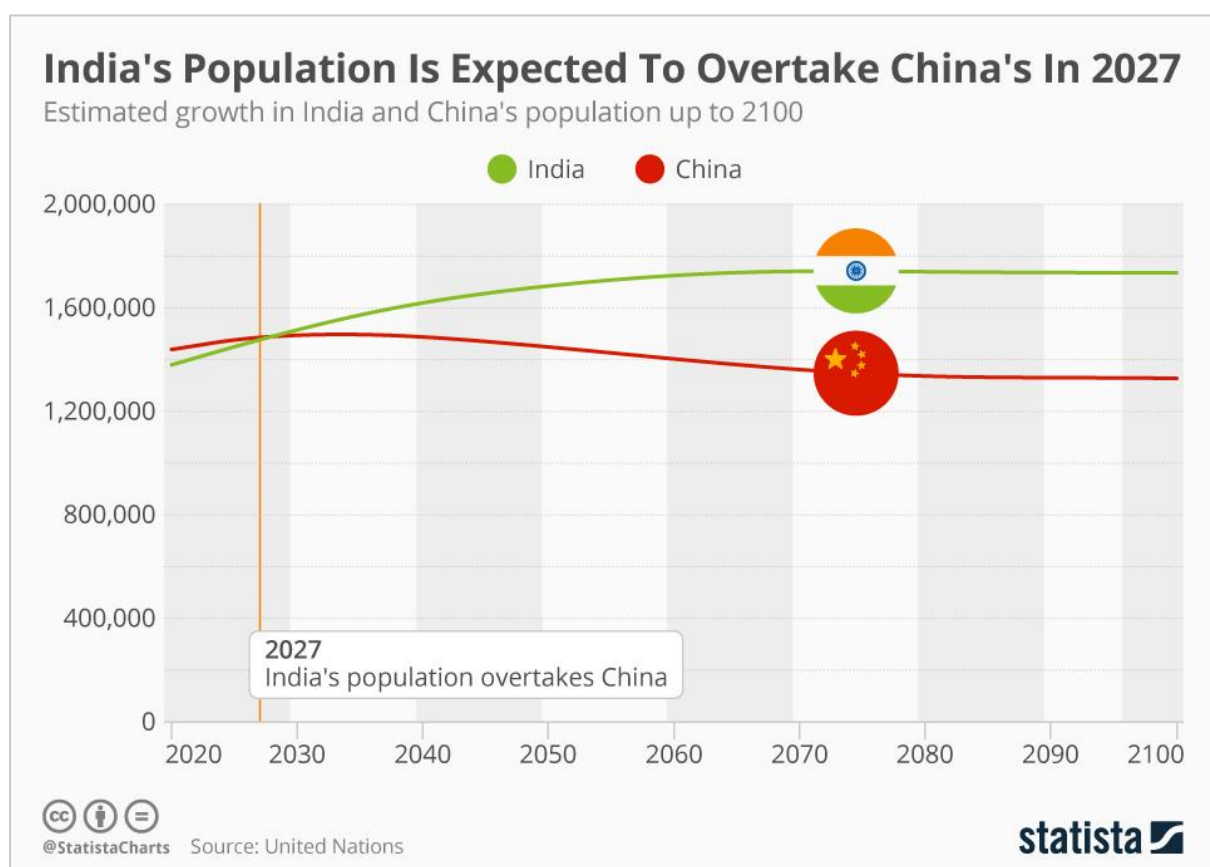


Figure 11a – India's Population to exceed Chinas by 2027 Source: UN publications via statista

see overleaf for chart to show Most Populous Nations on Earth

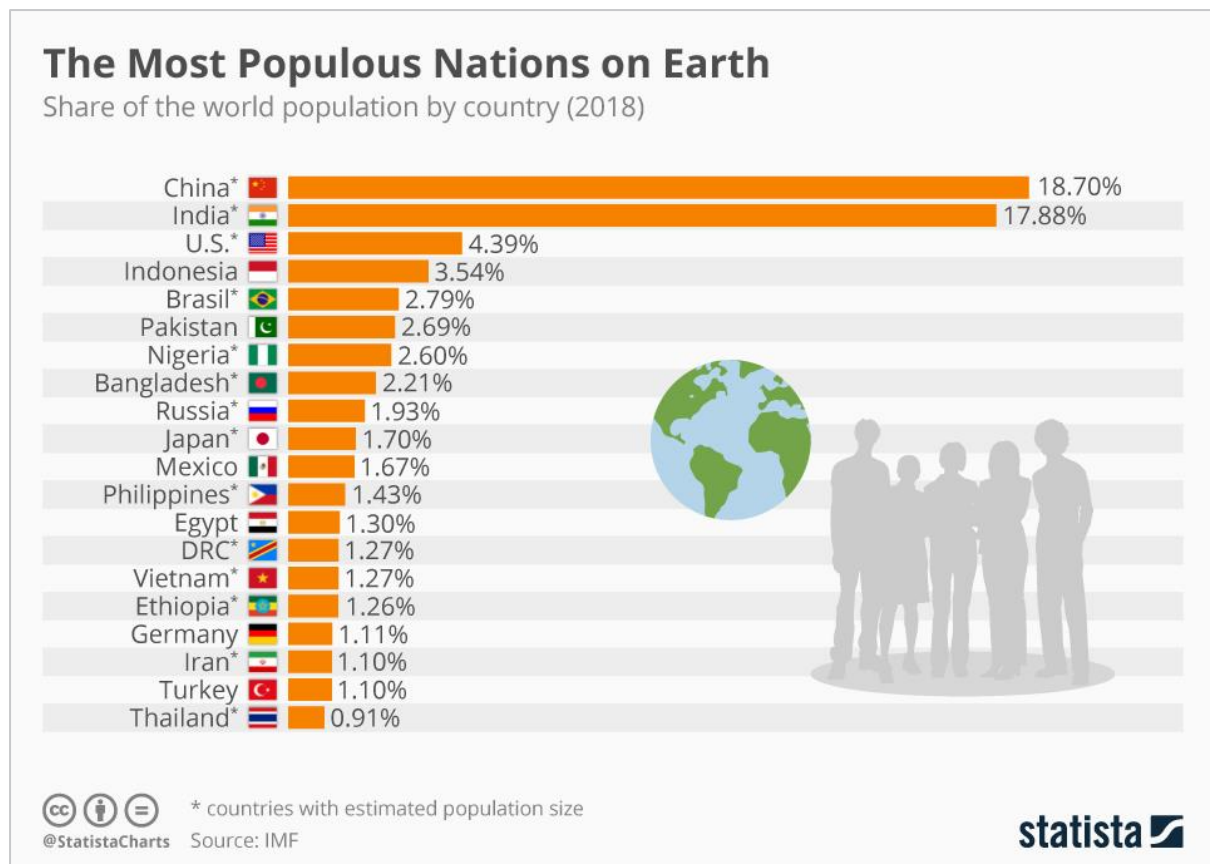


Figure 11b – Most Populous Nations on Earth Source: IMF via Statista

Between now and 2050, India is expected to show the highest population increase of any nation, overtaking China as the world's most populous country by around 2027. The countries expected to record the next biggest increase in population are Nigeria, the Democratic Republic of the Congo, Ethiopia and Tanzania, which is prompting the Chinese government to trade with the countries experiencing a growing population.

Pork is the world's most consumed meat protein, with over one billion pigs farmed globally each year, producing over 110 million tons of meat. China is by far the world's largest pork producer, with the European Union being the 2nd largest pork producer.

see Figure 11c on next page – number of pigs worldwide

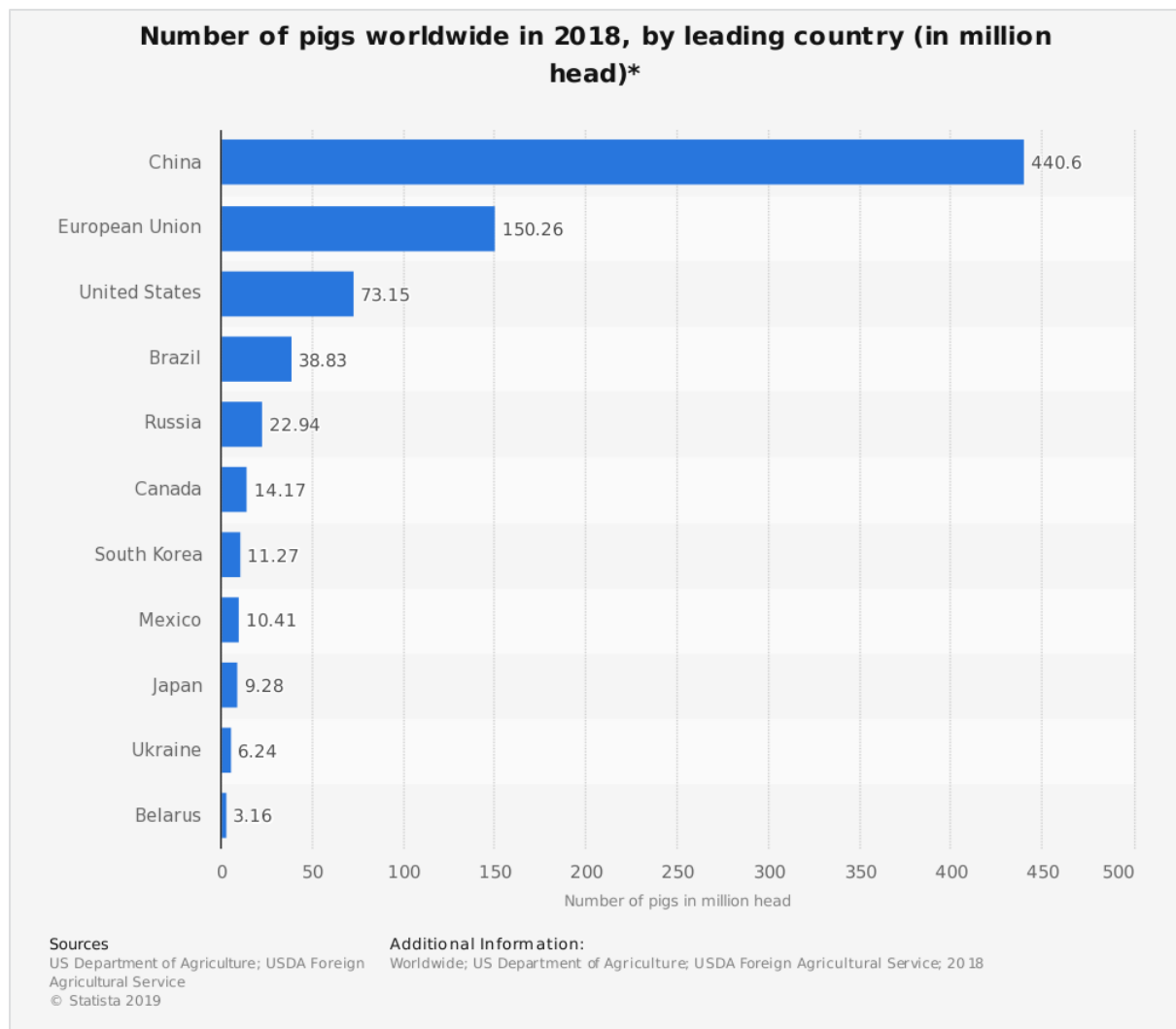


Figure 11c: Number of Pigs Worldwide in 2018. Source: US Department of Agriculture, USDA Foreign Agricultural Service

Global pork consumption is predicted to rise steadily in the coming years, increasing from the current 117 metric kilotons to 131 metric kilotons by 2027 (*Source: USDA Foreign Agricultural Service*). The UK imports around half of its food, and our diets are very varied, demanding a wide range of foodstuffs to be available year-round. This gives strength to the idea that, even if consumption per capita reduces, population growth will secure medium-to-long term demand for pork.

So how can the UK grow consumption in the short term to protect our ability to feed a growing global population in the long term?

Currently annual consumption of pork in the UK is 1.7million tonnes: 858,000 tonnes is produced in the UK, resulting in the industry being 52% self-sufficient (*Source: AHDB*). Despite negative health claims, processed pork products have shown increase in demand. In 2017 bacon grew by 2% in volume, gammon 2% and fresh pork sausages 3% increase year on year *Source: Kantar world panel, AHDB Pork pocketbook 2018*).



Frozen and loose fresh pork has experienced significant reduced retail demand - of up to 25% in volume. Independent butchers have also struggled to compete with the scale and competitive pricing set by supermarkets.

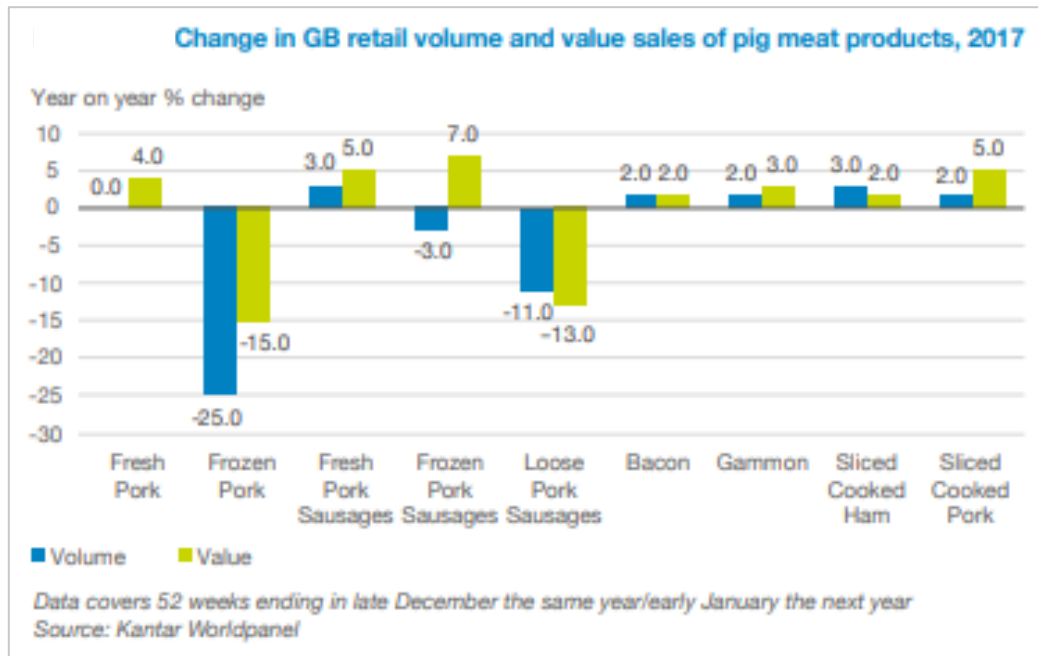


Figure 11d: Change in GB retail volume and value sales of pig meat products, 2017
Source – Kantar Worldpanel via AHDB Pork Pocketbook 2018



Figure 12: GB volume sales of pig meat by product, 2017
Source – Kantar Worldpanel via AHDB Pork Pocketbook 2018



Bacon currently represents the highest volume of pig meat sales in the UK. Michael Gove, Secretary of State for DEFRA (2019), mentioned in his address at the NFU National AGM in 2019 that there was an opportunity to offset imported gammon, hams and bacon by investing in processing facilities in the UK.

Due to wide range of incomes in the UK population it is envisaged that the UK consumer will continue to require an increasing range of pork products from the value to the premium.

With this in mind, I visited UK producers who were specifically targeting growth markets in the UK to develop a sustainable business model.

Case Study: Dingley Dell Pork

Mark Haywood farms outdoor pigs in Suffolk. Mark was striving to produce optimum tasting pork, targeting the food service sector outlet. He engaged with chefs by inviting them onto farm. This enabled him to tell his story and explain how genetics, breed and feed affected the taste of pork. He educated his visitors on how to cook pork for exceptional taste. This engagement has earned him sales opportunities in some of the most prestigious outlets in central London and Internationally.

Mark was passionate about creating a brand that was engaging and memorable. His ploys included a festival on the farm; a campaign to encourage bees to wild flowers in field margins; and painting his pig arks in bright colours. Social media was used to communicate his activity.



Figure 13: Angela Kirkwood, Mark Haywood and Stephen Hall at Dingley Dell Farm



Figure 14: 'Pig Fizz' A gift from Dingley Dell Farm

Case Study – London Smithfield Market

At 2am every weekday London Smithfield Market comes alive with traders buying predominantly for the London food service sector and Eastern European customers.

The trader Absalom & Tribe were supplying top quality hotels and food service in the capital. Demand was for suckling pig and pork with great provenance and a strong story.

Village Meats were trading with a focus purely on low price. *“Provenance is not a priority for this market”*, Ian Potter from Village Meats told me: *“Price in King”*. For this reason I saw a lot of Spanish pork being sold through the market. I learned that buyers traded container loads of boxed meats which enabled imported pork to change hands at a very reasonable price.



Figure 15: London Smithfield Market

No use of the Red Tractor assurance logos was seen during my visit. When I discussed this with a trader I was told that it was seen as the lowest of the low. The lack of support for UK provenance in Smithfield Market was disappointing. This visit helped me understand that work can be done to produce UK pork at a price point to target the food service sector.

My observations at London Smithfield Market highlighted the opportunity to review imported products which will become more prevalent post BREXIT. Part of the increased sales growth of pork will be attributable to pork consumers eating outside home and purchasing convenience food.

7a. Marketing

All of the countries I visited boasted their national flag on retail packaging and aimed to improve brand image and awareness with consumers. In Denmark TV advertisements focussed on telling the story of Danish farmers whilst in China there was a focus on a 'green' brand image. The Japanese were using key events such as the 2020 Olympics in Tokyo as a springboard to promote Japanese food.



Case Study – UK Pork Marketing

Pulled Pork and Pick Pork marketing campaigns were two initiatives funded by AHDB Pork levy payers. Major objectives of these campaigns were to rejuvenate the image of pork warranting over a third of the AHDB Pork budget to be spent on pork marketing. Marketing campaigns had been well received by major retailers with all major supermarkets engaging at some level and experiencing uplifts in sales.

Research from Kantar World panel evidenced the first pulled pork campaign delivered incremental revenue of £13.2 million, with £6.43 of extra retail sales generated for each £1 of marketing media spend. The second AHDB marketing campaign focussed on healthy mid-week eating of pork and the team at AHDB developed a new healthy cut called *Pork Medallion*.



Figure 16: Pick Pork Medallions – Source AHDB Media Pack



Clear and regulated British branding and labelling of pork post BREXIT will offer a valuable tool to promote British food to the consumer. Cross sector support and funding to identify and promote British provenance will be beneficial to increase domestic demand for UK pork products along with clear and concise messages being conveyed to consumers as to why they should buy British.

This opportunity was highlighted in June 2019 when Michael Gove, then Secretary of State for DEFRA, quoted 'Brand Britain' as a priority for UK government, with the proposed investment and development of the GREAT food campaign.

Case Study – The GREAT Britain Campaign

At the time of writing, recognition of the GREAT campaign in the UK was minimal: primarily because it is a marketing campaign to promote British industry globally. I raise this case study as an example of GREAT British branding and the future potential to target and grow domestic British pork consumption.



Figure 17: The GREAT Campaign, own photo taken at Heathrow Airport

Bringing the best of Britain to the world

"The GREAT Britain campaign showcases the best of what our whole nation has to offer to inspire the world and encourage people to visit, do business, invest and study in the UK. GREAT is the Government's most ambitious international promotional campaign ever, uniting the efforts of the public and private sector to generate jobs and growth for Britain."

"Our aim is to encourage people around the world to think and feel differently about the UK." Source: <http://www.greatbritaincampaign.com/#!/about>



UK pork marketing has focussed on increasing overall demand for pork rather than provenance. This approach is exclusive to UK pork marketing, with all other countries taking a more patriotic approach.

UK processors and marketing teams supported the wider promotion of pork whilst producers requested promotion of 'Brand Britain'.

The GREAT Britain campaign offers a government-supported marketing resource, that could promote the British food and farming brand to both the domestic and exports markets.

Future thought should be given to deliver clear and concise messaging to the consumer about why British food provenance is important, with standardised and recognisable use of the British brand.

7b. Export Opportunities

287,000t of UK pork was exported in 2017 (*Source: AHDB*). Exports primarily seek sales outlets to achieve carcass balance and sales of 5th quarter cuts; 57% of these exports go to the EU and 43% to third countries such as China. (*data: AHDB data - Jonathon Eckley presentation*).

The UK depends upon sow meat to be exported to Germany. The continuation of this outlet is paramount unless alternative markets are identified. The AHDB export team will be required to develop new sow trading opportunities in countries outside of the EU. Success over recent years has focussed around increasing exports to China.

Consideration must be given to currency exchange rates and how the value of the GBP will determine export potential.

Tom Hind, Chief Strategy Director at AHDB, has communicated well to the industry and the work being carried out is clearly communicated in published Horizon Documentation which proves a useful communication tool. <https://ahdb.org.uk/knowledge-library/consumer-insight-international-consumer-buying-behaviour-april-2018>

The medium to long term growth in demand, requirement for affordable food and need for a consistent supply of food, made me consider the resilience of the UK pig industry. This is explored in the next chapter of my report.

7c. Key outcomes of Chapter 7

- Pork is the most widely consumed meat protein in the world. Population growth and increasing wealth will increase global pork consumption, offering opportunity to grow the British pig industry.
- It is envisaged that the UK consumer will have a requirement for an increasing range of British pork products from the value to the premium retailers.
- The opportunity to review imported products will become more prevalent post BREXIT. Part of the increased sales growth of pork will be attributable to pork consumers eating away from home and purchasing convenience food.



- There remains scope to offset imported bacon, gammon and charcuterie in the coming years.
- 'Brand Britain' package labelling is necessary to develop consumer trust and loyalty. A clear and concise message needs to be conveyed to consumers as to why they should buy British.
- The fluctuation of currency exchange rate will always determine the exporting potential. The UK needs to focus on traceability to promote trust in the safety of British food.



8. A RESILIENT INDUSTRY to PRODUCE AFFORDABLE FOOD

Farmers face growing pressure to produce more food, more sustainably, in the presence of environmental and regulatory change. There are also social issues like ending hunger and tackling health problems. The challenge is vast and the requirement to produce healthy affordable food for more people is not only a national but global issue.

Prior to my Nuffield Farming study I was unaware of any significant UK academic research focussing on the pig industry. Unfortunately, I did not review academic research during my travels so cannot give a balanced comparison on global R&D spending and topics.

This aside, my study did highlight the importance of improving resilience to create an industry that is capable of managing shocks and promoting positivity to secure future healthy, affordable food supplies.

Did you know that there are numerous research projects underway in UK universities?

Projects include: **SusPigSys** project by Newcastle University, **iknowfood.org** involving York, Liverpool and Manchester Universities, and the **Pig Sustain** project by Leeds, Reading and Lincoln universities.

In March 2019 I met with Professor Lisa Collins and her team who were working on the Pig Sustain project. My aim was to gain a wider understand of the research that was being conducted on behalf of the industry.

Case Study – PigSustain

PIG Sustain is the most comprehensive examination of the UK pig industry's resilience ever conducted.

I met with Professor Lisa Collins who is leading the £2.1million, 48-month project looking into the resilience of the UK pig industry.

Q. How did the idea of Pig Sustain start?

A. The UK food system involves many activities from producing and processing, to distributing and retailing food. All of these activities are influenced by social, policy, technological, market, environmental and economic forces, trends and shocks, which make the UK food system vulnerable to disruption.

Extreme weather, disease, conflict and currency fluctuations all affect crop production, logistics and trade. The effects of an identified food system - 'drivers' - lead to volatility in food supply and ultimately affordability of food. Over the past 50 years, the UK has experienced major shifts in dietary patterns due to changes in agricultural practice, trade policies and food industry marketing.

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Q. What is PigSustain focussing on?

A. We hope to provide an evidence base to underpin the UK's strategic approach to food security and resilient food system in a changing world. It will inform how we monitor, manage and mitigate short and long term risks to the resilience of the food system. We aim to collate data and model scenarios and the effects it would have on the industry.

Q. How are you involving the industry with the project?

A. From the outset, this project was developed with the input of industry partners to ensure that the questions we aim to answer with this research are relevant to the industry. The collaborative approach of working together to develop the project will ensure the results provide timely and useful information to the pig industry to enable them to make better informed decisions.

To find out more about the Pig Sustain project

<https://gtr.ukri.org/projects?ref=BB%2FN020790%2F1>

I attended a stakeholder workshop organised by the PigSustain team in April 2019. The aim was to explore future scenarios for the UK pig industry within the context of the global food system. There were representatives from across the industry, including supermarket buyers, APHA, veterinary consultants, AHDB, DEFRA, FSA, producers and food processors. There were very few pig producers at the workshop. I was unsure if this was strategic or because it was a challenge for academics to communicate with the industry. As with all research: findings must be presented in a way that is commercially beneficial for the industry.

Despite the lack of producer attendance, open discussions focussed on the critical uncertainties in the industry in the hope that academics would gain a vision of what the future of the pig industry may look like. It is hoped that this research will uncover techniques to improve resilience based on understanding changing consumption trends, and the urban/rural divide.

Outcomes focussed around good pig health with resilience to disease pressures, paying particular attention to the devastating effects an outbreak of African Swine Fever would have, along with a drive to promote environmental best practice to reduce the impact of meat consumption on the climate.

The next chapter of my report will consider how the industry can evolve to achieve environmental best practice.



8a. Key outcomes of Chapter 8

- It was exciting to learn that research projects are bringing together industry stakeholders to collate data in which to prove the importance of a strategic plan for the future of food and the pig industry.
- It will be a challenge yet important for academics to communicate their findings to the industry.
- To achieve short to medium term pig industry sustainability and resilience, outcomes of academic research are required to be commercially beneficial.
- For longer term pig industry growth, academics must communicate the findings to policy makers to justify the importance of strategy and infrastructure investment.



9. CLIMATE CHANGE

Climate Change is happening and recognisable at farm level. Extreme weather patterns are becoming the norm throughout the world. The agricultural industry is aware that change is needed - evidenced by the National Farmers Union announcement that it aims for the industry to be Net Zero Carbon by 2040.

Reducing CO2 emissions, responsible water and energy use, soil health, reducing plastics and food waste, were primary issues discussed around the world. I observed a global desire to invest in a food supply chain that was resilient to extreme weather and would slow climate change.

The responsibility to slow climate change is shared with all stakeholders: politicians, producers, processors and consumers.

The UK government's current strategy is to enforce legislation to combat climate change. UK [Environmental Permitting \(England and Wales\) Regulations](#) is the mechanism used to regulate the pig industry with the aim of reducing pollution.

In 2019 the government published [The Clean Air Strategy](#). This is a legislative document aimed to set out plans for addressing sources of air pollution with the aim of making air healthier to breathe, protecting nature and boosting the economy. The clean air strategy is being enforced through the environmental permitting regulations. Published legislation appears not to consider agricultural economic resilience, productivity, carbon footprint, sequestration or on-farm renewable energy production.

To achieve the objectives required by the clean air strategy, capital investment is required to make on-farm improvements. Increasingly volatile farm income and commodity prices - evidenced in Chapter 6 - make significant environmental investment, as required by the legislation, commercially unviable for the pig industry. It emphasises the requirement for tax reliefs and capital grant aid focussed on public money for public goods to achieve environmental improvement.

It is worth noting at this point in my report that it is important that farm baseline data is accurate and representative of modern pig farming and genetics. To achieve realistic environmental improvement outcomes, farms must have the ability to measure, monitor and improve on a farm-specific basis.

Has DEFRA chosen the right strategy for tackling Climate Change?

see Case Study overleaf



Case Study – China - The Belt & Road Initiative

It surprises me that I am referencing China as a good example of investing in environmental and climate change improvement. During my visit in October 2018 I witnessed major investment in modern, productive, energy-efficient infrastructure, thus improving the environmental impact of food production.



Figure 18: Belt and road initiative – own photo

In 2013 the Chinese government set a strategic aim to become the Global Economic Powerhouse. Incomprehensible investment in infrastructure was witnessed both in China and globally with the launch of a trading rail route linking London to Beijing, completed in 2017, known as the Belt and Road Initiative.

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Subsequent investment has been aimed at modernising key industries; some of these were highlighted as being agriculture and technology, with the intention of exporting Chinese products around the world. The investment project is known as the 'China Global Outreach Initiative' and the national pig development strategy is part of that initiative. This five-year scheme focusses on improving animal husbandry and the environment. During my visit, pig hotels were being built, using the best ventilation and materials plus highly prolific genetics and technology to maximise efficient pork production.

Chinese consumers were environmentally aware and proud of the progress that had been made to improve the environmental impact of their industries.

The growth initiative had recognised the need to create a brand image to support their desire to export agricultural produce around the world. Building on the investment to improve efficiency and use of renewable energy was creating an opportunity to promote a Chinese brand that was 'green', in turn creating a future marketing opportunity for the pig industry.



Figure 19: Blue Sky in Beijing, own photo



Case Study –Netherlands - Edwin Michels

At the time of my visit Dutch pig producers were struggling to be economically viable, with producers having a job to break even. Cost of production/pig was €140 whilst income/pig was also €140. Feed (€75) and manure disposal (€10) were major costs of producing a pig. It was predicted that the Dutch pig industry was going to decline significantly within 5-10 years, principally due to increasing environmental regulation and its restrictions on industry investment.



Figure 20: On Farm with Edwin Michels, own photo

Edwin had a modern pig farm alongside redundant farm buildings. *“Many farms that are over 20 years old have been abandoned in the Netherlands as they are not up to EU standards,”* says Edwin.

Edwin’s farm was typical of most in mainland Europe. He said:

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“farming systems are fully integrated, producers invest in whole farm systems rather than individual buildings. There is generally a 20-year life on buildings due to the type of flooring and air cleaning systems, with the fast changing political environment and regulation causing ‘older farms’ to be non-compliant. Environmental permit regulation and planning applications were taking up to 10 years to approve. For this reason, investment in the pig industry has stagnated.”

Edwin explained that air cleaning systems accounted for 20% of the building costs but were not commercially beneficial: these systems did not improve animal welfare, productivity or efficiency of the farming business. For this reason Edwin was unsure what the future held for him in the pig industry, and he was struggling to understand what was the best way forward for his business.

The Chinese and Dutch case studies are examples of different strategies used with the same aim of improving environmental impact.

The Chinese represent productive, forward thinking investment for the long term viability of the pig industry. In comparison, cumbersome EU environmental legislation had slowed industry investment in the Netherlands, demotivated the industry and increased the capital investment required to modernise infrastructure.

UK domestic environmental legislation regulation must deliver what it sets out to achieve rather than becoming a restrictive burden to the industry. Improvement targets should aim to be measurable on farm; monitored, and give scope for improvements. Farm income mechanisms should allow for capital investment for improvements and long term investment in the industry.

Pork industry collaboration and willingness to improve is the responsibility of the whole industry, including producers, processors and retailers.

Pork industry collaboration and willingness to improve is the responsibility of the whole industry, including producers, processors and retailers. The industry should consider being proactive about setting achievable targets before restrictive regulation has a negative impact on the industry.

I proceeded to find out more about carbon footprinting and how this could help UK pork producers.

see Case Study overleaf



Case Study – Alltech EC02 benchmarking

Measure, Monitor, Improve were the recommendations put forward by Ben Braou, Business General Manager for Alltech E-^{CO2} Ltd when I interviewed him in June 2019 at their UK head office in Stamford.

Q. Tell me more about EC02 and its aims?

A. EC02 is an assessment tool that is specific to the agricultural industry and accredited by the Carbon Trust which is a global standard. We deliver and promote sustainability programmes for producers, processors, retailers and government to measure and reduce the emissions associated with producing agricultural products. Agriculture currently accounts for 8-10% of carbon emissions (*source: EPA, 2013*). We provide benchmark opportunities for on-farm efficiency, promoting increased profitability and sustainability with a reduced carbon footprint.

Q. How are you engaging with the food industry?

A. Farm audits aim to identify areas of inefficiency focussing on feed, herd health, fertility, water use, fuel and renewable energy. We then benchmark farms within a group or farm type to discuss recommendations and ways to improve farm efficiency.

Q. What are the negatives to Eco2 audits?

A. Data must be accurate so we visit farms to input data. Assessments are followed up with farmer discussion and benchmarking to identify best practice.

At this moment in time there are no global standards for carbon sequestration so we are not able to incorporate a formula into the assessment tool, which is an area we would like to develop in the future. Buying of carbon sequestration will be a future strategy for off-setting carbon emissions.

If farms are the most efficient they can be, they will have a lower impact on the environment. Productivity and food conversion are major factors in reducing CO₂. There is a risk that if government decides to legislate the agricultural industry it may have a negative impact on the industry as carbon footprinting would become a tick box exercise rather than a tool with environmentally beneficial outcomes.

There are numerous models for measuring a farm's environmental impact. As the concept evolves, a simple approach where improvements will be economically beneficial will be required: engagement with producers and the supply chain to measure through farm benchmarking; improve with open discussion and working groups; and financial support to improve environmental impact whilst potentially offering a future global competitive advantage.



Figure 21: Alltech Eco2 Offices, Stamford with Will Maughan, Jason Evans and Angela Kirkwood – own photo

9a. Key outcomes of Chapter 9

- The industry should aspire to produce more environmentally sustainable pork; which offers future marketing opportunities for retailers.
- Cumbersome EU environmental legislation slows industry investment and increases the capital investment required. New domestic environmental legislation regulation must be measurable on farm, monitored and give scope for improvements.
- There is a requirement for capital investment to achieve environmental improvements on farms. Tax reliefs, and capital grant aid focussed on public money for public goods, will allow for investment in infrastructure to achieve environmental improvement.
- Producers should consider benchmarking to measure, monitor and improve environmental impact of farming.



10. INSPIRING PEOPLE

People are the most important asset in any business. One of the biggest UK pig farming businesses quoted access to labour as a limiting factor to their business growth. Agriculture typically has an ageing workforce: it is reported that around a third of UK farmers are over retirement age while the proportion of young people aged under 35 years is around 3%.

(Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/741062/AUK-2017-18sep18.pdf)

With an increasing urban population and disconnect from how food is produced, attracting the next generation of farmers is becoming more challenging.

10a. Kick starting your career in pig farming

Often, if someone wishes to have a career working with animals, their initial thought is to become a vet without understanding what other careers opportunities are available. Farming is an extremely rewarding, challenging and diverse career choice, with no two days being the same.

Career opportunities within the pig industry include: animal husbandry, managerial, administration, advisory and consultancy, farm assessors, feed and nutrition advisors, HGV drivers, agricultural mechanics and engineers, pig genetics, marketing, retail, sales, service and technical, trading and purchasing, agrochemicals and fertiliser trading, animal health and veterinary, agricultural technology, construction, grounds maintenance and even international agricultural opportunities - to name just a few.

There are specialist agricultural colleges and universities throughout the UK; many have farm businesses as part of the teaching facility for practical experience. Apprenticeships in agriculture are also a practical route to start a career in agriculture.

How do other countries inspire the next generation?

Case Study – Philippines - Excelsior Farms Inc.

The Swinenovation centre at the Excelsior head office was a showroom and education centre to promote modern pig farming. Based in the centre of the city of Cebu, it was hoped the facility would enthuse the next generation of farm workers.

Excelsior Farms Inc., PIC, Big Dutchman and Cargill had collaborated to fund this project.

see picture on next page



Figure 22: Vino Borromeo, Genus PIC Philippines and Angela Kirkwood at the launch of the Swineovation Centre in Cebu

Case Study – Ireland - Teagasc

The Irish agricultural industry championed next generation farming with strong leadership from their Agriculture and Food Development Authority, Teagasc.

Education in food production and agriculture started in schools with agricultural science offered as an A-level and degree course. The purpose of the course was to prepare students for a career in agriculture and agri-business. Modules focussed on science, food, agriculture, environment, business, quality assurance, self-management, team-working, business awareness, problem solving, land management and communication.

The Green Cert was a highly regarded qualification also provided by Teagasc. This two-year training apprenticeship resulted in a qualification as a trained farmer. The Green Cert entitled new entrants to a holding number and ability to claim young farmer tax allowances and stamp duty exemptions.

continued overleaf



Figure 23: Group sow facilities in Ireland. Source: own picture

Teagasc provided integrated research, advisory and training services to the agriculture and food industry and rural communities. It was highly regarded in the Irish farming community as an advisory service. Alongside training services, advisers inputted farm benchmark data to enable accurate comparisons. Other services included providing documents such as contracts of employment, support to access Basic Payment Scheme funding, and Nitrate Vulnerable Zone documentation. Teagasc helped every farm to be compliant with regulation and also helped with on-farm investment focussed around health and safety with a scheme titled 'Targeted Agricultural Mechanism Scheme'. Funding was available for yard lighting, road resurfacing and other health and safety improvement projects.

Agricultural education for tomorrow's pig keepers and consumers is a challenge and the same challenge is experienced around the world. The Swineovation centre in the Philippines was built with the collaboration of the supply chain to invest in knowledge transfer and engage understanding of production systems. In Ireland education about the important task of feeding the population was taught from a young age. This education encouraged young people to engage with agriculture as an exciting career opportunity.

Positivity about the future of agriculture will be achieved by having clear aims and objectives to understand the importance of a reliable food supply. This idea will be discussed in the next and final chapter of my report.

see Key outcomes of Chapter 10 on next page



10b. Key outcomes of Chapter 10

- Feeding the population is an important task; positive education and leadership is required to encourage interest and enthusiasm in agriculture and the pig industry.
- It would be beneficial to open an innovation hub which showcases all production systems and new technology, accessible to the public, schools and industry.
- An advisory service should be made available to provide one-to-one professional business support to new entrants and those desiring a career in the pig industry.



11. IDENTIFYING AIMS and OBJECTIVES

As the title of my report suggests, I wanted to identify how we can grow the British pig industry. My study has highlighted to me that the short term goals need to focus on improving the current industry; with medium to long term focus on growth as demand for British pork increases.

The long term growth of the industry will require a transformation towards creating an industry which will leave a legacy for future generations. All stakeholders must bestow confidence on producers, partly through economic prosperity and also through strategic planning. Confidence about the future of pork production in the UK needs to be communicated from higher level government strategy.

The majority of countries I visited recognised agriculture for its importance in assisting to deliver a buoyant and stable economy. Those with growing industries benefited from clear government strategic plans actioned by a dedicated department for agriculture.

Good animal welfare has been the aim for UK pork production since the sow stall ban in 1999. Unfortunately, this strategic aim has resulted in the dramatic contraction of the UK

pork industry. The desire to become the highest animal welfare country in the world has resulted in increased costs of production; lower productivity compared to competitors; and increased imports of cheap pork products.

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All the farms I visited had good animal welfare standards and significant investment had been made to achieve these standards. I still felt a frustration that EU legislation was being interpreted differently in each of the EU countries. For example, in Denmark, sows post weaning could be individually housed for 30 days after weaning, something which is illegal in the UK. A more positive observation was the availability of government grant aid to improve farrowing facilities to enable freedom farrowing.

Consumer buying behaviour and trade opportunities are evolving. The industry must adapt to these changes to continue to warrant a premium for British provenance. This report has identified the requirement for pork at both the premium and value price points. It has also touched on the opportunity to introduce environmental USPs for brand Britain.

see Case Study on next page



Case Study – Philippines

The pig sector in the Philippines was vibrant during my visit in October 2018. The Philippines has the 4th largest sow population in Asia. Pig farming was fundamental and vital to the economy and economic growth. Pig prices were buoyant at 132pesco/kg whilst cost of production was 96pesco/kg.

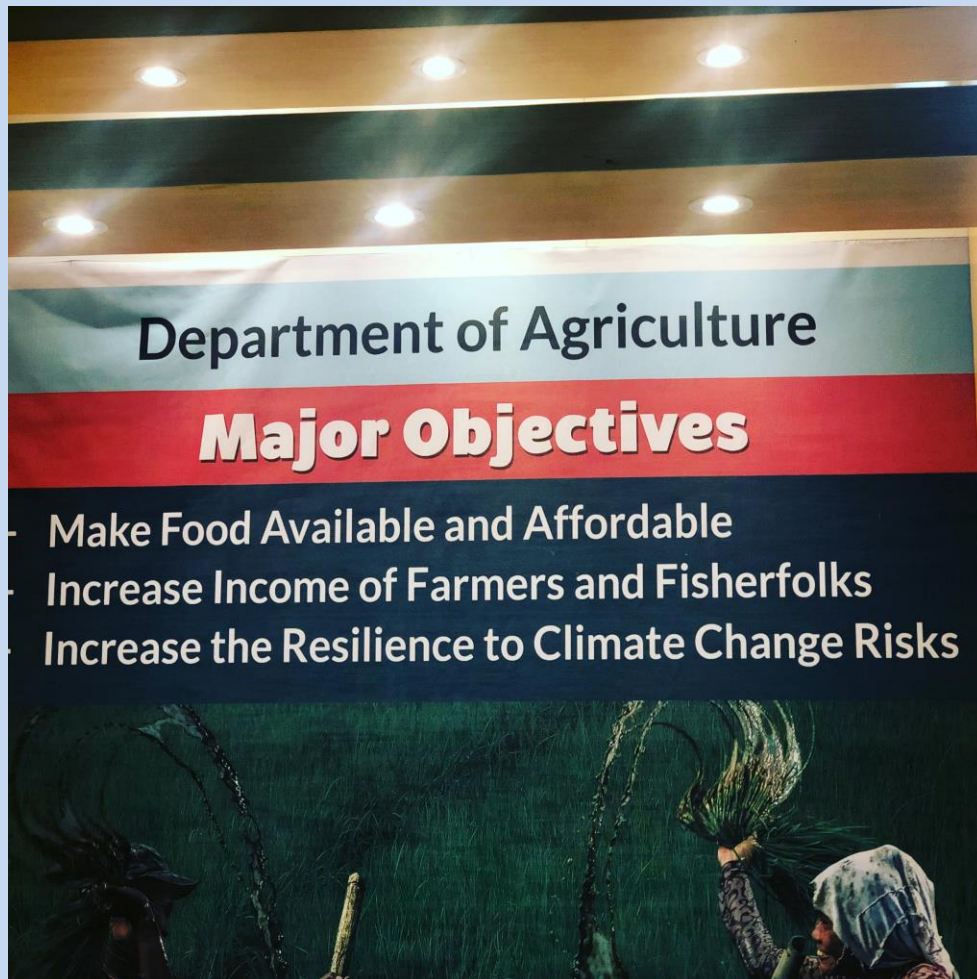


Figure 24: Philippines Department of Agriculture aims and objectives

The pig industry was taking advantage of growth opportunities by sustaining well organised production systems and cost effective supply chains. Consumption of pork products was high with the national speciality being pork Lechon. For this reason the Philippines needed to import circa 30million kilograms of pig meat per month to satisfy demand.

Profitability and significant capital investment from China had enabled investment in infrastructure, technology and genetics.

continued overleaf



The industry was consolidating into bigger co-operatives to manage the supply chain and enable all farmers to access resources such as genetic, feed, nutrition and animal health inputs. Backyard farming accounted for 65% of the pigs produced, with the other 35% being derived from modern commercial indoor farming.

The Department of Agriculture had set clear targets to sustain growth in the industry. These major objectives were clearly communicated at trade events.

1. Make food available and affordable
2. Increase income of farmers and fisher folk
3. Increase the resilience to climate change risks

“Help to nourish the World” was the mantra used by the government.

Case study - Japan

“WHISKY”, was the reply from Akio Sueyoshi, General Manager of Iwatani Camborough Co.Ltd. (PIC) when I asked what his thoughts were on the British brand. *“We only import the cheapest pork to fulfil the food service demand, supplying restaurants and processing in Japan”.*

Food service is a growing market which represents 50% of pork consumption in Japan and is currently supplied by USA, Denmark and Canada. Domestic Japanese pork is highly regarded and used by the home cooks. Demand for pork is declining as people change to a perceived healthier poultry-based diet and the population decreases.

Topography and density of population has restricted growth of Japanese domestic pork production with concerns over trans-Pacific partnership trade deals, expected to negatively impact viability of pork production.

The Japanese government did recognise the importance of domestic food production, aiming to maintain the country’s 50% self-sufficiency by subsidising smaller independent farmers to stay in business. They offer 50% funding availability to build new farms with interest rates at 0%.



My learnings, using the two case studies as examples, are that an industry does not necessarily need to aim for 100% self-sufficiency to have a buoyant and prosperous agricultural industry. A prosperous industry is built upon clear, simple and achievable strategic aims to bestow confidence and growth in a sector.

The Nuffield Farming study gave me an opportunity to engage and talk to UK pig producers of all sizes and business models, and target customers. When I asked what the strategic aims of the industry were, one thing they all had in common was that the strategic aim was unclear. “Improve animal welfare” appeared to be the overriding answer. However, no one could clearly explain what the definition of animal welfare was or what the final outcome was that the industry should try to achieve.

*A prosperous industry
is built upon clear,
simple and achievable
strategic aims to
bestow confidence and
growth in a sector.*

11a. Key outcomes for Chapter 11

- Agriculture must be identified as one of the key components for stable economic growth and stability of food supply to bestow confidence to the next generation and encourage investment in the industry.
- There would be benefits in a DEFRA restructure to incorporate a department for agriculture, similar to that of every other country with a desire to grow their economies. A restructured department would need to be adequately resourced both financially and suitability of expertise to implement a successful UK domestic agricultural policy.
- It would be beneficial if clear aims and objectives for the pork industry were identified; this would focus and empower the industry.
- Achievable aims and objectives are required to focus investment and promote the production of pork at every price point, from the value to the premium.



12. CONCLUSIONS

1. The challenge is to produce pork at a competitive price relative to other meats and pork producing countries; giving consideration to economic and environmental sustainability, climate change resilience and good animal husbandry. Future UK domestic agricultural policy must not stifle the industry.
2. Straightforward strategic aims and aspirations coupled with stakeholder collaboration to educate and mentor the next generation will bestow confidence in the pig sector to create a progressive and sustainable future.
3. Business prosperity, tax incentives and/or grant aid may be required to stimulate investment in infrastructure and environmental improvement.
4. Given the above tools the pork industry will strive to become one of the major flagship industries for 'Brand Britain'; in turn assisting in the delivery of a buoyant and stable UK economy.



13. RECOMMENDATIONS

1. The Market:

Pork is the most widely consumed meat protein in the world. Population growth and increasing wealth will increase global pork consumption. It is envisaged the UK consumer will continue to require a range of British pork products; from the value to the premium price ranges; whilst sales growth will be attributable to pork being consumed away from the home and purchased for convenience. There is opportunity to review imported pork products with scope to offset imported bacon, gammon and charcuterie with British provenance in the coming years.

2. The Producer:

Volatility of pricing and increasing input costs will continue the trend of consolidation of ownership and vertical integration in the UK pig industry. Medium to long term partnership agreements with integrators will provide investment opportunity which will transform the industry; in turn leaving a legacy for future generations.

Producers should aspire to produce more environmentally sustainable pork; which offers future marketing opportunities for retailers. Benchmarking should be considered to measure, monitor and improve environmental impact on farm.

3. Support Mechanisms:

Agriculture must be identified as a key component for stable economic growth. Cumbersome legislation slows industry investment, increases costs of production and impacts on the industry's capability to compete globally.

There is a requirement for capital infrastructure investment to achieve environmental best practice. Tax reliefs and/or grant aid along with professional advice and farm support is required for the industry to thrive.

The idea of an innovation hub to showcase pig farming and production systems, accessible to the public, schools and industry should be considered.



14. AFTER MY NUFFIELD FARMING STUDY

My Nuffield Farming study has given me clarity on what the global issues are around feeding a growing population; environment; and climate change resilience. This has put into perspective how I should be investing in the industry and my own business.

I have always been amazed by the development opportunities in agriculture for young people and truly believe that no other industry has such a community spirit. For this reason I am excited by the opportunity to repay those who have seen potential in me. I hope to positively influence the development of the UK domestic agricultural policy. Initially I will channel this through my work as NFU County Chairman of the York East Region, an appointment which began in February 2019.

In the longer term I aim to position myself to take advantage of opportunities. Use the skills and knowledge I have acquired to make myself resilient to change, both within the industry and in my own business.

Communication is vital for building confidence in the industry and I hope to work across numerous industry groups to explore strategies for supporting new entrants. I will continue links with the Worshipful Company of Farmers and AHDB, with a desire to become more involved with pork strategy and policy in future years.

For the business I again want to be in a position to maximise on future business opportunities. I will continue to invest in a diverse range of businesses to reduce economic risk. I hope to be involved with industry benchmarking that focusses on environmental improvement techniques.

Angela Kirkwood

October 2019



15. Glossary of abbreviations

AGM	Annual General Meeting
AHDB Pork	Agriculture and Horticulture Development Board – Pork
APHA	Animal and Plant Health Agency (formally AHVLA)
APP	Average Pig Price
ASF	African Swine Fever
BPS	Basic Payment Scheme
BREXIT	UK exit from the EU
COP	Cost of Production
CSC	Contemporary Scholars Conference
DEFRA	Department for the Environment, Food and Rural Affairs
EA	UK Environment Agency
EU	European Union
FSA	Food Standards Agency
GB	Great Britain
MP	Member of Parliament
NC	North Carolina, USA
NFU	National Farmers Union
NPA	National Pig Association
NVZ	Nitrate Vulnerable Zone
PRRS	porcine reproductive and respiratory syndrome
PVS	Pig Veterinary Society
RSPCA	Royal Society for the Prevention of Cruelty to Animals
RT	Red Tractor Assured Food Standards
Sow	Adult female pig
UK	United Kingdom
UN	United Nations
USA	United States of America
USP	Unique Selling Point
VMD	Veterinary Medicines Directorate
WCOF	Worshipful Company of Farmers
YFC	Young Farmers Clubs



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Isle of Man	John Harrison, IOM Department of Agriculture Rachael at Ballakelly Farm
USA	Alltech – Fergal McAdam, Jason Evans, Kevin Martin Archie Griffin and his family Bill Warren, Robert Fenn, Blueberry Matt Ivanhoe, Purvis Farms, Mark Bradley, Charles Crave
Netherlands	Yvon Jaspers and Edwin Michels
	CONTINUED OVERLEAF



Ireland	Clifford – Jetwash, Luke Boague, Mark Kiernan, Stephen Bradey -Trinity Nutrition, Gary Pepper, Emer McCrumb – Teagasc, Frank Bradey - Chariman of the IFA, McCarren farm shop, Owen Broady, Tommy and Freddy Mcquade, Colin Marry - Permapigs
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Denmark	Agromeck Danbred Genetics Danish Crown

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