

# **Livestock's Contribution to UK Food System Resilience Translating potential into reality**

**A St George's House Consultation –  
Monday 28<sup>th</sup> – Tuesday 29<sup>th</sup> November 2022**

## **REPORT**



## Livestock's Contribution to UK Food System Resilience

### Translating potential into reality

Participants from a range of backgrounds with an interest in livestock agriculture, including farmers, NGOs, retailers, and technology innovators gathered at St George's House to explore how a manifesto could make the case for the importance of livestock to the UK food system.

The overarching finding was that *livestock has a critical role in securing the future of our food system, but it must evolve to play its part.*

Key suggestions are laid out below, with further detail in the main report.

#### Livestock's Added Value – Ambitions for what the livestock sector can offer UK society

##### 1. Soil Regeneration

- Livestock is an essential part of an integrated system of agriculture and central to a regenerative approach to production. In particular, animals are essential to the fertility of our arable soil and critical to crop production as the sector moves away from expensive and environmentally damaging fossil fuel-based inputs such as artificial fertiliser.

##### 2. Circular Economy

- Livestock can help balance inputs and outputs of the UK food system. Pigs and poultry can valorise food waste as a feed alternative, and ruminant livestock can utilise co-products from food production, which will reduce livestock reliance on feed sources that could be used for human consumption. Animal waste can be an important source of fertiliser for arable land.

##### 3. Buffering the food system

- Livestock has a fundamental role in risk management for all sectors of agriculture. A range of agriculture is necessary to meet the requirements of a growing global population and mitigate against threats to food production and UK food security.

##### 4. Ensuring good nutrition

- Livestock play a key role in ensuring human health, providing essential nutrients beyond basic protein, which cannot necessarily be accessed through meat alternatives.

##### 5. Societal engagement

- Livestock is valuable to human and societal wellbeing. Engaging with farm animals as well as pets, which need meat in their diet, increases mental wellbeing. Cooking with and eating meat is culturally important in the UK. Livestock are part of UK landscape, tradition and culture: our distinctive patchwork of fields is a consequence of mixed agriculture.

#### Adjustments needed to unlock this value

1. Develop mixed systems of arable agriculture and livestock where the true value delivers to more than just short-term economic return, and includes sustainable environmental value.
2. Change rules around use of waste products in feed and as fertiliser, while improving management of farm waste and reducing water pollution. This will optimise resource use away from waste, rejecting it as an acceptable consequence of food production.

3. Holistic, multi-layered sector data on environmental impact, animal welfare, economic viability, among other factors.
4. Reduce reliance on subsidies, removing farmers whose poor practice undermines industry improvement across all areas of sustainability.
5. Improve staffing in services allied to livestock agriculture, including vets, and abattoirs.
6. Holistic consumer-based reporting of nutritional value of meat and meat substitutes.
7. Increase transparency in supply chains.
8. Consider international trade strategy, especially the potential of increased import of food produced to lower standards than currently acceptable in the UK, as well as the environmental impact of imported feed.
9. Revisit livestock numbers needed in the UK for a resilient food system, and adjust to that target.

### **Actions in the short term**

1. Define and make explicit the benefits and structural implications of integrating livestock across the agri-food system
2. Develop cross-disciplinary 'challenge consortia' to address required technology and enterprise developments – for instance in waste valorisation, agronomy, supply chain infrastructure.
3. Convene supply chain and other commercial interests to align market signals
4. Highlight and target policy asks, covering regulatory blockers, strategic investments, and trade policy
5. Ensure import standards are applied with consistency and rigour such that sub-standard imports do not undermine UK progress
6. Improve education on the nutritional value of meat throughout society
7. Legislate for improved nutritional standards in the public sector, and incorporate these in all public sector food provision

A deeper dive into the thoughts and discussions behind the suggested manifesto.

## **Livestock's Added Value**

Thinking about the value that livestock brings to society arose from a need to consider the problem in a celebratory and not defensive way. In order to justify future investment in livestock to investors that are increasingly concerned about their environmental impact, people working in livestock agriculture need a strong message about why livestock are essential to a healthy environment and society. The following key areas of added value were identified:

### 1. Soil Regeneration

Regenerative Agriculture builds soil health. Soil quality in the UK has been severely reduced by arable only rotations, the growing of crops with high environmental impact such as maize and rape, and failure in rotations that ignore the soil structure and biology. A focus on maximising yield and specialisation has reduced the diversity of crops. There has also been increased use of soil structure damaging mechanisation. The use of evermore effective fungicides, pesticides and herbicides has had a detrimental effect on the micro-environment and the organisms both in and on the soil, including fungi, affecting both soil cohesion and water retention. Healthier soil will be more biodiverse and fertile, while also more resistant to erosion, flood, and drought, improving carbon retention and making arable land more resilient in the face of climate shocks.

Herbivores are important to natural soil health since they provide a natural fertilising agent with their manure, as well as controlling growth of ground cover plants through eating and trampling. Variation in livestock species, with differing grazing techniques and dunging patterns provides diversity of environment for insects and flora. If livestock are not used, they will have to be replaced by wild herbivores, albeit the population would be lower than current levels of livestock. However, livestock can regenerate soil much more quickly than if we leave it to nature, meaning they should logically be used at least until soil health reaches natural levels.

It was also noted that livestock can be farmed alongside tree planting initiatives, which as well as providing environmental improvement and carbon sequestration, are shown to benefit prevention of erosion, provide a fuel and materials source, and offer shade and shelter improvements to help mitigate heat stress. Pigs, for example, have evolved to digest a forage based diet, but post Second World War meat production systems have been created for ease of management and rely on relatively cheap and available diets based on grain, soya and energy. Challenging the status quo and established production systems would lead to production where home grown forage could replace much of the imported feed sources which rely on deforestation for production. Free-range poultry production (bird flu restrictions permitting) have proved that poultry can be integrated into a woodland environment, and more agroforestry production is considered possible with improved understanding and training. Biodiversity relies on varied land use so a range of farming practices will be needed. A fundamental reappraisal of current production systems is required, that better delivers to a holistic understanding of sustainability.

Regenerative Agriculture is not well defined, and risks polarising thinking and policy. For some, regenerative approaches means a return to idealistic country life, while for others it's about a much better understanding of biology and co-existence, where the positive outcomes across all measures of value, are greater than the negatives. Built on the premise that this leaves the environment better in the future, this pragmatic approach, which starts



with soil health and fertility, has much to offer a sustainable and resilient food production system. Regenerative farming is currently practice-led as it relies on many factors and is easier to test in direct practice than through controlled scientific experiments. However, this makes it resistant to a strong definition and easy to use for greenwashing. However, some participants felt a tight definition might inhibit innovation in this nascent field.

Participants felt that Regenerative Agriculture had to some extent already been hijacked by those interested in carbon capture. The focus on carbon is limiting thought around the benefits of water management and soil fertility as farmers are focussed on the financial benefits of carbon capture. However, soil regeneration may not be a reliable way to capture carbon because the carbon does not necessarily remain in the soil, especially during a drought. Soil health is a better way to think of the benefits of Regenerative Farming.

Another big challenge with Regenerative Agriculture is the initial cost of changing system. Farmers will often face a significant drop in profits for a few years while they alter their practice and this is not affordable for many. Transition in production systems at scale will require incentive and support, and a fully engaged supply chain that is committed to that transition. Such an approach is unlikely to succeed by a market-only approach, and will require long-term policy commitments and treasury support.

## 2. Circular Economy

'Circular economy' refers to systems that avoid waste and reduce raw material or energy inputs by optimising the use of by-products from one process as inputs or feedstocks into another. There are three key potential mechanisms through which livestock can facilitate these sort of circular outcomes: (1) the use of food waste and industrial by-products as feed for livestock; (2) the use of manure/slurry to build fertility in soils for crop production (displacing artificial inputs), and (3) the use of manure/slurry as partial feedstock in anaerobic heat/power production.

In all instances these mechanisms happen to some extent in the UK already. The consultation participants discussed opportunities and barriers for scaling up, so that they would become defining features of a future integrated agri-food system. Key barriers included regulatory restrictions on using waste products as animal feed, and logistical barriers relating to the geographical separation of centres of livestock and arable production. Opportunities, beyond increasing efficiencies, include the potential to reduce the overall nutrient load and pollution risk within some agricultural landscapes.

## 3. Buffering the food system

The increasing population of the world is placing huge pressure on food production. In recent years food production on arable land has increased dramatically, but sustaining that growth in productivity will be challenging. Some land is not suitable for arable farming and so a focus on arable food sources at the expense of livestock may reduce food security.

In addition, the years ahead are likely to involve increasing volatility and risk due to a changing geopolitical environment, which has already had a profound effect on food security, as well as the already changing climate. It is important to maintain a range of food sources in order to maximise resilience to unforeseen challenges. It was suggested that livestock are important as a food store that can be called on when other food supplies are unavailable, for example due to a crop failure.

#### 4. Ensuring good nutrition

Many would argue that the health benefits of meat are very important. When plant-based protein is compared in detail with meat and dairy protein there are big differences. Essential vitamins and minerals such as B12 and iron are difficult to access through a plant-based diet. Research on this is currently lacking but increasing, for example studies on brain development of children who lack meat in their diet.

Measuring food security by concentrating on protein and carbohydrate levels was considered a very coarse metric. The concept of a nutritionally balanced diet is more important. However, it was acknowledged that the UK's consumption of meat needs to reduce to achieve a balanced diet.

There is a possibility to work with alternatives to meat, for example by combining meat and meat alternatives in processed food to obtain cheap, nutritionally satisfactory protein.

#### 5. Societal engagement

Participants noted the social value associated with meat, for example, having a nice cut of meat at an expensive restaurant to show your status. There was also broad agreement that meat remains central to meals in the UK and that people are excited by cooking meat, as demonstrated when meat sales went up during the pandemic due to people taking more interest in cooking their own food.

However, there is a risk around associating meat with status in that people may eat more meat than is good for them in order to show their status. Particularly in countries that are rising economically, people are moving towards a Western diet with more meat to show their wealth. However, this diet is not necessarily healthy and in fact many Westerners should reduce their meat intake.

Livestock are also essential to various welfare benefits associated with animals. Many pets require meat in their diet and thus rely on livestock. People are also likely to be more engaged in visiting livestock farms than arable, meaning that livestock is important for interesting the public in where their food comes from.

#### 6. Energy production

Energy was a field that was perhaps under discussed in the consultation. The need for photovoltaic farms and more carbohydrate production for energy to replace reliance on fossil fuels was mentioned as a risk, potentially requiring land that is currently used for food production. However, it was felt that the agriculture sector should be careful in taking on responsibilities that could be met by other industries. For example, solar farms could use car parks and roofs of buildings rather than arable land.

There was mention of technologies that might be able to capture methane produced by livestock for energy production, particularly in intensive settings where animals are contained within a building.

The adjustments that are needed for livestock agriculture to reach its potential might be different based on different scenarios of energy availability. Energy scarcity will reduce the availability of technologies which might be needed to drive change, as well as heavily impacting the production of fertilisers. Meanwhile, climate change will deeply affect agriculture by altering the crops and livestock which are viable in this country.

## Adjustments

Participants were asked to consider the structural adjustments which might be needed to unlock the value they had noted in livestock. What changes might be needed in the mid-term to achieve the ambitions laid out above for livestock agriculture?

### 1. Develop mixed systems of arable agriculture and livestock.

Farmers need to move beyond just producing food. They may be able to focus on increasing biodiversity, creating energy, carbon capture, and food production all in one field. Biodiversity relies on varied land use so a range of farming practices will be needed.

Conventional farming specialises to get the most out of one thing. However, sustainable farming requires a change in mindset to focus on multiple and interconnected uses of the land. Integrating livestock with arable agriculture is important for Regenerative farming. Integrated systems including animals are thought to be positive for consumer engagement.

A challenge to integrating arable and livestock agriculture is determining where the animals will come from, either moving animals within the UK, primarily from west to east, or increasing livestock numbers through more breeding or importing stock, all with environmental implications. There are possibilities for 'flying' flocks of sheep and herds of cows moving around an area from arable unit to arable unit, managed by livestock experts and with new business models.

A risk was identified in introducing livestock to farms which lack the skillset to care for them. This can be a key cause of failure in these schemes. Arable farms often already work with intensive pig and poultry production so it might be worth considering how they can be integrated further into cropland systems. Pigs in particular are naturally foragers and might be able to increase the nutrient quality of arable land.

Tree planting and hedge planting will be needed, and will have added benefits for biodiversity. However, there will need to be some investment in infrastructure.

### 2. Change rules around use of waste products in feed and as fertiliser, while improving management of farm waste and reducing water pollution.

Participants felt we should think more deeply about waste and its potential to generate product. We need to stop talking about waste and start talking about resources at different stages of utilisation.

Food waste, which has traditionally been used as feed for pigs and poultry can also be used by cattle, which might reduce reliance on feeds such as grains and soya that can be used directly for human consumption. However, currently biosecurity rules mean that food waste cannot be used in this way. These rules should be reconsidered and the amount of food waste available and needed for feed determined. The sector can then make informed decisions about the need for imported grain and soy for feed.

Farm waste causes severe environmental impacts, particularly in water sources. It was suggested that current regulation in this area was not fit for purpose, especially as it makes uses of farm waste complicated by strictly limiting the amount of time it can be stored for and periods of application. Farm waste could be used more widely as fertiliser, although challenges of transporting waste from livestock farms to arable on the other side of the country would need to be solved.

Male calves from pure dairy genetic pregnancies in the dairy herd have been considered 'waste'. More use of sexed semen to limit pure dairy breeding to heifer replacements should allow more production cross bred calves to enter the food chain, while development of production systems should focus on making more productive use of male dairy calves.

3. Holistic data reporting on environmental impact, animal welfare, and economic viability, for the sector.

Better data reporting will reduce the risk of greenwashing, as well as preventing prejudice against certain types of farming, which are perceived as being bad for welfare and the environment but may have positive impacts when managed correctly. The sector needs standard measurements of biodiversity, animal welfare, and environmental impact, and this should include financial sustainability too. It is important to layer metrics to get the best sense of good agricultural practice and to fully understand the correlation between the multi-dimensional factors. For example, measurements of carbon capture can be counterproductive when they skew towards faster growth of product without fully accounting for more inputs such as inorganic fertilisers.

Good data collection could offer much greater insight and understanding with more options for regulation and incentives. Access to and advances in AI and machine learning offer benefits for the agricultural sector, but need plenty of well-presented data to work effectively.

There are challenges around connectivity in rural areas. Farms may not have mobile signal and broadband. Another challenge is who could develop this sort of data collection. To date, numerous plans for improving agricultural data collection have fallen short.

4. Reduce reliance on subsidies, removing farmers whose poor practice undermines industry improvement across all areas of sustainability.

Post Second World War production subsidies were felt to have prevented farmers from thinking carefully about how they farm. Subsidies that are not sustainable and do not drive the right practice are outdated and not fit-for-purpose. Instead, data-driven standards are needed in order to remove bad practice, including with reference to farm profit.

Subsidies which reduce farmers' ability to drive change in their sector perpetuate poor prices, shored up by government payouts, reducing farmers' ability to negotiate a fair price and ensure value flow through the supply chain. Where subsidies have been removed for sectors such as pigs and poultry, farmers have been shown to be more progressive and able to adapt to change.

5. Improve staffing in services allied to livestock agriculture (veterinary, abattoirs).

There are big staffing problems in the veterinary sector. Vets are needed if good animal welfare is to be ensured so the livestock sector must support with this. Vets are also important to reduce the disease risk of livestock which is a greater concern since Covid and the current bird flu outbreak. Additionally, Antimicrobial Resistance represents the greatest threat to livestock production and delivery of a One Health agenda.

There are also big shortages of staff in facilities throughout the processing sector, largely due to Brexit. A solution must be found for this to maximise efficiency and ensure the sector competes in the global market.

6. Holistic consumer-based reporting of nutritional value of meat and meat substitutes.

Changes in welfare and environmental impact are currently being driven by supermarkets. Retailers have an incredible amount of data on consumer preferences around these areas but it is not being fed into the agriculture sector. Often retailers want to have their own branded nutritional information and environmental impact labels on the food they sell, making it hard for the agricultural sector to drive demand for livestock managed in new environmentally friendly ways.

It was also suggested that when people stop eating meat for environmental reasons it is because this is the easy option compared to other actions. Education is needed to ensure consumers make the best decision for the environment not the easiest one for them.

However, offering consumers additional data may be challenging as mostly consumers want to get in and out of a shop quickly, without spending a lot of time reading labels and considering their decisions. Consumers often trust their preferred supermarkets to make the right decisions for them in sourcing products. Therefore, although they are concerned about ethical considerations when polled outside of a shopping trip, when they enter their preferred supermarket they often only worry about price. It is important that consumers trust retailers, but supermarkets may need more regulation to ensure that they guide consumer behaviour in a positive way.

British consumers need to be educated about the nutritional value of meat and meat substitutes, as well as about making use of more parts of animals which are edible but not generally eaten in this country. To improve data on nutrition, research needs to be done to better determine how much meat is needed in a healthy diet, coupled with greater understanding on the implications of further processing in all products.

In addition, it was suggested that the UK is not very good at measuring carcass quality as it relates to the consumer experience, including taste and eating quality. As new trade deals open up international markets British livestock producers will have to compete against countries that have much better metrics for this. There is currently a big difference between nutritional health targets and the qualities in meat that farmers are paid for. At the same time underlying food safety standards must be consistently applied to UK manufacturing and imports of food products allowed access to the UK market.

## 7. Increase transparency in supply chains.

There needs to be more integration up and down supply chains, sharing data and plans for animals so everyone involved knows what they need and when to produce the best end product. If finishers know more about the early life and feed regimens animals have had, they can finish them faster, resulting in a cheaper and better product from animals that have spent most of their life in the field.

Farmers could be more assertive in making supply chain choices to get better prices and have better outcomes for their products. However, there needs to be equity within the supply chain to avoid vested interest in hiding data in order to get the best price. At the moment supply chains tend to be fear chains rather than value chains because everyone involved has such tight margins. All players need to be convinced of the value of collaborative working.

Agriculture needs better relations with consumers. This will enable farmers to drive consumer demand for high quality products produced in a sustainable way, rather than relying on supermarkets. A closer relationship with consumers would also ensure consumers

understand why products are sometimes not available. It would help with engagement of consumers in farming and educating them on their place in nature.

Finally, perhaps supply chains could be shorter and more local supply used. However, this does not necessarily mean reducing trade across borders since, for example, a farm in Norfolk might be closer to a buyer or supplier in France than in Scotland.

#### 8. Consider trade strategy.

Britain's future trade strategy will be very important to the meat industry. Opening up the British meat market to new countries could be a risk or a benefit. Participants were concerned that if British farmers reduce output of meat before there is a drop in demand from consumers, international providers may step into the gap. If there is regulation to reduce the numbers of livestock in the UK there must also be regulation on meat imports.

In addition, some quality standards internationally are lower than those currently accepted in the UK. Even if there is no drop in British meat production, a change in trade agreements could mean that imported meat undercuts the local market, leading to increased environmental impact due to transportation as well as insecurity for our farmers. This should be avoided.

However, international markets are important to the meat industry. Meat exports reduce waste from livestock carcasses as some international markets see parts of animals that British people are not keen to eat as a delicacy. However international markets could also encourage an increasing meat industry since the mark of a growing economy is often to move from a subsistence diet to a more Western style diet with far more meat – more meat than is healthy.

Meanwhile, feed imports mean that even if Britain maintains a diverse agricultural landscape that is ecologically beneficial, we could be doing that by relying on other countries farming monocrops and thereby damaging their environment.

#### 9. Revisit livestock numbers needed in the UK for a resilient food system, and adjust to that target.

Livestock farming should be seen in the context of reducing meat consumption while optimising the contribution of livestock to wider food system resilience. Animals can provide critical supporting functions to the food system, but only when deployed in a manner and at a scale that is targeted at delivering those functions.

#### 10. National Strategy between government and industry.

Some participants felt that it was important for the livestock sector to have a coherent environmental objective so that the sector would still have a direction when a specific strategy failed. It was also felt that government needs a more coherent food policy, which needs to be cross departmental because issues related to food go beyond DEFRA. Even within DEFRA there are a lot of disparate departments that are not directly related to livestock agriculture but which may be involved in the adjustments above.

However, some participants felt that it was dangerous to rely on the government since government policy often moves very slowly and can struggle with long-term planning due to changing ministers. Others felt that market forces might have a bigger part to play than government. There was therefore no consensus on this adjustment.

## Conclusion

The overarching finding of the Consultation was that livestock has a critical role in securing the future of our food system, but the agri-food system must evolve if livestock is to play its part. There was a broad consensus that there is not going to be one simple solution to how livestock farming should look in the future. A wide range of tools and farming practices will be needed and future strategy must support them all. But in the short term, a set-of practical next-steps were defined that may help move us towards this outcome:

1. Define and make explicit the benefits and structural implications of integrating livestock across the agri-food system
2. Develop cross-disciplinary 'challenge consortia' to address required technology and enterprise developments – for instance in waste valorisation, agronomy, supply chain infrastructure.
3. Convene supply chain and other commercial interests to align market signals
4. Highlight and target policy asks, covering regulatory blockers, strategic investments, and trade policy
5. Ensure import standards are applied with consistency and rigour such that sub-standard imports do not undermine UK progress
6. Improve education on the nutritional value of meat throughout society
7. Legislate for improved nutritional standards in the public sector, and incorporate these in all public sector food provision

## Participants

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Mr Wil Armitage	Managing Partner Keythorrpe Farms
Mr David Barton	Vice Chair NFU Livestock Board National Farmers Union (NFU)
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Ms Helen Browning	Group Chief Executive Officer Soil Association
Mr Justin Coleman	Agri Business and Live Production Services Director Moy Park
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Professor Bob Doherty	Dean University of York, School for Business and Society
Mr David Edwards	Director of Food Strategy WWF-UK
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Mr Mike Gooding	Director RCMG Oxford Ltd
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Ms Siobhan McShane	Rapporteur
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Ms Sue Pritchard	Chief Executive Food Farming and Countryside Commission
Mr Adam Quinney	Livestock Farmer AC & SE Quinney
Mr Matt Ryan	Regeneration Lead Nestlé UK & Ireland
Mr Ian Smith	Managing Director Bedfordia Farms
Mr Mark Suthern	Consultant Member of SGH Food & Farming Steering Group
Mr Callum Weir	Head of Climate and Agriculture Programmes WWF
Mr Ian Wheal	Founder and Chief Executive Officer Breedr Ltd
Professor John Wibberley	Professor REALM/University of Reading/Royal Agricultural University, Cirencester
Mr Richard Williamson	Managing Director Williamson Orchard Limited

## After Dinner Speaker

Lord Deben

## Guest Observers

Ms Julia Buzan	PhD Student in Psychology and Behavioural Science at the London School of Economics Cumberland Lodge Fellow
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