



COMMERCIAL FARMERS GROUP



# Commercial Farming: Delivering the UK's new Agriculture Policies

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Commercial farming is the production of food, fibre or energy as a business. For commercial farming to remain economically sustainable while meeting required regulatory standards, and to enable it to meet a range of additional, wider goals, professional farm management usually focuses on a combination of the following: people development; business management tools; specialisation; and the adoption of new technology, all of which combine to optimise output.



# Executive Summary

Four years ago, the Commercial Farmers Group published a series of steps towards a vision for the future of “...a competitive and resilient UK agricultural industry after the UK leaves the EU, producing safe, affordable and sustainable products to meet the needs of customers, consumers and the environment”. Today, as we prepare to leave the EU, we have the chance to reinvigorate UK agriculture to deliver this vision, and meet a host of pressing new imperatives at the same time as bolstering the national and wider rural economy.

However, there is a risk that those best-placed to deliver such widescale change – existing successful commercial farm businesses – will be overlooked as ‘delivery partners’ for new agricultural policy. This is due to a lack of awareness of their considerable economic, environmental and social achievements to date, and an underestimation of their potential to spearhead the changes necessary to develop a new resilient and sustainable UK food and farming sector.

Fewer than 10% of farming businesses are estimated to produce over half the nation’s agricultural output,<sup>\*</sup> yet these are most at risk from proposed changes to agricultural policy that prioritises environmental enhancement to the detriment of all other factors. This would present an enormous missed opportunity as these farms are ideally positioned to maintain or improve productivity at the same time as addressing a wide range of other issues. These businesses already underpin significant parts of the economy and have long been focused on survival in a more competitive global marketplace with minimal direct support. Their efficiency is based on evidence-based decision making and best practice. They structure their operations to make optimal use of their natural resources. Where they are already engaged in delivering public goods, they do

so with accountability towards the outcomes. In short, they can quickly bring about change through capability, data, scale and technology to meet changing market demands.

This means that with the right infrastructure and support, commercial farming could be harnessed to help deliver a truly sustainable and vibrant rural land-based economy. This in turn would deliver food security, support significant food manufacturing and tourism sectors, increase employment, and provide major economic and environmental benefits in the UK. As a result, commercial farming could play a key role in generating some of the solutions for the post-pandemic economic and employment downturn – as well as addressing the use of finite resources, greenhouse gas emissions, climate change and biodiversity decline.

**It is therefore imperative that as future agriculture policies across the UK solidify, commercial farming has a ‘seat at the table’ to propose mechanisms through which its farmers can be incentivised to achieve the desired social and environmental outcomes. These goals can only become more feasible with a sustainable economic case to underpin them, and a critical mass to achieve them.**

In summary, commercial farming stands ready to deliver the UK’s new agriculture policies. Commercial farming matters economically, socially and environmentally, and without it, the UK’s progress towards a sustainable future will be slower and less efficient, and our economy, our society and our environment will be more vulnerable to the many global challenges we face.

<sup>\*</sup> Defra, 2018. The Future Farming and Environment Evidence Compendium. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/683972/future-farming-environment-evidence.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/683972/future-farming-environment-evidence.pdf)



# Introduction

Commercial agriculture has been the principle driver of prosperity and economic growth in humans. By continually improving the efficiency and consistency of food production, agriculture has effectively freed up those most valuable of resources, human time and ingenuity, for other endeavours that have vastly improved our quality of life.

The UK's longstanding agricultural heritage, despite its relatively modest and variable land base when compared with many other major food producing countries, places it firmly in the top tier of farming nations globally. While agricultural practices can be traced back as far as 10,000 BC and the Neolithic era, innovative and progressive commercial farming has been a fundamental component of both the UK's economy and our wider environment since the 18th and 19th centuries, when Britain was the birthplace of the second agricultural revolution.

The series of scientific, engineering and husbandry innovations during this era collectively transformed the productivity of farming, which in turn underpinned the industrial revolution that established Britain's position as the pre-eminent global economic power of the time.<sup>1</sup>

That culture of innovation continues to this day in the UK, both on the ground and in world-leading research establishments, universities and major UK-based global agribusinesses. Their products and services, particularly in the fields of animal and plant breeding, health & nutrition, and agricultural engineering have contributed to growth in agricultural productivity around the world.

However, these developments have not come without cost. Globally, agriculture – alongside transport, energy and manufacturing sectors – has been associated with depletion of finite resources, environmental degradation and negative impacts on human and animal welfare. The social and political need to control

food inflation alongside market liberalisation has led to years of downward price pressure in the UK, forcing many farmers to innovate, cut costs and chase efficiencies, sometimes adopting farming systems that sit uneasily with an increasingly urbanised and detached population.

While the severity of these in the UK has been minimised in comparison with other countries due to stringent environmental, animal welfare and human rights legislation, the UK's imminent departure from the EU provides both threat to the continuance of such controls, and an opportunity to address future imperatives in a more targeted and tailored way than may have been previously possible.

This is why today, as we prepare to leave an EU whose influence has, for approaching 50 years, shaped farming more profoundly than any other domestic industry, we find ourselves at the threshold of a new era for UK agriculture. This is especially so when set against a backdrop of significant global challenges and opportunities for food and the environment.

Just one of these challenges has been COVID-19, which has absorbed headlines in recent months, re-emphasising the central role of data and science in decision-making, and innovation and technology in developing solutions. It has also brought into sharp relief the need for a safe, effective and resilient food supply chain, and the hitherto underplayed role of those who harvest, process and deliver that food.

The timing of the COVID-19 crisis leads us to hope that with 2020 already a pivotal year for the government-led workstreams that need to slot into place ahead of the end of the Brexit transition period on 31 December, these recent findings will be considered in deliberations.

At the forefront of the workstreams in England are the Agriculture<sup>2</sup> and Environment<sup>3</sup> Bills, both informed by the

# THAT CULTURE OF INNOVATION CONTINUES TO THIS DAY IN THE UK, BOTH ON THE GROUND AND IN WORLD-LEADING RESEARCH ESTABLISHMENTS, UNIVERSITIES AND MAJOR UK-BASED GLOBAL AGRIBUSINESSES.



work of the Committee on Climate Change<sup>4</sup> and Natural Capital Committee.<sup>5</sup> Defra is also expected to introduce its new Office for Environment Protection (OEP)<sup>6</sup> shortly, holding government and public bodies to account on environmental standards once the UK leaves the EU.

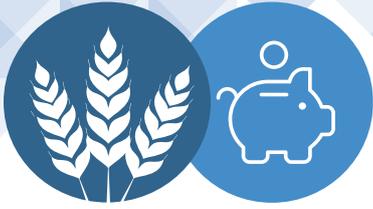
Development of policy in the other UK countries continues in parallel. The Welsh Government has stated its intention to bring forward an Agriculture (Wales) Bill,<sup>7</sup> creating a system 'better-suited' for Welsh agriculture, rural industries and Welsh communities. The outcome of a recent consultation is expected to provide more detail around this future Bill in due course. The Scottish Government introduced an Agriculture (Retained EU Law and Data) (Scotland) Bill<sup>8</sup> in November 2019, and this is currently working through Scottish Parliament. With the re-formation of the Northern Ireland Executive in January 2020, the outcome of a consultation on the future of agriculture in Northern Ireland run by DAERA in 2018<sup>9</sup> can now be considered as the shape of the new post-Brexit agricultural policy is evolved.

These together represent the most radical changes to agriculture and the rural economy since the 1946 Agriculture Act, but concerns remain about the underlying lack of importance still placed on food (and nutritional) security – exacerbated by Treasury adviser Tim Leunig's leaked emails earlier in 2020 claiming that the food sector was not 'critically important'.<sup>10</sup>

While Westminster's Agriculture Bill has been revised to include provisions on food security (previously absent) and the introduction of the National Food Strategy<sup>11</sup> into the 'conversation' in 2019 has been reassuring, disquiet persists that commercial farming remains misunderstood and undervalued, and food production will continue to be the expendable 'poor cousin' in the rush to address such a wide range of other imperatives.

Concerns remain that the opportunity to deliver many of the social and environmental changes needed through the mechanisms of commercial farming are also being missed. Firstly, as the Reverend W. J. Kennedy, Inspector of Schools for Lancashire, said in 1856: "If you want any business done for you, you should ask a busy man to do it"; we propose that if you want specific goals achieved through economically sustainable means, ask a commercial farmer with a proven track record. It is also commonly quoted that "you can't be green if you are in the red" – which explains why some of UK farming's most successful and impactful environmental changes have been underpinned by economically sustainable models that either reduce costs or add value.

In summary, this report investigates the contribution commercial farming could make to a more sustainable farming industry in the UK. In our conclusion we revisit the vision the Commercial Farmers Group defined in 2016 to see whether the vision still stands, and the steps to achieve it remain relevant. Far from a cause of problems, commercial farming could be a delivery partner, and provider of solutions that do not come at the expense of securing food (and nutritional) security.



# The Economic Opportunities

Economic viability is critical in that it underpins social and environmental sustainability. The following sections summarise the main economic opportunities presented by commercial farming, although many of these points also overlap with social and environmental benefits.

## 1. Gross Added Value

When viewed in isolation, UK agriculture's Gross Value Added (GVA) of £10 billion per annum and employment of 440,000 people (2018)<sup>12</sup> appears relatively modest in terms of the wider economy, but its importance goes beyond the commodity or farmgate value of our domestic agricultural output. Farming provides much of the feedstock for the UK food and drink manufacturing sector, which employs similar numbers again, and contributes a further £29 billion GVA annually. Both underpin our largest sector that employs more than 4.1 million people across the country and as a whole contributed more than £120 billion or 9.4% of GVA to the UK's non-financial business economy in 2017.<sup>13</sup>

While tourism remains in abeyance globally due to COVID-19, many visitors come to the British countryside to enjoy its farmed scenery or sample traditional food and drink, and the trickle-down effect of the money they spend benefits a wide sector of the community. A Deloitte's report<sup>14</sup> suggested tourism was worth between £58 billion and £127 billion in GVA in 2013, between 4.1% and 9% of the UK total, with the Tourism Alliance<sup>15</sup> estimating around a third of spend is in small towns or country areas.

The majority of food manufacture and farming businesses are SMEs, distributed across the mainly rural regions of the UK where primary agricultural production occurs and as such, have a symbiotic, value-adding relationship. When we also consider the myriad of other predominantly rural manufacturing and service-based businesses that depend on agriculture and food

production for a significant proportion of their revenues, then the true value of a thriving agricultural sector to the rural and wider economy becomes more obvious.

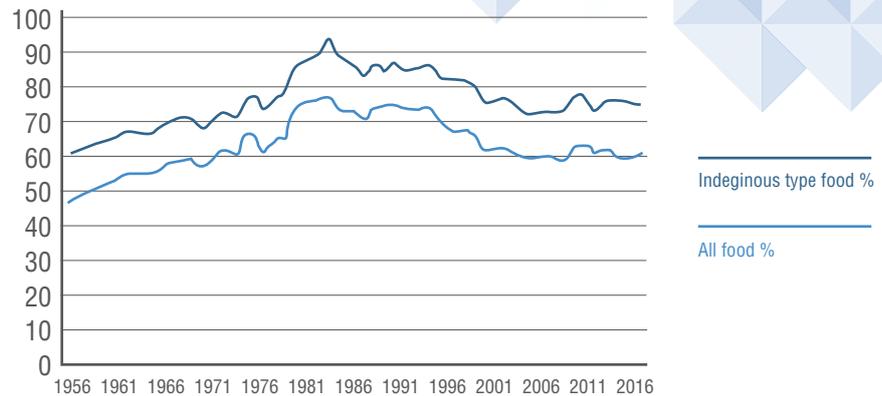
While small-scale, high-value niche production is a significant and growing part of our domestic food value chain, most of the added value occurs beyond the farm gate. For the majority of commercial primary producers, multiple retail and food service supply chains are far more significant and it is they that will ultimately determine the market value of most of UK agriculture's output.

In an era of increasing globalisation of food production, commercial pressures will inevitably drive manufacturing to regions where production can, from a short-term shareholder value perspective, be most competitively and advantageously procured – with perhaps less consideration afforded the longer-term socio-economic consequences of those decisions. If commercial UK farming were to contract significantly due to increased exposure to volatile world markets, or an uncompetitive regulatory environment, then the entire food manufacturing value chain, built on the back of it, will contract with it.

Therefore, where post-Brexit tariff and regulatory barriers are reduced for imported agricultural commodities, there is a benefit to ensuring that commercial producers in the UK are not unduly disadvantaged. The question remains how this can be achieved (Section 6).

**Figure 1: Food Production Supply Ratio** (source: Agriculture in the UK, 2018)

Food Production to Supply Ratio (commonly referred to as the 'Self Sufficiency Ratio'), is calculated as the farmgate value of a raw food production divided by the value of raw food for human consumption, and was estimated at the time of this report to be 61% for all food in 2018 and 75% for indigenous type food.



## 2. Food (and nutritional) security

Ensuring a competitive and viable agricultural sector is increasingly important to a UK outside the aegis of the EU from a food (and particularly nutrition) security perspective. The COVID-19 pandemic, where partly or fully closed national borders initially delayed many goods deliveries and domestic supply chains were found wanting, has only served to underline the importance of food security and robust, fully functional supply chains.

Conventional wisdom might suggest that EU tariffs have historically maintained food prices to consumers at unnecessarily high levels relative to what can be obtained on the world market. But this fails to recognise the likely intensification of volatility in global commodities as the 'perfect storm' of rising demand, climate change and diminishing resources, articulated by Professor John Beddington in 2009,<sup>16</sup> continues to build.

While commodity price pressure appears to have eased in the past five years, global commodity markets are still very finely balanced and vulnerable to significant shocks. The entire world's attitude towards food production changed fundamentally in 2008 on the back of three years of below-trend yield growth depleting world grain stocks. That risk has not gone away and remains every bit as great today as it was a decade ago.

The 2019/20 epidemic of African Swine Fever in the Chinese pig herd is a good example of how quickly and profoundly food commodity markets can move. In a bid to contain the spread of this disease, the Chinese had slaughtered 40% of their pig herd [at time of writing], which prior to the outbreak was estimated to account for c.50% of the world's pigs. This has resulted in a massive shortfall in domestic production and prices on the world market have surged as a result. As there

is insufficient pig-meat available globally to meet this shortfall, demand is driving up the price of other animal proteins as the Chinese seek substitutes for the deficit of pork. This in turn was a major contributing factor to the rising inflation rate in China in October 2019 (3.8%) well above the government's target of 3%.<sup>17</sup>

The economic impact to any country of sudden food price spikes is considerable. While relatively wealthy nations such as the UK can seek comfort in an ability to compete for scarce food stocks in a rising market, the negative impact of sudden and significant food price inflation (let alone temporary shortages) to other areas of the economy should not be underestimated.

Due to the long-term downward trend in the cost of food, our economy now relies on the premise of food being cheaper tomorrow, in real terms, than it is today. Any sustained reversal of that status quo, especially for an economy increasingly reliant on imported food (*Figure 1*), has potentially damaging recessionary consequences given the price-inelasticity of demand for food and the resulting impact on disposable income during periods of food price inflation.

In providing a significant proportion of the raw material for the UK food manufacturing, economically speaking UK agriculture punches above its weight and provides a crucial buffer against world market volatility.

Therefore, any actions that support the competitive position and resilience of UK commercial farming will improve the resilience of the wider economy, while those that compromise its competitiveness, resulting in primary food production being exported, expose us all to potentially damaging longer term economic risks.

### 3. Supply chain functionality & food waste

To turn to domestic food production, ensuring consistency of supply in terms of quality and quantity relies on a balanced supply chain. Farmers receiving a fair share of the profits in return for commercial endeavours are in a better position to invest in delivering against environmental or social sustainability goals. Efforts to achieve supply chain equitability through a voluntary Groceries Supply Code of Practice, introduced in 2010 and enforced from 2013 through a Code Adjudicator, have helped to reduce complaints from direct suppliers, although more than a third of those surveyed (36%) in 2019 still said they had experienced a Code-related issue in the past year (down from 79% in 2014).<sup>18</sup>

Despite these improvements, the Code cannot help those who supply retailers through third parties, which for many sectors is the majority of the market, and overall power remains very much stacked in favour of retailers. Direct contracts have proved beneficial for some, and many already include and fund the delivery of public goods – but other contracts hold little security and can deliver heavy penalties. Tim Lang, Professor of Food Policy at London's City University, commented recently in *The Guardian* on the cracks in the UK food supply chain that the COVID-19 crisis has exposed. He highlighted the imbalance of power with just eight companies controlling 90% of the food supply and primary producers getting the “smallest slice of the cake”.<sup>19</sup>

The opportunity presented by addressing supply chain issues more comprehensively and holistically would be the redistribution of returns and increased funding at source for environmental and social sustainability initiatives. There is also a significant potential to minimise food waste in primary production (est. 3.6 million tonnes annually<sup>20</sup>), as well as supply chain, food service and retail (est. 2 million tonnes<sup>21</sup>) through enhanced analytics, improved communication, and production which better meets market specifications.



**THE OPPORTUNITY PRESENTED BY ADDRESSING SUPPLY CHAIN ISSUES MORE COMPREHENSIVELY AND HOLISTICALLY WOULD BE THE REDISTRIBUTION OF RETURNS AND INCREASED FUNDING AT SOURCE FOR ENVIRONMENTAL AND SOCIAL SUSTAINABILITY INITIATIVES.**



## 4. Animal health & welfare

UK farming takes great pride in its environmental and animal health and welfare standards. While the international charity World Animal Protection acknowledges there is room for improvement, particularly in terms of delays in bringing in new laws, it recognises animal welfare in the UK is among the best in the world.<sup>22</sup>

It is a popular assumption that larger scale, more 'intensive' production presents an elevated risk to animal health and welfare. However, the conclusion across a range of scientific studies is there are pros and cons to all scales and intensities of production, with quality of management being the ultimate determinant.<sup>23,24</sup> Certainly, some modern, well-resourced and professionally-managed farms have been found to deliver significantly better health and welfare outcomes than the industry average,<sup>25</sup> especially if integrated supply chains incentivise higher standards and provide additional income to invest in infrastructure improvements.

Overall, the UK has for decades been at the forefront of moves to improve welfare standards such as the early phasing out of dry-sow stalls, veal crates and battery cages, often at not insignificant cost to domestic market competitiveness in the short to medium-term. The downside of this has been that commitments to ever-higher perceived welfare standards, particularly if based around inputs rather than quantified health and welfare outcomes, have sometimes undermined the competitive position of the industry without any real additive benefit to the UK's already world-leading standards.

An example of this was when sow gestation stalls were banned in the UK in 1999, 14 years before their planned phase-out across the rest of the EU, which resulted in a very costly decline in the UK national pig herd. Within five years, UK sow numbers had dropped by 40% as retailers switched to importing cheaper European pig meat, produced using methods that the UK had declared unacceptable – and yet due to EU trade law

could still be freely sold here.<sup>26</sup> It was only once the EU ban was introduced in 2013 that competitive parity was effectively restored and the relative decline in pig numbers slowed. But by that time the damage had been done and the UK pig sector, once at 80% self-sufficiency, has never recovered its domestic market share. Productivity has increased since then, thanks in the main to improved genetics and health, but self-sufficiency remains at 50%.

While the welfare motivation for such unilateral action should be welcomed, the inconsistency between consumer aspiration for animals reared in certain ways and actual buying behaviour should act as a cautionary note to any government considering trade deals that result in similar disparities in other sectors, where the net result is an export of the perceived animal welfare challenge.

In conclusion, higher standards that can provide clear and scientifically-proven animal welfare, socio-economic or environmental benefits, and for which costly externalities or detrimental impacts to competitiveness can be mitigated, are in everyone's interests and should form part of the UK's future policy. In these situations, commercial farmers in those sectors are often best-placed to identify and overcome barriers provided they have the opportunity to work constructively with government on designing new regimes.



## 5. New technologies

Access to production-enhancing technologies that are widely used in other areas of the world, and which have been proven to have no adverse and, in some cases profoundly positive health, welfare or environmental impacts, should be considered and reviewed.

The uncertainty around regulatory compliance post-Brexit is a serious risk to UK primary producers, who will potentially be caught between the rock of existing EU regulation, much of which will become immediately enshrined in UK law until addressed on a case by case basis, and the hard place of potentially reduced or tariff-free imports from regions where these regulations do not apply.

The more widespread adoption of genetically modified (GM) crops is one area where considerable productivity and environmental gains have already been demonstrated in regions that permit their cultivation. Further applications under research signal huge potential benefits from technologies such as self-fertilising crops.<sup>27</sup> Emerging 'CRISPR' gene-editing (GE) technology also promises a far greater range of opportunities across mainstream crop and animal agriculture and could be instrumental in the reduction of fossil fuel, pesticide and antibiotic use in food production in the future, as well as improving health and reducing the need for management procedures such as disbudding or de-horning.<sup>28</sup>

Much if not all of the earlier opposition to the commercial use of GM technology has been based on fear or miscommunication of risk. Unfortunately, this appears to have spilt over into the current opposition to the commercial use of GE technology in UK and EU food production, with the precautionary principle used by legislators as a convenient bulwark against having to make politically-uncomfortable decisions regarding their approval.

To allow farmers in the UK access to not only the economic but also environmental and animal welfare benefits that could arise from GE in particular, a shift of approach is needed from use of the EU hazard-based precautionary principle, to one of risk assessment (as has been successfully implemented during the COVID-19 crisis). Any activity carries a risk, and too often the risk is used to place a moratorium on a technology which would otherwise yield enormous net benefits. As the growing body of evidence supporting both safety and potential benefits strips away all but the most ideological arguments against their adoption, the opportunity now exists for commercial farmers in the UK to embrace potentially transformational technologies and use them to help deliver significant gains in wider areas of sustainability.

## 6. Trade & tariffs

It is difficult to see, given the hard-line position taken by the US in the recent US-Mexico-Canada Agreement trade talks regarding access to the hitherto unassailable Canadian dairy market, how the UK could withstand calls in future UK/US trade negotiations for access to the UK market for American hormone-treated beef or chlorine-rinsed chicken.

The EU has defied repeated calls from the WTO to lift what the WTO considers an unjustified import ban, imposed in 1990, resulting in retaliatory tariffs amounting to \$100 million per annum on EU exports to the US. Despite many assurances to the contrary, it seems unlikely that the UK government has the same appetite to defend a domestic beef market in particular that currently imports 25% of its volume from the EU, when there is little evidence of risk to human health, yet plenty to support environmental and economic benefits of using growth promoters?

We are not suggesting at all that UK regulations should be relaxed to accommodate growth promotion in any form, especially given the UK's far stronger position on stewarding antibiotic use in livestock. With the arguments for and against different standards driven as much by emotion as by evidence, clear and truthful food labelling to differentiate between standards can play a role in steering consumer choice. After all, food retailers are already the experts in the diversity of consumer attitudes and drivers of buying behaviour.

## 7. Economic opportunities – conclusions

Given the points raised in this section, we conclude that commercial farming in the UK presents economic opportunities to:

- Continue contributing significantly to the UK's GVA by retaining and improving the viability of both the food manufacturing and wider agri-food sectors, worth £120 billion, as well as the rural tourism sector
- Invest in higher animal welfare standards – albeit without disadvantaging the UK through unilateral unprotected measures
- Exploit new technologies that will allow the UK to improve resource efficiency, environmental outcomes and animal welfare
- Devolve difficult issues relating to disparity in international standards to the food chain
- Secure domestic nutritional security at current or increased levels and maintain a supply of quality, affordable, nutritious food
- Respond quickly and effectively to changes in consumer demands
- Improve efficiency and productivity (given the right governmental support)





# The Social Opportunities

The social opportunities arising from maintaining a viable commercial farming industry are broadly linked to many of the economic arguments outlined previously, and can be considered on both domestic and international levels.

## 8. Rural economies

Domestically, the economic impact of agriculture is, unsurprisingly, disproportionately felt in rural areas. A thriving agriculture benefits society through the direct and indirect provision of employment and economic activity in areas where there is often less incentive for non-land-based industries to invest.

While the intensification and mechanisation of agriculture, and the subsequent loss of direct on-farm employment, has historically been blamed for the decline of rural communities, it is more acute in more marginal rural areas where mechanisation and intensification have had relatively less impact. In reality, mechanisation arose out of necessity as it was the pull of greater opportunities elsewhere in the economy that drove the rural exodus to the cities, as it continues to do around the world today. However, there are as many if not more people employed in the wider 'food economy' today than half a century ago, it's just that more are now employed downstream of the farm gate.

A recent study conducted in Scotland<sup>29</sup> suggests despite concerns about rural depopulation, a wealth of opportunities exist for commercial farm businesses to underpin wider rural growth. The picture may not be one of the rural idylls, but jobs associated to commercial farming, in service and manufacturing from lower cost bases than urban areas, are a significant opportunity to spread economic wealth.

## 9. Affordability of food

Where commercial agriculture has an important socio-economic role to play is in the democratisation of food and the subsequent raising of living standards. By striving to produce food more efficiently and competitively, we drive the long-term real cost of food down relative to average wages. This has the advantage of making quality food more affordable and alleviating food poverty for an ever-greater proportion of society, which in turn has profound societal benefits in terms of public health and well-being, through greater opportunity of adequate nutrition.

While we have little influence on what people actually purchase and consume, by increasing our efficiency of production and thereby lowering the real cost of the most basic and fundamental of human needs, we raise living standards and drive economic growth by freeing up a greater proportion of disposable income to be spent elsewhere in the economy. It could also be argued that in a time of potentially rising demand for food around the world, we have a moral obligation to maximise the efficient production of food domestically if for no other reason than to alleviate inflationary pressure on world food prices. Every additional tonne of grain, or kg of cheese or beef that we import has the effect of maintaining upward price pressure on food markets globally and therefore, potentially compromising the affordability of adequate nutrition for the world's poorest people.

# **NOTHING CAUSES SOCIAL UNREST FASTER AND MORE ACUTELY THAN HUNGER AND THE OBSERVATION THAT “EVERY CIVILISATION IS THREE MEALS FROM CHAOS” IS AS RELEVANT TODAY AS IT WAS WHEN FIRST COINED IN ROMAN TIMES.**

While this may seem irrelevant at a time of falling prices, the old adage that “a well fed man has many problems, a hungry man just one” was brought starkly to life in the ‘bread riots’ witnessed in many Middle-Eastern and Asian countries in 2008, that subsequently fuelled the Arab Spring. Nothing causes social unrest faster and more acutely than hunger and the observation that “every civilisation is three meals from chaos” is as relevant today as it was when first (reportedly) coined in Roman times.

Efficient, affordable food production is both a moral obligation and an insurance policy against widespread social discord. It is no surprise that securing and maintaining a sustainable food supply has been for many years and remains the Chinese government’s principle strategic policy objective. When we consider that the UK has less productive cropland per capita than China, then the value of an efficient, functioning and viable commercial agriculture sector as a cornerstone of domestic food security becomes ever more compelling.

## 10. Animal health & welfare (2)

While animal health and welfare has been covered in the economic section of this report, it is often also regarded as a social concern. The importance of addressing animal welfare expectations as opposed to specific scientific outcomes is an imperative understood by commercial farmers, who by their nature are focused on the demands of their end-customers.

In the UK, the fact that consumer demand drives the market is often overlooked, and a myriad of systems claiming ‘higher welfare’ already exist yet are very poorly taken up. Should changes in consumer preference, knowledge or economics favour a long-term swing towards alternative production systems, commercial farming is well-placed to respond to this. The concern has never been about meeting changing expectations – it has always centred around the disparity between what consumers can ask for, and what they are prepared to pay for.

## 11. Social opportunities – conclusions

Given the points raised in this section, we conclude that supporting commercial farming in the UK presents the social opportunities to:

- Secure and build on existing high animal welfare standards
- Secure domestic nutritional security at current or increased levels and maintain a supply of quality, affordable, nutritious food
- Exploit new technologies that will allow the UK to improve animal welfare
- Stimulate rural economies through innovation and entrepreneurship



# The Environmental Opportunities

Commercial farming is often conflated with ‘intensive’ farming, and both are commonly blamed for a number of the world’s environmental challenges. These extend from deforestation and habitat loss to grow crops for human consumption or animal feed, to declining wild bird and insect numbers, water pollution, depletion of aquifers, and catastrophic levels of greenhouse gas emissions, with ruminant enteric methane production and emissions from intensively farmed livestock often cited in the media as the single largest source of anthropogenic greenhouse emissions.

Like all manufacturing and industrial processes, food production has a cost in terms of resource use and therefore an environment footprint. Due to its fundamentally unique nature, agriculture exploits many natural systems and processes that unavoidably involve the release and capture of significant quantities of greenhouse gases. However, it is important to consider that food production is a fundamental necessity and not a choice, cannot (to a greater or lesser extent) occur without the use of land, and is directly proportional to the number of people alive on the planet at a given time.

As a result, the rapidly growing world population and consequent demand for food becomes both key issue and driver of greenhouse gas emissions and resource use, and an opportunity for commercial farming to balance these imperatives against biodiversity imperatives.

## 12. Greenhouse gas emissions & resource efficiency

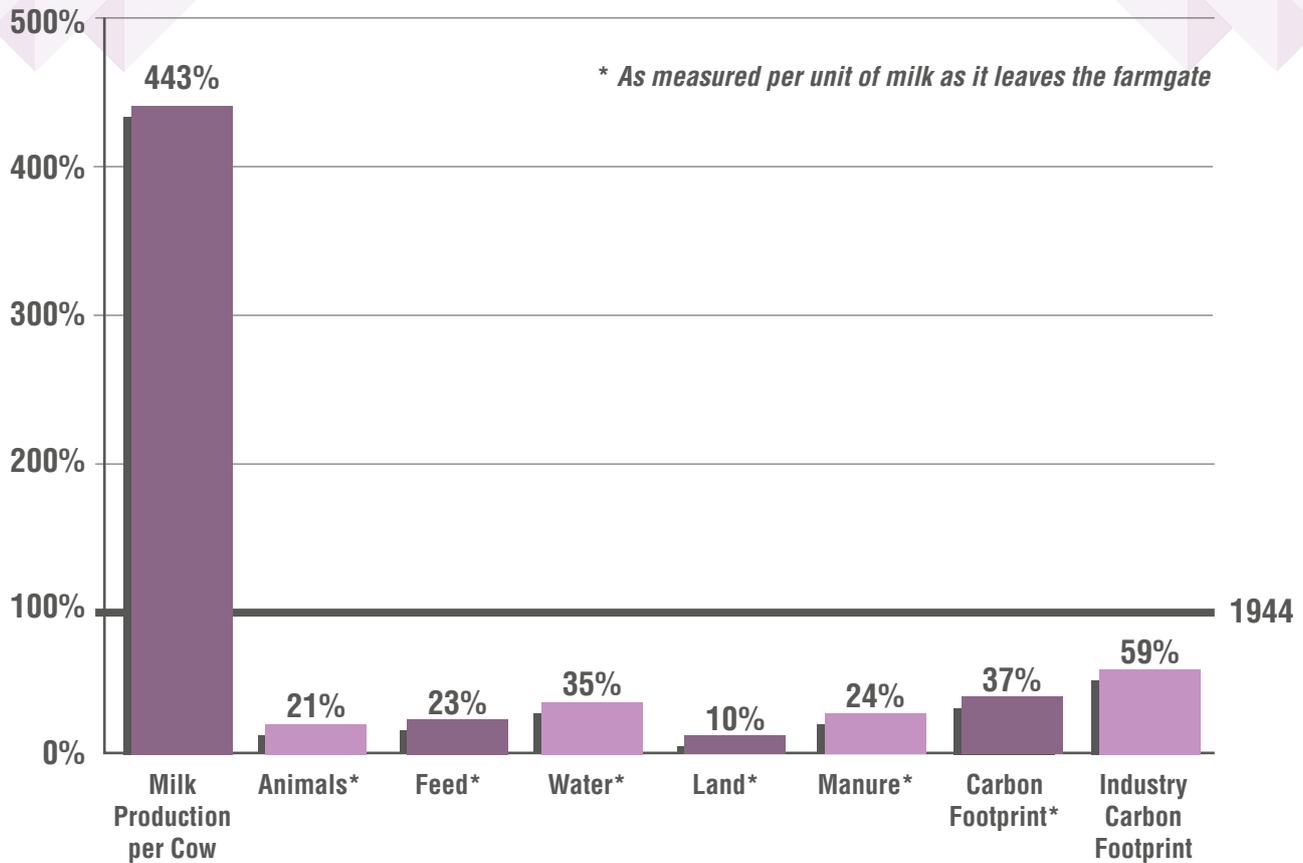
It was widely expected that a key focus of the 2020 United Nations Climate Change Conference COP26,<sup>30</sup> due to take place in Glasgow in November but now postponed until 2021, would have been nature- and land-based solutions to climate change.<sup>31</sup> Indeed, the NFU sees the opportunity for farming to be part of the solution, and has announced its intention to achieve Net Zero<sup>32</sup> greenhouse gas emissions across English and Welsh agriculture by 2040, through a range of measures that include improved efficiency, better land management and use, and boosting renewable energy.

The UK with its climate, rainfall, biodiversity, topology and geological features undoubtedly offers ample

opportunities to reduce carbon emissions through renewable energy generation and low-carbon farming. Commercial businesses with their access to land, capital and planning expertise are very well placed to take up renewable energy generation, whether wind, photovoltaic, anaerobic digestion, geothermal or other more novel technologies.

Regarding carbon emissions, while commercial farming is frequently a target for environmental blame, it offers greater opportunity to implement environmentally beneficial measures without compromising on other environmental or economic imperatives. A large modern farm might, in absolute terms, use more resources and

**Figure 2: Comparative efficiencies of producing a litre of milk in the US in 2007 compared with 1944**  
(source: Capper et al, 2009)



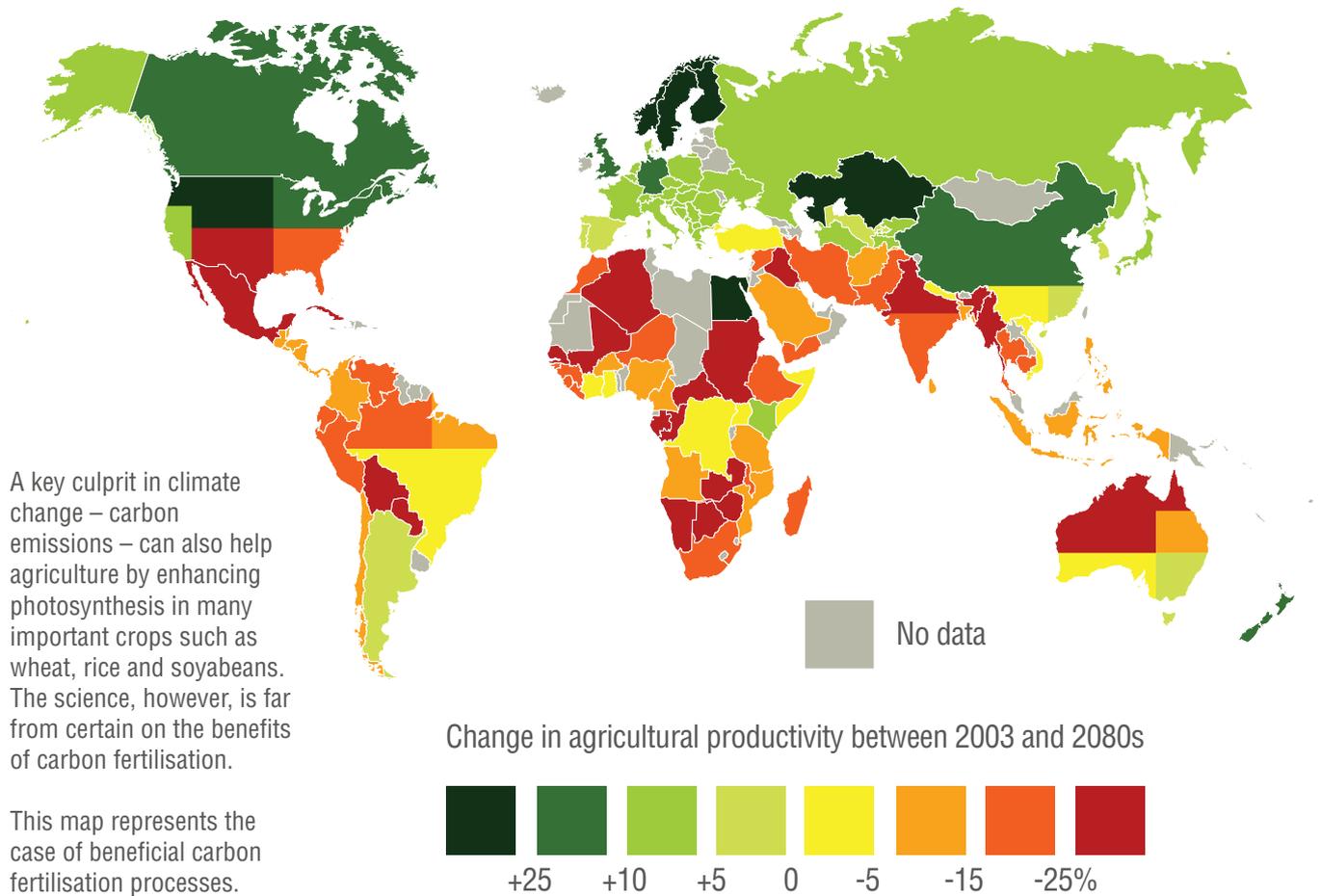
emit more greenhouse gases than a small traditional farm, but any analysis should compare figures in terms of 'per unit of output'. In 2018, a study from Poore & Nemecek suggested wide ranges in greenhouse gas emissions from one farm to the next.<sup>33</sup> While there are currently no universally accepted on-farm tools to help a farmer determine actual levels, a growing number of major peer-reviewed studies by global authorities on agriculture, including the UN's FAO, have now shown conclusively that when viewed purely at 'unit of output' level (ignoring social imperatives), more intensive systems of production are almost invariably more efficient, and therefore carry a lower cost in terms of resource use and greenhouse gas emissions than more traditional methods of production.<sup>34</sup>

If we were to use milk production as an example, then a litre of milk produced in Western Europe or the US, by higher yielding cows managed more intensively, has a whole lifecycle carbon footprint of 1/8th of that of a litre of milk produced in many parts of Asia or sub-Saharan Africa using more traditional and less intensive methods.<sup>35</sup> If we were to use carbon footprint as a proxy for total resource usage and then project forward the anticipated growth in food demand in Africa and Asia in the next 30-50 years then commercial-scale farming

in the developed world begins to look more and more like the solution to conflicting needs of increasing food production while reducing greenhouse gas emissions.

If we again use the impact of milk production as an indicator of direction of travel, then a study carried out by Capper et al. at Cornell University in 2009<sup>36</sup> comparing the whole lifecycle cost of producing 1 billion litres of milk in the US in 2007 under the prevailing contemporary feedlot based system, to the same volume produced in the US in 1944 under more extensive pastoral methods, then the outcomes are equally stark (*Figure 2*). It showed a litre of milk produced in the US in 2007 required 10% of the land, 21% of the animals 35% of the water and generated 24% of the manure and 37% of the carbon footprint of a litre of milk produced in 1944, due in the main to massive improvements in genetics and management efficiency of both the animals and the crops grown to feed them. Similar trends can be observed across all major livestock species and food crops across the world, contrasting starkly with the widely accepted narrative that bigger and more intensive is worse for the environment and for humanity. Hence commercial farming offers the opportunity to reduce greenhouse gas emissions and resource use through efficient farming methods.

**Figure 3: Projected impact of climate change on agricultural yields**  
 (from Cline W, 2007. *Global Warming and Agriculture: Impact Estimates by Country*)



## 13. Climate change & water

In 2008 the IMF published the findings of a 2007 paper by William Cline et al. at the Petersen Institute for Global Economics in Washington, that looked at the likely impact of climate change on agricultural productivity in the next 50-80 years<sup>37</sup> (Figure 3). The results suggest that due to the impact of climate change, food production potential in areas where the projected growth in population is the largest (i.e. Africa, Asia and South America) could be reduced by up to 25% while a corresponding rise in production potential was predicted in more northern latitudes. If this scenario is remotely accurate then there is an even greater onus on commercial farming in Northern Europe, Eurasia and North America to continue to produce food and to develop ever more efficient methods of food production, that can be deployed effectively elsewhere in the world, both to mitigate the impacts of climate change and to avert a potentially major socio-economic catastrophe.

One of the main limiting factors to production arising from climate change is water availability. A 2010 report from the World Wildlife Fund (WWF)<sup>38</sup> explains that globally, 70% of existing freshwater is withdrawn for irrigation in agriculture. Currently, 73% of the estimated 4,645 litres consumed directly and indirectly per UK person per day is in the form of agricultural products, of which 62% is in imported products. The more 'embodied water' we import into the UK in the form of agricultural products, the greater the impact on the environment in the countries that produced them.

However, not all water is the same. 'Blue' water is water from lakes, rivers and aquifers, and 'green' water is rainfall captured or stored in the soil (Figure 4). Green water is sometimes discounted from scientifically-based water footprint calculations because it is regarded as a natural resource which is a function of land use. The

**Figure 4: The three water footprints** (from Water Footprint Network [waterfootprint.org](http://waterfootprint.org))



**Green water footprint** is water from precipitation that is stored in the root zone of the soil and evaporated, transpired or incorporated by plants. It is particularly relevant for agricultural, horticultural and forestry products.



**Blue water footprint** is water that has been sourced from surface or groundwater resources and is either evaporated, incorporated into a product or taken from one body of water and returned to another, or returned at a different time. Irrigated agriculture, industry and domestic water use can each have a blue water footprint.



**Grey water footprint** is the amount of fresh water required to assimilate pollutants to meet specific water quality standards. The grey water footprint considers point-source pollution discharged to a freshwater resource directly through a pipe or indirectly through runoff or leaching from the soil, impervious surfaces, or other diffuse sources.

UK's plentiful (average) rainfall means a much higher balance of green water is used in UK farming compared with many countries, resulting in a far lower impact on the availability of water for other purposes. For example, almost all wheat in the UK is rain-fed, and UK beef and lamb have been calculated to require 88% and 99% green water respectively.<sup>39</sup> It is also worth noting that UK rainfall levels (green water) are significantly higher than seven of the top 10 countries from which it imports 'embodied water' in the form of agricultural products.

Therefore, importing yet more food into the UK does not reduce our environmental impact – it just exports it to areas where the net impact may be far greater. Hence, such a policy would exert stress on an already-pressured global food supply with possible long-term unintended consequences for both environment and social order.

By contrast, UK agriculture and its technological legacy has historically played a major role in feeding the world's population, and our role going forward is every bit as important now as at any time in our history. In her

speech to the 2020 Oxford Farming Conference, NFU president Minette Batters highlighted the moral and economic imperative for countries such as the UK to at least maintain if not raise their agricultural production, as their climate and increasingly their access to plentiful supplies of fresh water, makes domestic production a more strategically sensible option than exporting production to third countries where these resources are increasingly challenged.

However, it is critical to acknowledge that making the most use of the UK's natural resources still needs improved efficiency and optimisation of where production takes place, and how. Commercial farmers have already identified the benefits of investing in water infrastructure, including capture, storage and transport of water alongside improved drainage management and flood alleviation. Many of these opportunities are now being combined with renewable energy generation – for example floating photovoltaic panels on water reservoirs which reduce evaporation, or carbon capture and storage within soil through use of cover crops which also reduce soil erosion and increase water retention.

## 14. Soil

Minimum or no-till farming on a commercial scale incorporating targeted use of herbicides is a concept being driven forward primarily by commercial farmers, who not only recognise the cost reduction benefit but the huge improvements in soil organic matter and soil micro-organism numbers, alongside reductions in soil degradation, compaction and erosion.

While an estimated 9.8 billion tonnes of carbon are currently stored in Britain's soils,<sup>40</sup> there is considerable capacity to increase this as it has been stated that 45% of European soils currently exhibit very low organic matter content.<sup>41</sup> Green manuring techniques or the re-integration of livestock to farms either in the form of separate farms sharing nutrients and resources, or the physical presence of animals as in mob grazing techniques, illustrates that commercial farmers have already realised the water retention, fertility and resilience benefits of increasing soil carbon.



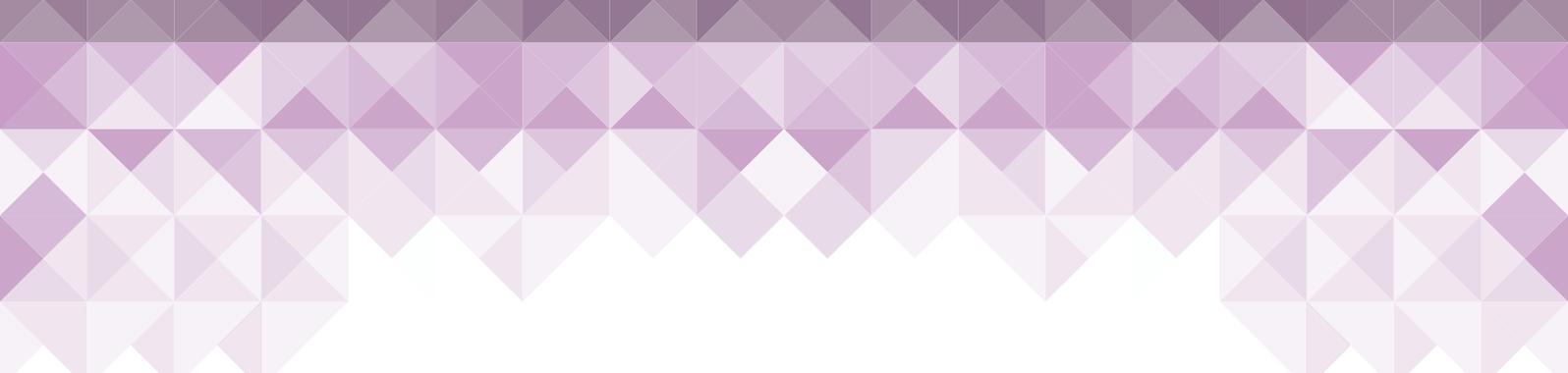
## 15. Pollution

The majority of environmental pollution from agriculture is described as 'diffuse', i.e. coming from a myriad of smaller point sources, that for reasons of logistics and cost are often difficult to accurately monitor, measure or mitigate. Again, scale and modernity are frequently linked with environmental risk while in reality the Environment Agency acknowledges that new facilities and technologies, linked with commercial farming, can reduce the risk of pollution, or wider environmental impact if they replace older facilities or systems – albeit with suitable safeguards in place to manage any risks.<sup>42</sup>

Many of the current and emerging mitigation measures available to reduce the risk of both environmental pollution and greenhouse gas emissions require a level of investment and minimum viable scale of operation that potentially discourages their uptake by smaller less well-capitalised businesses. Such large capital investments require a profitable agriculture, hence are more open to uptake by commercial operators.

Furthermore, and again counter to the popular narrative, higher levels of scrutiny are invariably applied to larger-scale commercial facilities in the UK than to smaller lifestyle or niche farms. From planning to decommissioning and at all points in between, a combination of both market and statutory regulators provide a robust set of checks and balances to the already high standards of professional management employed across the industry, resulting in the high quality of outcomes observed. We have seen this in action in the halving of antibiotic use in livestock farming in the UK over the past five years, which has been spearheaded by the more intensive and commercial poultry meat and pig sectors.<sup>43,44,45</sup> While antibiotic use in the UK is far lower than the European average, antibiotic resistance is a 'One Health' issue, and the reduction of use on-farm will help reduce the dissemination of both antibiotics and resistance genes into the environment.

Therefore, increased investment in animal health, biosecurity, and housing and farm infrastructure, adoption of Integrated Farm Management<sup>46</sup> techniques, and use of precision application equipment and data to optimise nutrient management, will all help reduce ingress of chemical inputs into the environment and numbers of pollution incidents. The adoption of all these measures can be promoted through commercial farming.



## **AN OPPORTUNITY OFFERED BY COMMERCIAL FARMING TOWARDS SUCCEEDING IN BIODIVERSITY GOALS IS THE APPLICATION OF AN OUTCOME-BASED APPROACH, WHICH LOOKS TO EFFICIENTLY MAXIMISE THE YIELD OF BIODIVERSITY, IN MUCH THE SAME WAY AS PRODUCTIVITY OF A CROP WOULD BE MAXIMISED.**

### 16. Biodiversity & natural capital

The 2018 Cambridge University report by Balmsford et al.<sup>47</sup> concluded that counter to popular perception, larger-scale more intensive agricultural production methods required fewer inputs per unit of output and were often less damaging to the environment – particularly when viewed at a landscape scale – than less intensive systems of production. One of the reasons for this is the opportunities for biodiversity and natural capital offered by land sparing, a concept recognised for a number of years,<sup>48</sup> and formally practised on commercial basis through initiatives such as LEAF,<sup>49</sup> which operates an outcome-based biodiversity approach, and Conservation Grade<sup>50</sup> which is no longer running, but required 10% of land – usually the least productive – be placed under native environmental management, for example sowing with specific pollen and nectar plant mixes. These concepts fit with the EU's new Farm to Fork strategy,<sup>51</sup> launched May 2020, which aims to bring at least 10% of agricultural area back under high-diversity landscape features.

An opportunity offered by commercial farming towards succeeding in biodiversity goals is the application of an outcome-based approach, which looks to efficiently maximise the yield of biodiversity, in much the same way as productivity of a crop would be maximised. Given that commercial farming in the UK already succeeds despite volatile markets, challenging weather and global competition, ambitious plans to enhance natural capital can only be more achievable if the most commercial-focused farmers have the incentive to apply their businesses towards the issue.

### 17. Environmental opportunities – conclusions

Given the points raised in this section, we conclude that supporting commercial farming in the UK presents the environmental opportunities to:

- Exploit new technologies that will allow the UK to improve resource efficiency
- Improve efficiency and productivity (given the right governmental support)
- Become the solution (not cause) of a range of environmental concerns, including use of finite resources, greenhouse gas emissions, climate impacts, and decline of biodiversity

# COMMERCIAL AGRICULTURE MATTERS, AND IS MORE RELEVANT TODAY THAN EVER BEFORE. MAKE IT PART OF THE SOLUTION.

## Overall conclusions

When considering its impacts in terms of cost to the end consumer and environmental footprint, then modern commercial farming could possibly be viewed as a major contributor to raising living standards while at the same time mitigating mankind's environmental impact. That is not to deny the responsibility farming shares for the myriad challenges we face globally. But considering the likely future impact of a changing climate on the productive potential of agricultural land, by farming more efficiently and environmentally responsibly on land which will support such a level of production, we can meet our net zero emissions commitment by 2040 and spare a far greater area of more marginal land for nature (within and without the UK) in the process. Moreover, we can do this at the same time as maintaining security of food supply and continuing to improve animal welfare and social outcomes – while contributing to the national and wider rural economy.

In 2016, the Commercial Farmers Group created a vision for the future, which was: **“a competitive and resilient UK agricultural industry after the UK leaves the EU, producing safe, affordable and sustainable products to meet the needs of customers, consumers and the environment.”** Having identified numerous ways in this report in which commercial farming can flex, adapt and continue to contribute towards a resilient future, we review the steps that were defined alongside the vision.

Our conclusion is these steps are as relevant as they were four years ago. The Commercial Farmers Group urgently asks for an opportunity to work with Government to develop solutions. Commercial agriculture matters, and is more relevant today than ever before. Make it part of the solution.

The 10 steps:

- Within the emerging 25-year strategy for the farming and food industry, a series of achievable, measurable five-year/shorter-term plans.
- Smarter regulation with a genuine emphasis on earned recognition and evidenced outcomes rather than compliance with process.
- Environmental policy that recognises the active management required to achieve many environmental benefits.
- Increased and better-directed funding for applied research, development and extension to increase productivity and mitigate changing climate.
- A cost-effective plan to support the delivery of public goods, including development of rural infrastructures and flood defences, and continuing improvement of the environment.
- Creation of new UK export markets for both commodity and added-value goods through a targeted, measurable and UK government-led strategy.
- Recognition of the positive benefits of scale, technology and modern farming systems in increasing productivity and providing beneficial contribution to the environment.
- Policy which considers the whole food supply chain.
- Promotion of the breadth and depth of career opportunities in agriculture at schools, colleges and universities and through work experience, apprenticeships and practical farm management training.
- A sustainable plan to ensure key sectors within UK farming can continue to access seasonal and casual labour from overseas.

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“The Commercial Farmers Group promotes competitive and resilient UK agriculture producing safe, affordable and sustainable goods (eg food, fibre, energy) to meet the needs of customers, consumers and the environment. We aim to produce these goods with reducing direct payments alongside appropriate and proportionate regulation, with public money primarily directed towards the delivery of public goods. In the long term, with production decoupled from subsidy and excessive regulation, farmers would be better-placed to compete in a global marketplace.”