

A FUTURE FOR FARMING

A vision for sustainable UK agriculture

SPRING 2024



FARMERS
WEEKLY

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TRANSITION



OUR PARTNERS



The *Farmers Weekly* Transition Partner Network is a UK-wide community of farmers, industry stakeholders and influencers working together to secure a sustainable future for UK agriculture. If you would like to join and want more information, contact Anna Eccleston at anna.eccleston@markallengroup.com

Foreword

Welcome to *A Future for Farming*, a special *Farmers Weekly* publication outlining the benefits that a sustainable future for UK agriculture will bring people and the planet. As a society, we face huge challenges. Healthy, quality food is at the heart of a healthy nation. But we also face the need to mitigate climate change, improve the environment and secure clean air and water. Farmers are uniquely placed to help the UK meet these challenges – and provide all these benefits – but only if agriculture itself is profitable. As well as being the bedrock for the UK's £104.4bn food and drink industry*, growers and livestock producers can store vast amounts of carbon in the soil, build better natural capital and help the UK meet net-zero targets. In *A Future for Farming*, we bring together 18 experts from our *Farmers Weekly* Transition network to highlight ways policymakers can make this possible – and the benefits it will bring – illustrated with case studies from 12 successful farmers. With a general election due in 2024, we examine six key areas that must be addressed by the next government: agricultural policy, food production, food security, trade, natural capital and climate change.

Johann Tasker
Farmers Weekly Transition editor and roundtable chairman

*Valued at £104.4bn, the UK's food and drink industry is the country's biggest manufacturing sector by turnover – larger than the automotive and aerospace industries combined. Source: Department for Business and Trade, 2024



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TRANSITION FARMERS

Throughout this report, as well as the thoughts of the roundtable delegates, we bring you input from our Transition Farmers. These are a group of growers and livestock producers who have agreed to share their experiences, expertise and advice. Go to fwi.co.uk/transition





Meet the 18 Transition

The Transition roundtable brought together 18 experts from across the food

roundtable participants

and farming sector to help secure a sustainable future for UK agriculture

STUART JACKSON *Head of technical services, UPL*



Stuart Jackson heads the UPL technical team, which has a focus on biological products under the banner of natural plant protection (NPP). He has been involved in the crop protection business for more than 33 years, with various technical roles in the development of cereal herbicides and fungicides.

JONATHAN ARMITAGE *Head of farming, Strutt & Parker*



Jonathan Armitage is a highly experienced farming, rural business and property consultant and manager with 30-plus years' experience as a qualified rural practice chartered surveyor. He has been head of farming at Strutt & Parker since 2021, leading a team of farming consultants.

JOHN ALLEN *Director, AB Dairy/Kite Consultancy*



John Allen owns Kite Consultancy, one of the UK's leading dairy consultancy companies, and provides business services across farming and allied industries. John's areas of expertise include strategic planning, marketing, supply chain management and change management.

JEFF CLAYDON *Chief executive, Claydon Drills*



Third-generation farmer Jeff Claydon invented the first Claydon product in 1980, and the first-ever grain monitoring device to be fitted to a combine – the Claydon Yield-o-Meter. The company went on to innovate with a direct strip tillage drill in 2003 and now exports machinery to more than 30 countries.

DECLAN KEILEY *UK and Ireland head of development, Lightsource BP*



Declan Keiley qualified in rural practice surveying and started out as a land agent. He moved into the renewable energy sector before joining Lightsource BP in 2021. The company's solar projects offer long-term leases to farmers and landowners, providing a diversified income stream.

TOM MASON *Head of land, Environment Bank*



Tom Mason is an MRICS rural chartered surveyor with more than 10 years' experience in the agricultural sector. He leads a team of land managers working with farmers to create habitat banks. His mission is to find innovative solutions balancing the needs of the environment and the rural economy.

MARK BUCKINGHAM *Corporate engagement leader, Bayer*



Mark Buckingham has a degree in Agriculture from Reading University and is a Nuffield Farming Scholar. He has worked as a farm business consultant in marketing, and for a grain trading company. He was a public affairs manager at Monsanto before taking up his present role at Bayer in 2018.

THOMAS GENT *UK country lead, Agreena*



Fourth-generation farmer Thomas Gent works on the family farm alongside his role at Agreena. He is committed to regenerative farming and is a key player in developing the UK and European soil carbon market. His farm was one of the first in the UK to join the Agreena carbon programme.

ANDREW FLUX *Group commercial strategy director, Frontier*



Hailing from a family farming background, Andrew Flux began his career with Frontier 16 years ago. He leads Frontier's commercial strategy, overseeing crop protection supply and innovation, fertiliser, sustainable crop production, corporate sustainability and marketing and communications.

MICHAEL LEE *Deputy vice-chancellor, Harper Adams University*



Prof Michael Lee is a world expert in sustainable livestock systems, animal science and nutrition. He has worked for institutions including Rothamsted Research, University of Bristol, and the European Federation for Animal Science, and published more than 350 research articles and papers.

GRAHAM MOORE *Director, John Innes Centre*



World-leading scientist and pioneering wheat researcher Prof Graham Moore has contributed to improving wheat yields and variety resilience. He was awarded the Rank Prize for Nutrition for his contribution to research, and the Royal Society Darwin Medal for developing the concept of cereal synteny.

PAUL SAVAGE *UK agricultural director, Arla Foods*



Paul Savage has experience in the commercial and ecommerce sectors, including 10 years in agricultural business at Arla. He has a keen understanding of the price pressures facing farmers and retailers. He is very much focused on helping to create a sustainable, successful dairy sector.

PIERS COSTLEY *Managing director, Farmplan*



Piers Costley joined Farmplan straight from Berkshire College of Agriculture, working his way up to managing director. He focuses on delivering innovation in farm management software solutions. He believes data and good business intelligence is key to making good decisions in a post-Brexit era.

BEN MAKOWIECKI *Agricultural sustainability director, Lloyds Bank*



Ben Makowiecki has worked for 25 years in agricultural banking and consultancy. He is also a strategic group member of the Green Finance Institute report *Financing a Farming Transition*, examining how private finance and government can help farmers transition to net zero.

TIM OLIVER *Co-founder, Wanderlands*



Tim Oliver has a background in international commerce and spent 25 years working across numerous markets in Asia before co-founding award-winning environmental consultancy Wanderlands, which advises landowners on how to achieve their net-zero or net-gain objectives.

SOPHIE THROUP *Technical and sustainability director, Morrisons*



Sophie Throup comes from a family dairy and egg farm. She worked in the veterinary sector on research and training programmes before moving into the retail sector. She was involved in setting up the School of Sustainable Food and Farming at Harper Adams University and CIELivestock.

PHILIP HAMBLING *UK head of corporate social responsibility, ABP*



Philip Hambling started his career at Defra and has held posts at the British Meat Processors Association and Sainsbury's, and was NFU head of food and farming from 2017 to 2023. ABP is part of Harper Adams School of Sustainable Food and Farming Delivery Partner Network, exploring sustainable farming methods.

ANGELA BOOTH *Director of responsibility, AB Agri*



Angela Booth has a degree in animal nutrition and worked as a feed compound nutritionist before joining a regional animal feed business which became part of AB Agri in 2001. Her role at AB Agri is focused on leading the team towards its goal of achieving net zero in its operations by 2030.

AGRICULTURAL POLICY

Barriers to securing a sustainable economic, social and environmental future for UK farmers must be overcome



Jonathan Armitage

The overriding requirement for a sustainable farming business must be that it is profitable. Profitable businesses are best placed to make changes over time to deploy a long-term strategy. It gives breathing space for farmers to properly consider changing circumstances and to put measures in place to change business systems and activities that may not have an immediate positive impact on cashflow. We cannot rely on government to ensure the profitability of all farming business all of the time, but we can expect a government to provide an environment in which they have the greatest chance of success and to manage risk. This could include supporting our domestic industry by limiting imports that do not meet our own standards, widening the brief of the Groceries Code Adjudicator so they can deliver fairness within the domestic supply chain and offering clarity on when government might be willing to offer protection from sudden or temporary market shocks.



Stuart Jackson

For innovative companies bringing new solutions to the market, one of the key barriers is not having a defined regulatory pathway for biological or biostimulant products. There are lots of

products in the marketplace that have no predefined requirement to demonstrate consistency of performance, so we need a framework that allows us to register them. Unless we have that regulatory pathway for biopesticides and the right opportunity to demonstrate consistency of performance, there will be little progress made in achieving the government's target of cutting pesticide use and accelerating integrated control methods.



Mark Buckingham

My key ask on policy would be for a science-driven and proportionate regulation that enables business investment. Without it, commercial organisations are being held back and important technical developments are either being delayed or shelved. This is putting us at a competitive disadvantage, at a time when it is being sorely felt at the farm level.

Brexit offers us an opportunity to change this situation. We've gone through the extremely expensive, disruptive process of leaving the EU to achieve regulatory autonomy and the scale of this opportunity is really significant and underappreciated. There is some encouraging evidence of how the government is starting to look at regulatory opportunities and it is taking some important steps towards

global best practice, so I think we need to look for this science-driven, apolitical and proportionate system to continue.



Piers Costley

The top point is the need for an industry vision. At the moment there seem to be multiple overlapping visions that are competing, especially since Brexit. So I think an overarching, long-term vision is urgently needed to provide direction and confidence and then an appropriate funding system that continues into the future. Agriculture also needs proper representation in policy and decision-making circles. Every sector has different challenges, so that needs to be reflected. And, policy must appreciate the significant cultural barriers to change.

A significant proportion of the industry is made up of family farms, so for them to transition to doing something else is a very significant change. That has to be understood and built into the vision and policy.



Ben Makowiecki

There are broadly five policy requirements that would help to correct the risk-reward balance that is affecting everyone in the



UK-produced food faces increasing competition from imported food



The King delivered the government's agenda at the state opening of parliament in November

We are giving up food output here and importing it from further away, which can't be a sustainable approach. Andrew McFadzean

industry, regardless of their specialism or sector. The first is to develop a deliberate decarbonisation strategy for agriculture – it's the only high-emitting sector that doesn't have one. The second is to back a standard method for calculating carbon emissions. Farmers will need ongoing support to improve the environmental performance of their land, so our third requirement is to ensure public payments are sufficient to allow this work to go on. There must also be clearance for green finance schemes that allow farmers to invest. Finally, we need clear guidelines to better control voluntary carbon markets.



Declan Keiley

There are three policy issues that need addressing. First, it is the present planning policy constraints that need to change to encourage a greater diversity in the scale of solar power projects. The second and third issues are related. A lot of the work we do improves biodiversity net gain, but signing a lease with us immediately excludes farmers from agri-environment schemes. This is obviously a significant barrier to renewable schemes. Likewise with tax,

a farmer loses all agricultural relief on the land once an agreement for a solar power diversification is signed. These are relatively small moves that wouldn't have a big impact on the Treasury but would do a great deal for farmers.



Sophie Throup

For retailers, the biggest barrier is the lack of a common definition of sustainability. We need to know what the term means and what its impact will be on food production

TRANSITION FARMER Andrew McFadzean

Ayrshire-based Andrew is looking to improve grassland and cut his dependency on inputs for his beef finishing system.

He believes all four UK governments need to have a greater understanding of agriculture at farm level to create policies that support a thriving home-grown food sector. "It concerns me that the green groups have the ear of the politicians, particularly in Holyrood. The resulting policies, influenced by their beliefs, don't work when applied to real-world food production," says Andrew. For example, it is

not a sustainable policy to encourage global commercial companies to offset carbon emissions by planting conifers on vast land areas of land with food-growing potential. That land will be lost to food production for at least 30-60 years. In that time frame, national and global food demand will increase dramatically so we are losing this capacity when we could need it most, he suggests. "Instead, tougher curbs on emissions should be imposed directly on the airlines and developers who are using farmland to offset emissions. The national cattle population has declined over the past 20 years while air travel is increasing. But agriculture is hit far harder by legislation and

food output is being lost. We are only about 60% self-sufficient. Cutting your ability to produce home-grown food cannot be a sustainable approach to policy making, especially as the UK is one of the most efficient food producers in the world. We are giving up food output here and importing it from further away, which can't be a sustainable approach."

Andrew says policies should be geared to prioritise efficient, home-grown food production and encourage good practice that protects the land for the future. Then we need to educate people to eat fresh food rather than processed. "It would be better for the nation's health and food security."





Everyone wants cheap, affordable food, but there is a trade-off, and when it costs more to produce than you can sell it for, then something is not quite right.

Vicky and Kate Morgan

and distribution. What do we mean by sustainable and does everyone think it means the same thing? Everyone is working on sustainable solutions and practices, but they are not necessarily doing this in a common way. While progress is being made and an acceptance that things need to change, common definitions would bring all this together.



Philip Hambling The main barrier is that policy development needs to be directional and enabling – right now there is a lack of vision for the business of farming at government level, so the farming sector is not aligned with what it needs to deliver for policy or the market. There are good words said about what the aspirations are, but those need to be turned from a “word salad” to practical stuff that is meaningful and relevant to farmers on the ground. This lack of a clear vision, combined with agflation, has sapped confidence and held up investment. A much more supportive and directional policy environment is required.

Complexity costs time and money. The lengthy stop-start transition from BPS to ELM has been an unmitigated disaster. There are small-scale farmers in Wales looking at going out of business and in other places large farms looking to diversify. Everybody is getting sidetracked with poor clarity. The reality is, if the government wants the industry to change, making farmers worse off is not the way to do that. A new and more courageous approach to policy is required. The approach to renewables is also ridiculous. Constraints on wind turbines and arbitrary power output limits for solar all act as a deterrent. ■



Angela Booth A joined-up vision and government regulation relevant to the development of new technology are both required for the industry to move forward and for us to feed a growing population. We first need to decide what that vision and any resulting strategies cover –

whether it's land use, agriculture or food security. That then needs to be adopted by all the government departments. For the new technology regulation, we want to see it made appropriate and science-based. It must be specific to new technology rather than an existing framework imposed. A third point is the amount of time businesses spend on non-financial reporting. We need to recognise the amount of unproductive actions and therefore unproductive time in our lives that has to be resourced. The non-financial reporting requirements in the food supply chain are now so onerous that productive time is being lost.



Tim Oliver The fundamental policy problem in the UK is complexity. For policy to create the change that's required by the agricultural industry, it has to be simplified.

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UK pig producers need clarity on future health and welfare policy

TRANSITION FARMERS Vicky and Kate Morgan

Pig farmers Vicky and Kate say a major issue for their East Yorkshire unit is the lack of transparency within the supply chain.

Since the pig industry crisis two years ago, nothing has changed in terms of redressing the balance of power and ensuring that we, as farmers, are not the only ones taking all of the risk, says Vicky.

The review of the supply chain commissioned by Defra is ongoing, something the sisters are thankful for. “But we look forward to some positive outcomes sooner rather than later, to ensure we are not put in the same position again,” she adds.

There are many government-led uncertainties in terms of welfare and environmental legislation, such as a ban on farrowing crates. To allow businesses to move forward and invest in the future there needs to be very clear direction on what will, and will not, be allowed. All political parties want cheap food – it's a vote winner; they also want the highest welfare and environmental standards in the world and the most ridiculous assurance schemes, says Kate.

The two do not go together and, as a consequence, imports of cheap, lesser standard products are freely allowed in, she points out. Everyone wants cheap food but there is a trade-off and when it costs more to produce than you can sell it for, then something is not quite right.

To overcome this, the government must prioritise UK food security. This does not mean subsidising inefficient food production and poor practice, it means allowing farmers to invest to develop the best practices to deliver the best products. But government must ensure that what it demands from UK farmers, it also demands from imports, the Morgans say.



FOOD PRODUCTION

A better balance is required to meet the needs of food producers, consumers and the environment



Sophie Throup Just as there are different types of farmers, there are different types of consumers. While they all want safe, nutritious and affordable food, consumers are understandably not keen to pay more at the tills. But many are interested in how their food is produced, and farmers can benefit from this – most are very keen to buy British and to support them.

Eco-labelling is one way of balancing competing needs and is certainly in the spotlight. Our experience is that labelling often changes consumer behaviour for only a short period, before they revert to their previous habits. Many of our customers say they don't have time to read labels when shopping, despite pledging a commitment to the environment. The balance between consumers and farmers then lies in helping everyone to understand each other's perspectives. The way to do that is through education, starting in schools and encouraging people from a young age to think about food and farming and the environment. It must be a balanced picture because as it stands that's not always the way it's taught in schools.



Andrew Flux My starting point is there are significant divisions in the food production industry but we should all be on the same side.

To achieve the balance we are searching for, all participants must have confidence in the supply chain they are involved in and understand what their role is and where they fit in.

A supply chain functions best when everyone views themselves as being on the same side and there's a two-way flow of information. Long-term collaborative relationships have proved to be a good way of making continuous improvements. To everyone's gain, we need an approach that fosters a drive to work together.



Philip Hambling We know the direction of travel is to get farms providing environmental services alongside food, and we need to acknowledge the significance of that shift and what it means for the future. There is certainly a need to share the learnings of good, profitable, sustainable production with the government to see how public money



can be invested to protect the environment and still deliver competitively priced food to consumers. A better balance will be achieved when farming is recognised as being the delivery partner for public goods. Of course, in a healthy market, there is always competition – we shouldn't assume that others aren't chasing the same goals or making improvements to their systems.



Ben Makowiecki There's a number of competing demands involved in getting this balance right, with both diet change and food waste influencing what is a complex picture. If agricultural data was standardised and held centrally, there would be a better means of report- ➤

Farmers provide a host of benefits alongside food production, looking after the environment and supporting local communities

PHOTOGRAPHY: GUP, TIM SCRIVENER, ANGLUS FINDLAY, DAVE CHARLLEY, ABB, ARLA FOODS, TELLING PHOTOGRAPHY



TRANSITION FARMER Alan Steven

For Fife-based veg and cereal grower Ian, the overriding food production issue is the need for a UK-wide, coherent, long-term strategy to balance environmental issues with farming needs and consumer demands.

It has become a more complicated task because agriculture is a devolved matter across the four countries and different areas have differing priorities and objectives, says Alan. "Worse still, politicians don't understand what it takes to produce food so listen to green lobby groups rather than farmers," he says.

This has taken land out of production and led to legislation and support measures that take away from the primary purpose of farms – to produce food.

Although developing a strategy is complex, he says the underlying problem is simple and applies UK-wide – a lack of profitability. "That means we can't invest. Whether it is producing food or carrying out environmental work, there is not enough profit in core agriculture."

Money drives investment and improves efficiency. Improved technology, better equipment and training for workers are needed to help make food production more efficient. But margins are so slim and vulnerable to input price changes, there is little or no scope to invest or even maintain systems that directly affect yields, such as drainage.

Efficiency is also a major driver in cutting greenhouse gas emissions. So greater efficiency improves profitability, brings about environmental goods and keeps food prices steady.



Imports have been shipped thousands of miles at the cost of the environment. How can this be good for British consumers?

Alan Steven

UK food is among the best in the world – and key for a healthy nation

ing results and making more meaningful comparisons. We all know there are differences in the way that UK grass-fed beef is produced compared with South American meat, for example, so a common reporting system based on agreed carbon metrics would help our cause.



Angela Booth Affordable, responsibly produced food is a common goal across the sector. We know two major concerns for consumers are animal welfare and deforestation, both of which are being addressed by how we source our ingredients and the production methods used in our processes. We also know being efficient makes good business sense while it is better for the environment.



Piers Costley Better education is needed if the link between the consumer and the producer is to be improved. Consumers need an improved understanding of the differences in the way that food is produced, and a standardised approach to data and reporting.



Mark Buckingham The key question that arises about achieving this balance is whether food labels that contain the appropriate metrics can be used to help drive change. Will giving consumers more information help farmers or is there a possibility that it could be used against them? Will imported food products and ingredients carry the same labels?



Thomas Gent We've seen so much volatility in recent years, with climate, prices and costs all fluctuating widely. As a result, farmers haven't been making reliable margins or receiving their fair share of the value in a supply chain. Because of this, we need to bring more transparency into supply chains. Consumers have never been so interested in food production – now they need to understand more about the practicalities involved and how the financial rewards are split.



Graham Moore From the research community's perspective, the timelines involved in our work are very long. For example, it can take many years to bring a new cereal crop variety to the market, by which time priorities may have changed. The current Recommended List system,

which mainly focuses on yield, needs to evolve to include consideration of environmental benefits offered by new varieties. This would strike a better balance for the industry going forward.



Paul Savage In principle, eco-labelling presents an opportunity to help consumers make more informed choices. But these labels must be product specific to incentivise change and need to be balanced – nutrient density detail should be given the same emphasis as environmental data.



Michael Lee As a leading university in agricultural science, we focus on how production science can be used to improve efficiency and help with achieving this balance. A sustainable production system has economic, social and environmental measures at its core. Currently, there is a disconnection between funding and the application of science in the UK, which is why we need change. Improving that mechanism will allow science to have a central role.



John Allen We all have a responsibility to stop the narrative being created by people with agendas, and make sure

that the right metrics are being presented. Without these, there is a danger that eco and food labelling can be misleading. The Global Dairy Platform has been very effective at getting the right information out and showing how we can produce nutritious food efficiently, safely and sustainably.



Declan Keiley At Lightsource BP, we have a mob-grazing project being undertaken on our solar farms. The aim is to provide branded "sun-grown" meat and milk, with the appropriate environmental and production credentials. This is good example of a project that meets everyone's needs, as it overlaps land uses and puts the environment at the heart of what we do.



Tim Oliver To get the balance we will need to change behaviours – whether it's that of farmers, consumers or environmentalists. And, for that to occur, they have to trust the source of information in front of them. Recent developments, such as the growth in social media and the rise of misinformation, make it difficult for consumers to know if they are being taken for a ride or not. ■

Affordable, responsibly produced food is a common goal – good for business, society and the environment

TRANSITION FARMER Philip Vickers

At Raby Farms in County Durham, farm manager Philip says the team works hard to balance financial, social and environmental commitments, while making the changes that will equip the business for the coming years and leave a legacy for future generations.

"To this end, sustainability is at the heart of everything we do – something that we know consumers are looking for," says Philip.

Raby Farms is adapting its farming system by building healthier and more resilient soils and reducing the reliance on artificial inputs.

A wider, more diverse rotation and the integration of livestock are also helping us with this journey, as we minimise risk and make the business more resilient.

"At the same time, we are taking steps to reduce our greenhouse gas emissions – just as all businesses are having to do. We don't have a choice; the world is changing and we must meet a new set of requirements," Philip says.

"An ever-changing market and political situation mean new income streams are being investigated and we will have to embrace them. Protecting wildlife and our unique landscape is essential; delivering public goods is part of our remit too.

"So while we are committed to providing top quality food products and protecting the environment, we are also mindful that a vibrant commercial business must maintain margins and produce a profit.

"For this reason, we keep some flexibility in our system, so that seasonal factors and cost pressures can be dealt with. We've achieved a great deal, but there's still a long way to go," he adds.

The balance between consumers and farmers lies in helping everyone to understand each other's perspectives.

Sophie Throup





TRANSITION FARMER
Fergal Watson

Fergal farms beef on the Ards Peninsula, County Down, and highlights new planning rules on ammonia emissions that are making it practically impossible for livestock farmers to build infrastructure.

This is directly affecting food security. "If farms can't get planning to expand or to replace existing infrastructure, our industry will contract, become less efficient, and so too will food production," he says. "In Northern Ireland, we would usually see an average of 300 planning applications a year from livestock farmers, but hardly any of these would now get through planning under the new guidance for councils on ammonia emissions."

UK agriculture can't deliver what the country needs in terms of food security if it is being denied the infrastructure it needs to operate.

"What message does that send out for the next generation who might want to farm, young people like my daughter, Eibha-Marie?"

"Even if we want to replace an existing shed, we have to go through planning. But under the current rules, we wouldn't get it. So we are just encouraging a system where sheds and infrastructure become dilapidated, and that means we become less efficient. That isn't going to help food security."

"For my business to improve, to make it sustainable, we must invest in buildings. That means striking a balance between the sometimes conflicting needs of food production and the environment," he says.

FOOD SECURITY

UK growers and livestock producers have a key role in feeding the nation

Given its success in increasing production sustainably, the UK has to play its part in improving food security

John Allen



John Allen The dairy sector is actually in a far better place to produce more food in the UK than many might imagine. Of course, there are challenges with the sector, but worldwide demand is growing by 1.5-2.5% each year. Because the demand is there, we simply cannot afford to turn off the efficiency gains that have been made to date, to ensure we maintain supply. Given its success in increasing production sustainably, the UK has to play its part in improving food security – certainly until efficiency in other countries improves. We have an amazing nation of farmers – despite thousands of farms closing,

we still produce the same amount of milk as we did 20 years ago. We can produce more from less. So we should be trying to capitalise on that capability and receive some recognition for the contribution we have made. I'd like to see more inward investment encouraged to develop processing capabilities and a policy environment that allows the continued production of UK food.



Graham Moore In the next 50 years, we will need to produce as much winter wheat as we have since agriculture began, and that's a global total. That

is going to require significant effort and market pull-through, with tools such as the Recommended List being amended accordingly. Climate change is key to this. It's very clear that climate change will affect food security, so I'm going to link the two topics together. Plants sense the environment and react to climate change, so that interaction needs to be a major research focus. Pathogen pressures will also change in line with the climate.

What pathogens we think of as threats now, may not be the same ones we see in a couple of years. Resilient traits need to be exploited and, in combination, you have to look at our plant defence



Food security will be threatened by climate change, placing greater importance on breeding new plant varieties to cope

Roundtable delegates aired their views on how British farming and policymakers could work together to improve food security

strategies as well, maybe in position breeding, but also perhaps, eventually, in genetic modification. We also need to think about what crops we will be growing in future and how they will fit into the rotation.



Philip Hambling Further investment in dairy and livestock production in the UK is one of the best ways to contribute to our food security and ensuring that it meets our exacting sustainability targets.

Climate change, disease and political tensions mean the world has been transformed in recent years, a fact that we have all felt tangibly since war broke out in Ukraine. The availability of vital inputs was hit and prices soared, and that has had an impact on food prices. It showed that relying on overseas trade carries many more risks than it used to.

Thankfully, environmentally, the UK is a really good place to produce a lot of food. But politically, our role in global food security and producing high-quality products very efficiently is often overlooked. So we need to build our resilience and improve our national food security to optimise production within our resource boundaries. That can be improved by domestic investment and realising maximum value for UK-produced food to ensure our production base remains profitable and so sustainable.

bean meal from South America is one risk, another is supply of micronutrients used in animal feeds. Most vitamin B12, B2 and B7 comes from just one country.

A proper risk review of how to maintain our current level of food production is long overdue. So my plea is with the government to do a proper risk review of the challenges that might stop us maintaining production. The review should then look carefully at how we could increase it to safeguard food security.



Angela Booth UK agriculture can play a bigger role in food security but there are risks. While we have to look at environmental issues such as carbon dioxide emissions, we must also ensure we really understand what is critical to us being able to continue the level of production we have. Imported protein such as soy-





Stuart Jackson One of the key things in global and national food security is consistency for the growers themselves.

They need to have robust markets and input supplies and both of these have been threatened in recent years. Volatility caused by global unrest has had a massive impact on farm business resilience. If the situation continues, farmers and growers will lack the confidence and profit to reinvest, so food security will be affected. The oilseed rape crop is a good example of this in practice – the lack of solutions to a pest issue means that we are now importing much of the oilseed rape we need, rather than growing it here. But there's no desire or interest from the science area or commercial companies to get involved because there are not the consistent opportunities available in the UK. And that comes down to profitability. If the grower is not profitable, the science and commercial companies won't want to invest.



Michael Lee To my mind, food security is a public good. But the current policy direction means farmers are focused on how they can deliver biodiversity net gain or capture carbon, or diversify their farm.

They are so focused that they are being persuaded to move away from producing high-quality food. That means we've really driven ourselves into a corner as far as food security is concerned.

Unless we also recognise the importance of food security in producing high-quality food on land where it is most sustainable and efficient to do so, then we're in real trouble. What we need is a ministry of agri-food, which would emphasise the potential of this country to produce high-quality nutrition in conjunction with protecting the environment, not the other way around.

We need to have the expertise and knowledge to ensure that our production methods are suitable for the output levels required amid the changing climate.



Paul Savage In the UK, with its geography and climate, there's an opportunity for the dairy industry to expand and build on its already considerable contribution to food security. There's already a huge amount of investment that has gone into the UK. When we then start to talk about trade

and export opportunities as well, we see a role there for dairy to play.

Unfortunately, confidence levels among farmers and the wider industry are so low that the additional investments required for this to happen are not always being made. There's a role for government in supporting and encouraging the industry and letting it deliver its full potential.



Jonathan Armitage The government recently announced that it would publish an annual food security index to look at trends relevant to food security.

This is a positive step forward, as previously it has only been committed to publishing the report every three years.

We are seeing significant changes in the way crops are grown, with many farmers going down the regenerative route or scaling back production in favour of environmental schemes. Climate change is also having an impact. So it does seem sensible to gather evidence on the implications for food security on a more frequent basis.

However, the data will need careful interpretation, as agricultural output is distributed very unevenly. For example, Defra's *Future Farming and Evidence Compendium* published in 2018, claimed that, in England, 57% of agricultural output came from just a third of the total farmed area. Once we have the data available, should there be an obligation for ministers to act if UK food security falls below a certain percentage and, if so, what should that percentage be? ■

Political upheaval and price volatility have threatened the UK's ability to keep supermarket shelves stocked



In the next 50 years, we will need to produce as much winter wheat as we have done since agriculture began, and that's a global total. **Graham Moore**



TRANSITION FARMERS

Rachel and Richard Risdon

Rachel, who produces milk from grass-fed cows in Devon, says government policy potentially has the biggest influence on UK food security. Brexit trade deals could support UK food security but may achieve the complete opposite. "Looking at it through the lens of a dairy farmer, the UK has to pay tariffs to export butter and cheese, but our trading partners don't. So there is no level playing field and no possibility that we can compete with those cheaper imports.

"The Canadian trade deal largely fell apart because the government at last recognised we couldn't agree to import food produced to different standards to our own, so that was at least a step in the right direction."

Rachel says the UK needs to have an agreed long-term policy for food production, not just carbon and the environment. Agriculture covers all three areas and if only two are focused on, we will unintentionally displace our food production and import more.

"Importing food to displace what we could produce here isn't a solution, because even if it is grown in exactly the same way as it would be here, it falls short because there is a big environmental cost to transporting it," she says.

"A considered balance of food production, environmental care and carbon reduction is needed. Trade has to support domestic production, not replace it."

PHOTOGRAPHY: ADOBE STOCK, RICHARD WAYMAN/ALAMY STOCK PHOTO, ABP, ARIA FOODS, EMILY FLEUR, STEFFAN HILL, TIM SCRIVENER, TELLING PHOTOGRAPHY



Trade works best when it is mutually beneficial, rather than favouring one side at the expense of the other

MAKE TRADE WORK

We must ensure UK farmers remain competitive while producing high-quality food and delivering a better environment for the next generation



Tom Mason We need to respect our own high welfare and domestic production standards. Rather than compromising when setting up international trade agreements, we should seek preferential trading partners that also value those standards.

In terms of non-tariff barriers, we could increase competitiveness by minimising any unnecessary additional costs associated with trade imports and exports. This can be done by streamlining logistics and inspection systems. An overhaul of supply chains – moving towards a more transparent, open and honest food system – could contribute to food security while showcasing and celebrating British food, making it more attractive to consumers at home and abroad.



John Allen The fundamentals of UK dairy – and certainly the UK livestock sector – mean we are competitive, including globally and domestically.

In recent decades, this has been about producing food at the lowest possible price – often specialising in either livestock or arable production at the expense of the environment. But responsible mixed farming is making a resurgence. We have to accept that food isn't going to become any cheaper from an environmental perspective. Food is going to cost more, because the world population is increasing, so more people will be competing for it.

Western economies don't fully appreciate that people in other parts of the world are becoming wealthier and will

Food is going to cost more because the world population is increasing, so more people will be competing for it.

John Allen

outbid Western consumers for food at some stage in the next 10 years. In some places, it is already happening.

We can meet that demand in terms of exports. But the limiting factor is a lack of skilled employees coming into the UK food industry. We need skilled people who can balance the challenge of feeding the world while delivering environmental sustainability.

That is where we will increase our competitiveness on the global stage – by >

< creating the next generation of young people with talent and attracting them into agriculture.



Michael Lee We need more veterinarians within the livestock sector, including in abattoirs. As a country, we are still very short of large animal vets and that is a major focus for us at Harper & Keele Veterinary School – to increase that number.

The provision of local abattoirs to support the ruminant livestock sector, in particular, needs to be addressed. This will provide high-quality, local, nutritionally dense products and the associated business growth opportunities.

The valorisation of manures at source on farm, to replace inorganic fertiliser, also needs further attention and investment to realise a circular food system and the future sustainability of livestock supporting arable nutrient demands.



Jeff Claydon To be in business, trade has to be profitable. Without profit, you don't have a business – it's as simple as that. Technology is part of the answer to help make things more efficient so you are less reliant on expensive inputs.



The government should be doing more to ensure imports are secured from countries that strive to achieve the same production standards as we have here.

Kit Speakman

support to understand all these topics.

We're trying to fill that gap because it isn't coming from government. It is important that people understand how the market operates. We can't influence global dynamics or world markets, but we can help ensure we produce food efficiently and well.



Jonathan Armitage

We need to ensure people understand the implications of trade agreements. Reaching an agreement is one thing – putting it in place and acting on it can be quite another.

Once you have an agreement in place, if you actually want to sell something to somebody you have to go and sell it. Some of our competitors internationally are very good at doing that.

The Dutch have been very successful at building their international trade because they have gone out and grabbed it. They have sent trade delegations and envoys out all round the world to sell their agricultural products. They have also managed to identify differentials between their products and those of their competitors. They have managed to do that brilliantly, and we need to be more imaginative. The selling point is something we are missing.

To take wheat as an example, our production standards are among the highest in the world. But we have a reputation for producing wheat for livestock feed, rather than for milling or breadmaking. So it's about better marketing, not just production.

That is not something that is necessarily going to happen at Defra – it is more likely to happen in the Department for Business, Enterprise and Regulatory Reform – and the Department for Innovation, Universities and Skills.

The AHDB does a good job. But it needs a bigger remit to sell all sorts of food and drink products on behalf of what is an industry of mostly small and medium-sized businesses. ■

TRANSITION FARMER Matthew Williams

First-generation Shropshire grower Matthew farms 1,100ha of combinable crops after developing a passion for agriculture at school.

The rotation includes wheat, spring oats, spring barley, winter beans, oilseed rape and triticale – all globally traded commodities grown on a mix of locally rented and contract-farmed land.

A precision farm management system assesses crop nutrient requirements, seed rates and yield data – helping Matthew to better manage fuel and fertiliser use, cutting exposure to volatile price swings.

Profitability relies on attention to the smallest detail. "Farming without subsidies and land-based assets as a fallback means we have to focus on every input and achieve optimal yields to make a margin," he says.

"My big thing is cost control – the entire operation is run on a spreadsheet that I update continuously. I know 99% of my costs at any one time; I know exactly where I am each month and have identified cashflow pinch-points well ahead."

Matthew uses data from traders and independent analysts – studying global grain markets as often as five times a day. Playing the market has improved returns by as much as £60,000 in one year (2018).

The goal is to refine the process to maximise grain prices while cutting cultivations. This will spread fixed costs over a wider area, improving crop production and profitability while looking after the environment.

Matthew Williams is focusing on cost control – maximising grain prices and reducing cultivations



TRANSITION FARMER Kit Speakman

Essex beef and arable farmer Kit is working hard to future-proof his business against volatile commodity prices, rising input costs and increasingly unpredictable weather. Kit believes the government needs to do more to support and promote home-grown food.

British farmers deliver arguably the highest animal welfare and production standards in the world. "We have limited chemical and medical intervention and high rates of outdoor grazing, all while being expected to match our price points to countries with far lower standards," Kit says.

"The government should be doing more to ensure imports are secured from countries that strive to achieve the same production standards as we have here, with clearer labelling and fairer price points," he says.

A good starting point would be to procure British food within government sectors, such as the NHS

and schools, to not only promote British farming but also cut food miles.

"The only way for British farmers to remain viable is to diversify into other industries to protect our incomes during a period of high input costs and ever-fluctuating commodity prices," Kit points out. Until the global commodities playing field is levelled, British farmers will continue to face intense pressure, as the changing climate only worsens yield potential.

"Farmers have long been custodians of the countryside and deliver environmental benefit daily, something that seems long forgotten by governments. The Sustainable Farming Incentive offers some financial rewards, but does not replace direct payments. These were viewed as 'payments for farming', but in my opinion, these were subsidising cheaper food for the public by allowing farmers to remain viable despite unsustainably low price points

on basic foods and supermarkets monopolising sales," he says.

"It is difficult to justify spending money on low-emissions technology when our farming business relies on diversified incomes to be viable. How can we expect farming to be green when so many farming businesses remain in the red?"

Kit Speakman believes farming businesses need to be profitable so they can invest in green technologies



Farm businesses have to become fitter and reduce costs. To remain globally competitive, we must produce our wheat at a lower cost per tonne. It's about soil health and moving less soil – reducing the amount of fuel needed to establish a crop of wheat.

It's about keeping our other costs lower too – including labour and other overheads – especially when other countries are subsidising their cost of production. If we can do that, we can maintain yields cost-effectively without losing quality.



Andrew Flux Agriculture is more complicated than ever before. Global markets set their own level – we have seen that during the Covid pandemic and the war in Ukraine. The government needs to act on food security – and the point about education is important too.

Growing crops is not about chucking chemicals around. It's about understanding crop physiology, plant health and resilience. That goes for livestock production too. The next generation needs



NATURAL CAPITAL

Farmers should be encouraged to provide environmental benefits and maximise the potential of emerging markets for natural capital, including corporate investment



Thomas Gent Agriculture occupies a unique position as an industry. Given the right opportunities, farmers can deliver many of the solutions to some of the biggest challenges we face as a society and as a planet – especially when it comes to mitigating climate change.

Farmland can provide so far untapped income streams from natural features

Carbon sequestration is a good example of this. By storing carbon in the soil, farmers can help mitigate the worst impacts of climate change – and get paid for it, although the markets for doing so are still developing.

Even so, some of that value is already being realised, especially when it comes to carbon. As a company, across Europe we have already paid out more than £5m

to farmers for their soil carbon

That's important because carbon markets are designed to help farmers and the wider supply chain achieve net zero. And it brings in external investment too, so it's an exciting opportunity for the agricultural industry.

But we have to remember that it costs a lot of money for farmers to transition to this new way of working. For them to be successful – and deliver positive change and carbon sequestration – they need a lot of investment.

That means the sector needs the combined income from carbon markets, the supply chain and the government – and they must be allowed to work together – to make it a no-brainer for farmers to do the right thing.



Declan Keiley As solar developers, we don't look to build on the best farmland. Our main driver is access to the national grid – which is a challenge because there hasn't been any substantial investment in the grid for the best part of 40 years.

Biodiversity and carbon sequestration are recognised by-products of solar developments. They can be planted

PHOTOGRAPHY: GNP, KATHY HORNIBLOW, RICHARD STANTON, TIM SCRIVENER, TELLING PHOTOGRAPHY

The roundtable panel discussed a range of natural capital options



with wildflowers or herbal leys and used to graze livestock, for example, helping to improve soil health while capturing carbon.

They also allow landowners and farmers to meet their net-zero targets – and the carbon credits from solar can be used to offset emissions from food production. Some of these are already being realised, but there's much more to come.

So the big point I'm trying to make is that there has to be a balanced view. We aren't out there looking for the best bits of land to put solar panels on – that's a fallacy. And we are working with farmers and landowners to help offset emissions.



Tim Oliver To succeed, the industry needs absolute clarity. The best farmland needs to be reserved for food production grade 1,2,3 and 3A – feeding people needs to be the priority. Marginal and less productive can be used for natural capital – for woodland and biodiversity.

Woodland creation is important and will enhance biodiversity if the planting density is right. But it shouldn't be treated separately to agriculture. The two can co-exist. It's not an either-or choice. They can be complementary.

Globally, we (the UK) have some amazing assets – and that includes agriculture, and our approach to legal and governance structures. UK farmers and landowners have huge potential to provide assets such as carbon credits and biodiversity net gain and set international



Declan Keiley (centre) says there has to be a balanced view

We need agreed standards and market mechanisms for natural capital to become an income stream that benefits everyone.

Jonathan Armitage

benchmarks that are properly verified – but the right practical framework needs to be applied.

There will be huge global demand for high-integrity habitat units with enormous value. We can provide these assets alongside food production in the UK. Policymakers must not encourage farmers to do so with one hand and then take it away with the other.

Farmers like Ed Shuldham (below) see natural capital as an increasingly important revenue source

There is no doubt in my mind that we can be a leader as a nation to create this blend of optimising food production in harmony with the environment. And how we integrate environmental with land and food production could be a template globally.

But we're going to have to be bold. We must be courageous. But we can do it because people look to the UK as a

TRANSITION FARMER Ed Shuldham

Ed, of JM Stratton & Co, is a founder member of the group. Farmers receive a share of every deal brokered by the group – including corporate investment from environmental, social and governance (ESG) funds. Farmers manage about 72% of land in England, and without access to this area, the government cannot deliver on its targets. ESG aims to enable the delivery of projects at scale that fit into the landscape and work for local businesses and communities.

Biodiversity net gain and nutrient neutrality are bringing rewards for group members, says Ed. "We are able to get a fair return for delivering public goods and services. We expect these markets to develop, so it is important to engage at this stage and ensure the structure of deals works for farmers.

"Carbon and biodiversity offsetting and trading are fast-moving areas that most farmers don't have expertise in. By acting as a group, with the right representation, we are able to access the best possible terms and appropriate rewards."

Group members can also access advice and support that would otherwise be unavailable or too costly, visit other farms in the area and understand how any changing management practices have contributed to success. Example activities include reducing water pollution, flood alleviation, habitat restoration, and encouraging wild pollinators and farm wildlife.

But for farmers to become involved more widely there needs to be greater certainty in private markets. "The constant shifting and delays on policy do not give the confidence private



buyers of natural capital services require to engage. Farmers need certainty on areas such as tax. For voluntary markets, many private buyers are holding off pending standards from government, while others are engaging on terms that may end up being undermined. Clear leadership and timescales to adopt standards would help the market to plan," says Ed.



**TRANSITION FARMER
Andy Bason**

Reducing carbon emissions is a key goal for Hampshire farm manager Andy, who says doing so will improve profitability as well as benefiting the environment.

Andy has devised a series of short-, medium- and long-term targets as he strives to develop a truly sustainable farm business – including 600ha of combinable crops at Newhouse Farm, Northington Down, Alresford.

An agroforestry project on the farm has seen 300 apple, walnut and pear trees planted in seven 4m strips across a 10ha block of cropped land. The goal is to provide a habitat for beneficial insects and also create a supplementary income stream.

Longer term, the business is developing a 10ha wood using an English Woodland Creation Offer from the Forestry Commission. The aim is to leave a legacy of carbon capture and a place for wildlife.

With plenty of deciduous woodlands around, Andy received help from Kirsty Brannan, farm conservation and woodland adviser at seed supplier Oakbank, to make sure conservation efforts make most difference.

Creating the new wood has involved planting 20,000 trees – 80% of which are native species, with 20% non-native. A pond has been added, as well as rides and glades established to encourage wildlife.

CLIMATE CHANGE

A framework is needed for farmers to provide workable solutions that mitigate the impact of climate change – and help the UK meet net-zero targets



Environmental improvements and food production can go hand in hand. The two can co-exist – it's not an either-or choice. **Tim Oliver**

< leader already. And if we sit back on our haunches, we will become a laggard and not the leader within five years.



Michael Lee Only by considering land use change and agriculture together will we be able to realise the potential that each of these markets offers.

The argument about food versus the environment has gone on for far too long – it's time to bring them together – to recognise that they can, and do, go hand-in-hand – and to look for innovative ways to tap into these funding streams.



Stuart Jackson Farmers need support with green markets and with private funding – both are new developments for the industry and potentially new income streams that could be really beneficial.

But they involve very different terms and conditions to those that many farmers and food producers are used to. Understanding how they will work, what

they have to offer and who will benefit most, are all important questions.



Jonathan Armitage

It's clear that we need agreed standards and market mechanisms for natural capital to become an income stream for farmers. That

means robust, government-backed schemes that people can trade and rely on.

We find ourselves in an era where there are polarised arguments about whether we should be focusing on food production or the environment – but we must do both. Climate change and the biodiversity crisis are already having a direct impact on food producers, and unless we take action to address climate change and biodiversity, the challenges farmers are facing are only going to get worse.

More often than not the two things are intertwined and integral to one another, and there are plenty of good examples of best practice where this is the case. The debate over land sparing versus land sharing is never far away and, in truth, we need a bit of both. ■

Planting the right trees in the right place can improve biodiversity and provide an income stream



Michael Lee

To help farmers with the net-zero challenge, we need a fundamental understanding of baselines so that every farm can do a full audit of its carbon stocks. Technology to help with this is developing all the time. We need to stop predicting and modelling and start measuring, so that improvements can be tracked. Too much information is based on modelling at the moment, which is not accurate enough. The recent development of the Sustainable Farm Network hopes to achieve support for farmers.

Another issue is that the science and understanding of methane production is very poor – methane is increasing in the atmosphere at a greater rate than its production, so its removal mechanism is shrinking. To make progress, we need to understand more about methane sources such as biogenic from natural cycles including livestock, fossil sources from mining and leaking natural gas and

If the past two years and Russia's invasion of Ukraine have taught us anything, it should be that we mustn't ignore food security in the battle to tackle climate change. **James McCartney**



pyrogenic from forest fires. We need to report emissions as biogenic or fossil-fuel orientated. Science in these areas is fast-moving and academia has a central role to play in keeping everyone informed and ensuring that the debate isn't hijacked by those with commercial or emotive ideological interests.

For a truly sustainable farming system and to make headway with net-zero targets, farmers need to reduce their reliance on artificial inputs. Processes used in nitrogen fertiliser production are energy intensive and greenhouse gas emissions from fertiliser are highly damaging – for example, nitrous oxide – so our ambition should be to move away from fossil-derived and mined inputs. >



Jeff Claydon The farming industry has shown itself to be willing to trial and test innovations that have the potential to help meet their net-zero commitments. Whether it's hydrogen generation, rainwater harvesting, solar panels, tree planting or electric vehicles, there's no shortage of willing participants when there's a business case for their use. With the right support, we can meet these targets. But we have to ensure that regulation for accessing the power grid is fit for purpose, to allow farmers to produce electricity and get it into the local communities.



Tim Oliver Promoting what the farming community can achieve through adopting sustainable farming practices is a priority. We need to make it easy for farm businesses to be permitted to deploy renewable energy projects and to optimise their marginal land, rather than putting barriers in their way. For example, making simple regulation and grant funding for mini-hydro projects on river-fronted land, changing planning rules to encourage more solar panel and onshore wind turbine installations. Greater



TRANSITION FARMER James MacCartney

"It doesn't seem right to take good arable land out of production for environmental purposes, but we of course have to consider the carbon balance, too," says beef and sheep producer James.

"We are currently going through the Sustainable Farming Incentive application process. We might be able to receive a similar amount of money to that received through the Basic Payment Scheme, but we will be producing less food."

The policy is one that is intended to help the country meet its net-zero targets, but is also a major barrier to sustainability.

"Our neighbours are taking land out of arable production to grow grazing crops for environmental payments. As a livestock business, that is good for us because our cattle and sheep will be grazing them, but it will mean that overall the UK will grow fewer cereals."

If the past two years and Russia's invasion of Ukraine have taught us anything, it should be that we mustn't ignore food security in the battle to tackle climate change. As a country, we should become more self-sufficient – this would help reduce global greenhouse gas emissions through reduced transport. Yet the government has designed policies that encourage imports, and that can't be good for the sustainability of UK agriculture long term or climate change," he says.

AD is overlooked by policymakers to such an extent that it has become known as the Cinderella of renewable energy.

Eddie Andrew

sites. Where we can, we seek to avoid good food production land, although the location has to be based on the quality of the local grid connection. The best way forward for the food-producing industry is for people to talk to one another about solutions and come up with a strategy suggestion to put to the government rather than wait to have one imposed.

Food production needs to be factored in to the debate on climate change



Paul Savage An overarching framework, which has both the tools and the rewards that farmers need to mitigate climate change, should be developed.

In the dairy industry, there is good understanding of how feed additives can reduce emissions and how biochar can be used to improve soil function, so these types of innovations should be included. Within the wider livestock sector, there is a huge focus around feed additives. So could the government play a role in supporting the use of feed additives to help boost production efficiency and cut emissions? There are some fantastic numbers being banded around in Europe about their potential. Our experience suggests farmers are very keen to engage on this topic, so a supported approach could achieve results. All of this needs to be underpinned by carbon measuring and accurate baseline assessments. ■



Declan Keiley Integrated land use is essential for any framework – producing renewable energy shouldn't be done in isolation. In our current planning system, climate change initiatives are often looked on more favourably than those connected to food production by elected members. Nine times out of 10 when it comes to decision-making, climate change will trump food production and everybody really needs to grasp that fact. There's no argument now that a switch to renewables is the only way of dealing with carbon emissions. But this should be seen as an opportunity for landowners to take part in carbon reduction and to continue to produce food on integrated

impetus is needed to deliver the change required to optimise food production while maintaining a sustainable environment at farm level. We know that biochar and basalt enhance soils both for fertility and environment carbon capture benefits, so we must make sure farmers can benefit from these techniques. There has been inaction for too long.

methane into electrical power and then into hydrogen via hydrolysis. "Why not just encourage the use of the methane as a power source for vehicles and equipment? New Holland has figures suggesting fuel costs can be cut from £20/hour on diesel, to just £2.80/hour with biomethane-powered tractors," he says. An AD plant also creates digestate – a high-nutrient fertiliser that can reduce artificial fertiliser use by 50% on an average dairy farm. It is estimated that 40% of the environmental impact of a loaf is down to artificial fertiliser use. Artificial fertiliser manufacture requires huge fossil fuel use, so it is a key climate-change driver while prices are exposed to global events. The potential knock-on is food price volatility and inflation. "So I would ask the next government to make strategic funding available to support on-farm AD plants," Eddie says.

livestock and dairy systems could provide enough power for a quarter of all homes in the UK. "It is a staggering statistic and could allow a shift from fossil fuels that would reduce UK greenhouse gas emissions [GHGs] by 30%. "Despite methane's potency as a GHG, its capture using AD is overlooked by policymakers to such an extent that it has become known as the Cinderella of renewable energy. Funding is targeted elsewhere – it is totally mad there is next to nothing for methane and AD on farms," he says. There is support for storage covers that can collect methane under the Slurry Infrastructure Grant, but then nothing for the systems to process it thereafter. Eddie has planning permission for a slurry-fed AD plant, which will produce cheap power for the farm 24 hours a day. But if he wants to attract government funding, Eddie would have to convert the

TRANSITION FARMER Eddie Andrew

South Yorkshire dairy farmer Eddie says slurry-fed anaerobic digestion (AD) has enormous potential to create cheap, green energy efficiently and help in the climate-change battle. Figures show that UK

Above: Extreme weather patterns from floods to droughts are hampering food production



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