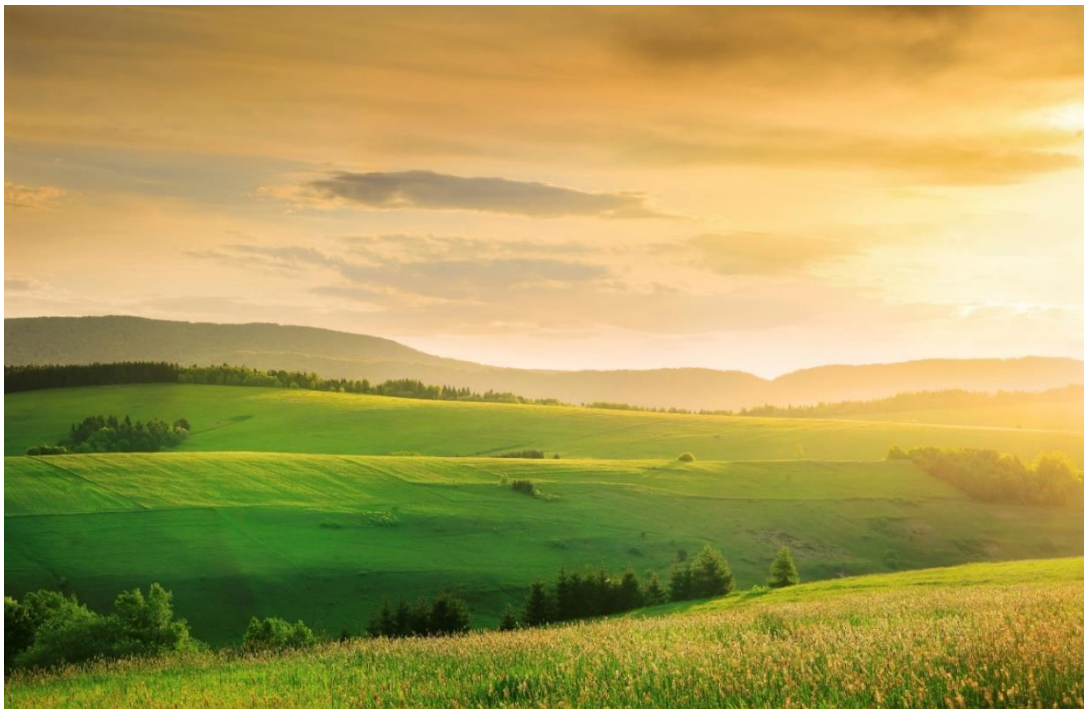
A UK MEAT INDUSTRY COMMITMENT TO ACTION

MEAT IN A NET ZERO WORLD:

Optimising productivity and minimising waste from farm to fork

2021 progress update



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Written by: Karen Fisher, Special Adviser, WRAP

Front cover photography: Grass covered field.

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1.0 Overview

This document sets out a vision and set of actions for the UK meat industry to work from farm to fork to improve efficiency and productivity, minimise waste, protect natural assets and reduce global warming.

The aim is to make the UK meat industry a world-leading example of efficient and sustainable meat production and supply, by:

- ✓ As a supply chain, helping deliver productivity improvements, greenhouse gas (GHG) emissions reductions and protection of natural assets (e.g. soil, water) during livestock (cattle, sheep, pigs) and poultry rearing;
- ✓ Sourcing raw materials for use in feed that is cultivated in a way that protects against conversion of forests and valuable native vegetation;
- ✓ Large meat processors, retailers, and hospitality and food service businesses continuing to take action to reduce their own operational food waste, GHG emissions and water impacts; and
- ✓ Helping to halve the amount of meat purchases thrown away in and out of home.

A series of actions and commitments are defined within the document (summarised in Table 1) that will contribute towards existing national-level targets across different timescales:

- Courtauld Commitment 2030 targets to halve food waste and food system GHG emissions and reduce water stress by 2030;
- NFU's vision of reaching net zero GHG emissions across the whole of UK agriculture by 2040; and
- The UK's target to bring all GHG emissions to net zero by 2050.

The document was compiled and published by WRAP, on behalf of stakeholders across the UK meat supply chain. The actions within will be implemented by supply chain businesses (processors, retailers, hospitality, and food service businesses), with support from industry bodies. The term 'we' throughout this document refers to these supply chain businesses.

WRAP is compiling evidence to track progress and ensure accountability. This document includes a summary of progress over the year since launch.

A Collective Commitment to Action

"There has never been a more critical time for action. We are facing a warming world, with more people and less land, water, energy and other resources to go around. As an industry we are committing to work together to ensure that we use these resources efficiently and minimise our impact on the environment, whilst safeguarding the health & welfare of our animals and the livelihoods of our producers. Never has it been more important that we produce food in a sustainable manner, including reducing food waste from farm to fork.
By working collectively, we aim to make the UK meat industry a world-leading example of efficient and sustainable meat production and supply"

Rachel Hackett, Group Sustainability Director – 2 Sisters Food Group
John Durkan, Group Sustainability and Environmental Manager – ABP
Tim Rycroft, Chief Executive - Agriculture and Horticulture Development Board (AHDB)
Jane Salter, Head of Environmental Policy – Agricultural Industries Confederation (AIC)
Liz Fox, Corporate Responsibility Director – Aldi
Norman Bagely, Head of Policy – Association of Independent Meat Suppliers (AIMS)
Chris Brown, Senior Director Sustainability and Sourcing – ASDA
Andrew Brodie, People, Sustainability & Communications Director – Avara Foods
Nan Jones, Policy Technical Manager – British Meat Processors Association (BMPA)
Richard Griffiths, Chief Executive – British Poultry Council (BPC)
Andrew Opie, Director of Food and Sustainability – British Retail Consortium (BRC)
Edward Morgan, Group CSR & Training Manager – Castell Howell Foods
Clare Clark, Sustainability Business Partner – CH&CO Catering Limited
Lyndsay Chapman, CEO – Centre for Innovation Excellence in Livestock (CIEL)
Michael Hickman, Foodservice Director – Compass Group UK & Ireland
Caroline Mason, Head of Agriculture – Co-op
Jim Brisby, Chief Commercial Officer – Cranswick
Nick Dunn, HS&E Manager – Dovecote Park
Gill Higgins, Group Head of CSR & Sustainability – Dawn Meats Group / Dunbia
Martin Barker, UK Sustainability Manager – Duynie Feed UK
Adrian Kesterson, Technical Advisor – Fabra UK
Penny Tomlinson, Managing Director – Fairfax Meadow
Malachy McAteer, Operations Director – Foyle Food Group
Nigel Edwards, Group CSR Director – Hilton Food Group
Gwyn Howells, CEO – Hybu Cig Cymru (HCC)
Andrew Staniland, Trading Director – Iceland Foods
Simon Hewitt, Group Technical and Compliance Director – Karro Food Group
Kate O'Driscoll, Group Head Of Sustainability - Kepak Group
Jenny Packwood, Director, Responsibility and Reputation - KFC UKI
Amali Bunter, Head of Responsible Sourcing and Ethical Trade – Lidl Great Britain
Steve McLean, Head of Agriculture & Fisheries – M&S
Harriet Wilson, Agriculture & Sustainable Sourcing Manager – McDonald's UK & Ireland
Sophie Throup, Head of Agriculture, Fisheries and Sustainable Sourcing - Wm Morrison plc
Declan Cunningham, Head of Sustainability and Risk – Moy Park
Cathy Watson, Category Lead – Nando's
Lizzie Wilson, Senior Policy Adviser – National Pig Association (NPA)
Richard Findlay, National Livestock Board Chair – NFU
Jonnie Hall, Director of Policy – NFU Scotland
Andrew Cracknell, CEO – Pilgrim's UK
Andrew Kuyk, PTF Director General – Provision Trade Federation (PTF)
Alan Clarke, Chief Executive – Quality Meat Scotland (QMS)
Jim Gaffney, Managing Director – Randall Parker Foods
Jim Moseley, CEO – Red Tractor Assurance
Paul Candler, Technical Manager – Riverway Foods
Barney Kay, Head of Agriculture – Sainsbury's
Claire Atkins Morris, Director of Corporate Responsibility - Sodexo UK&I
Juliane Caillouette-Noble, Managing Director – Sustainable Restaurant Association (SRA)
Natalie Smith, Head of Agriculture - Tesco
Jake Pickering, Head of Agriculture – Waitrose
Charles Baughan, Managing Director– Westaway Sausages Ltd
Mike Hanson, Director of Sustainable Business - WSH
Iain Clunie, Programme Manager - Food & Drink – Zero Waste Scotland


2 sisters Food Group
abp
AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD
aic
agricultural industries confederation
ALDI
ASSOCIATION OF
aims
INDEPENDENT MEAT SUPPLIERS
ASDA
avara
foods
bmpa
British Meat Processors Association
BRITISH
POULTRY COUNCIL
The voice of the British poultry meat sector
BRC
Castell
Howell
CH
&CO
CIEL
Centre for Innovation
Excellence in Livestock
COMPASS | UK&I
GROUP
co
op
CRANSWICK
Great British Taste
FINEST BRITISH BEER
DOVECOTE PARK
dunbia
Duynie
Feed
FabraUK
Foodchain & Biomass Renewables Association
fairfaxmeadow
putting great meat on the menu
Foyle
HILTON
Food Group
plc
HYBU CIG
CYMRU
MEAT PROMOTION WALES
Iceland
KARRO
FOOD GROUP
KEPAK
KFC
LIDL
M&S
FOOD
Morrisons
Since 1899
Moy
park
Nando's
npa
national pig association
NFU
NFUScotland
Pilgrim's
ptf
PROVISION TRADE FEDERATION
QMS
Quality Meat Scotland
RPF
Randall
Parker
Foods
RED TRACTOR
CERTIFIED
STANDARDS
Riverway Foods
Sainsbury's
sodexo
thesra.org
SUSTAINABLE
RESTAURANT
ASSOCIATION
TESCO
Waitrose
Westaways
wsh
ZERO
WASTE
SCOTLAND

Table 1: Summary of actions / commitments and means of tracking progress

Target area	Actions	Tracking progress / KPIs
Halving the amount of meat thrown away at home between 2007 and 2030 (in line with SDG 12.3)	Actions for retailers and meat processors / brands: • Adopt known best practices for on-pack labelling and guidance across the key areas identified for poultry, pork, beef, lamb items. • Work on new solutions and innovations in the key areas identified (e.g. packaging/other innovations to extend shelf life, optimising pack sizes; encouraging more freezing/defrosting and use of leftovers). • Support consumer-facing campaigns to increase awareness of ways to reduce meat being wasted, such as Love Food Hate Waste. • Actively engage with employees (as citizens) on wasting less food.	Full set of KPIs outlined in Section 3.5 (tracked via WRAP surveys). WRAP will also repeat its household food waste survey on a periodic basis and generate a UK-level estimate, for comparison with 2007 data.
Large meat processors, retailers, and hospitality and food service businesses are taking action to reduce their own operational food waste, GHG emissions and water impacts	Actions for meat processors, hospitality and food service (HaFS) businesses, retailers: • Set an ambitious food waste reduction target (e.g. to halve food waste by 2030). • Adopt a GHG reduction target, with best practice to be in line with the principles of the science-based target initiative. • Robustly measure and report on progress towards reducing food waste and GHG emissions. • Where surplus is unavoidable, increase the amount sent to redistribution charities to avoid waste. • Actively engage with staff on wasting less food. • Have food waste reduction plans in place with suppliers. • Improve the efficiency of water use in processing operations and support collective action to protect water resources in key sourcing areas, e.g. through the Courtauld Water Ambition.	% of sector (poultry/ pork/ beef/ lamb processing; retail, HaFS) - with targets and providing evidence of action. Overall reduction in meat waste, and GHG emissions arising in poultry/ pork/ beef/ lamb processing; retail, HaFS Tracked via reporting to WRAP through the Food Waste Reduction Roadmap, and to BEIS/via Climate Change Agreements.
Playing our part as a supply chain to help deliver productivity improvements, GHG emissions reductions and protection of natural assets during livestock (cattle, sheep, pigs) and poultry rearing.	Actions for meat processors, retailers, HaFS businesses: • Encourage and support agricultural suppliers to use farm GHG calculators to understand their emissions and aid development of GHG reduction plans. • Encourage the use of common sector KPIs when engaging suppliers. • Use producer groups, and other Knowledge Transfer mechanisms, to share best practice, insights on short / medium / longer term horizons and enable feedback from producers. • Be clear on market requirements, to help inform production plans. • Where relevant, use data received from FSA/FSS inspections to provide timely feedback to producers. • Continue to invest in R&D and new technologies to aid improvements in productivity and reduce the environmental impact of inputs. • Support collective action projects to protect water resources and other natural assets in key sourcing locations.	KPIs for poultry / pigs / beef / lamb are outlined in Table 3 later in this document – including data sources for tracking progress.
Sourcing raw materials for use in feed that is cultivated in a way that protects against conversion of forests and valuable native vegetation	Actions for meat processors, retailers, HaFS businesses: • Commit to the goals of the UK Roundtable on Sustainable Soya and the UK Roundtable for Sourcing Sustainable Palm Oil. • Develop / implement practical action plans, with support from Efeca and others (e.g. NGO's, technology providers, certification schemes). • Support R&D and market development for soya alternatives, such as insect meal and other novel feed proteins, as well as domestic-grown soya alternatives such as legumes.	Progress on key raw materials for feed – as reported through the UK Roundtable on Sustainable Soya and the UK Roundtable for Sourcing Sustainable Palm Oil.

Table 2: Summary of progress against action areas (2020-2021) *[see later sections for more detail]*

Target area	Progress reported in 2021
Halving the amount of meat thrown away at home between 2007 and 2030 (in line with SDG 12.3)	• Many positive behaviours were adopted by householders during and after national lockdowns (e.g. pre-shop planning, freezer management, using leftovers), demonstrating that there is significant scope for positive change. • Businesses have stepped up to help cement these behaviours by strengthening adoption of best practice for on-pack labelling and guidance – for example all retailers have now removed the term 'Freeze on Day of Purchase' from packaging, or are working towards this - which WRAP estimates could help reduce waste by c.15,000 tonnes/year. • Businesses also widely supported the hugely successful Food Waste Action Week, through social media, competitions, NPD challenges, messaging on livery, etc.
Large meat processors, retailers, and hospitality and food service businesses are taking action to reduce their own operational food waste, GHG emissions and water impacts	• Businesses comprising more than 75% of UK meat processing sector have committed to the Food Waste Reduction Roadmap. • In the last reporting year, meat processors collectively reported more than 20,000 tonnes of food waste reduction – an average 30% reduction from those companies reporting year-on-year. • The amount of animal products (meat, fish & eggs) redistributed to charities and other organisations more than doubled between 2019-2020 (latest estimate), meaning the equivalent of an additional 10 million meals a year didn't end up as waste. • All of the businesses supporting this commitment have set a GHG reduction target and have reported year-on-year improvements – in some cases up to 30% reduction in emissions intensity (scope 1 and 2) over the last year. • All processors also reported having water efficiency targets and year-on-year improvements – in some cases up to 15% reduction in intensity of water use over the last year.
Playing our part as a supply chain to help deliver productivity improvements, GHG emissions reductions and protection of natural assets during livestock (cattle, sheep, pigs) and poultry rearing.	• >60% of business supporters to this commitment have set Net Zero or Science-Based GHG reduction targets that encompass supply chain (scope 3) emissions. • New farm-level metrics to help track progress against these, and national-level targets, have been agreed for poultry, pigs, beef and lamb. • Retailers and processors have reported a significant, increasing, amount of R&D activity being focused in priority areas, such as feed innovations and breeding trials. • Knowledge transfer activities have continued as a key mechanism to share best practice and latest insights - through farming groups, strategic planning with suppliers, demonstration farms, education programmes and data exchange.
Sourcing soya for use in feed that is cultivated in a way that protects against conversion of forests and valuable native vegetation	• Efeca (facilitator of the Roundtable on Sustainable Soya) now estimate that 32% of soya imported into the UK in 2019 was covered by a deforestation and conversion free certified soya standard. • In combination, the total proportion of soya imported into the UK in 2019 considered to be from sources at low risk of deforestation/conversion or covered by a deforestation and conversion free certified soya standard amounts to 62%. • The eventual aim is for 100% deforestation-free and conversion-free sourcing.

2.0 A Cross-Industry Vision

There has never been a more critical time for action. We are facing a warming world, with more people and less land, water, energy and other resources to go around. As an industry we need to work together to ensure that we use these resources efficiently and minimise our impact on the environment, whilst safeguarding the health & welfare of our animals and the livelihoods of our producers.

To deliver quality food to our customers, we work as a supply chain, and everyone has a role to play:

- Producers – rear animals to meet a range of production standards, health & welfare outcomes and other market specifications;
- Feed producers – produce the feed that these animals need to thrive; and fertiliser producers help grow the plant-based feed materials.
- Processors – source animals meeting requirements and process these into a number of products meeting specifications on size, weight, fat cover, etc.
- Retailers and hospitality and food service businesses – market products attractively to consumers; balancing fluctuating daily/ weekly/ monthly/ annual demands and changing trends; and
- Consumers – make daily choices on what, where & how to buy, store, cook and eat food.

Every link in the chain is a steward of the resources invested to produce the products that consumers value.

Individually each part of the chain has taken major strides to improve efficiency and reduce environmental impacts. But action at individual points in the chain can only take us so far and can create inefficiencies for another part of the chain. So we need to work together to achieve more.

For example, WRAP estimates that around 380,000 tonnes / year of the meat intended for consumption is never eaten (c.10% of total purchases), and the greenhouse gas (GHG) emissions associated with producing this amount to more than 4 million tonnes CO_2-equivalents. Much of this is discarded after purchase, at home - but there are actions that can be taken at different points in the supply chain to help reduce wastage.

Our commitments

We are collectively working towards a joint vision of improved resource efficiency from farm to fork. We aim to make the UK meat industry a world-leading example of efficient and sustainable meat production and supply.

We will achieve this by:

- ✓ Playing our part as a supply chain to help deliver productivity improvements, GHG emissions reductions and protection of natural assets (e.g. soil, water) during livestock (cattle, sheep, pigs) and poultry rearing;
- ✓ Sourcing raw materials for use in feed that is cultivated in a way that protects against conversion of forests and valuable native vegetation;
- ✓ Large meat processors, retailers, and hospitality and food service businesses continuing to take action to reduce their own operational food waste, GHG emissions and water impacts; and
- ✓ Helping to halve the amount of meat purchases thrown away in and out of home.

Specific actions and progress indicators at each stage are included within this document.

Together these actions will make a significant contribution to the UK food and drink sector achieving the ambitious targets set out in the Courtauld Commitment 2030 and UN Sustainable Development Goal 12.3 to halve per capita food waste by 2030. They will also make an important contribution to the UK's target to bring all GHG emissions to net zero by 2050.

Tracking our progress

In partnership with WRAP we will track our progress – and provide examples of the actions we are taking to inspire others. Working with WRAP will further ensure that results are independently verified and publicly reported.

This document includes a summary of progress over the year since commitments were first published in June 2020.

3.0 Action Areas

Five areas in which we believe we can make a real difference to improving resource efficiency from farm to fork have been identified.

These mirror the key steps in the supply chain – and the major points of interface between different supply chain stages.

1. Rearing / primary production
2. Processing
3. Point of sale - retail
4. Point of sale - hospitality and food service
5. Food waste at home

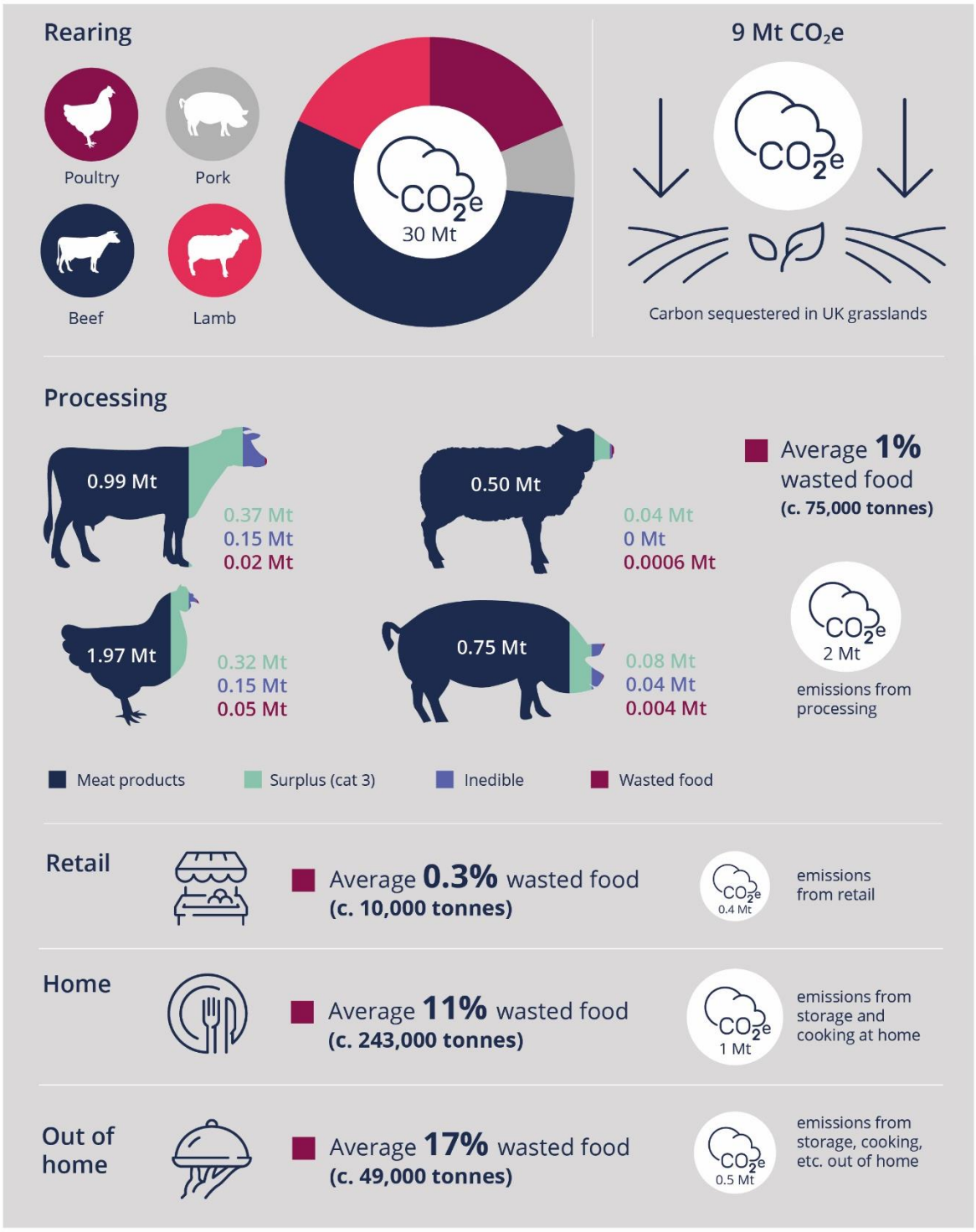
Figure 1 overleaf shows the relative scale of production volumes, wastes and GHG emissions across these different stages – and where priorities for improving resource efficiency lie.

The following Sections set out our specific actions and commitments in each area. These actions are also summarised in Table 1.

Defining 'food waste'

At each stage in the value chain, 'waste / food waste' is defined as: any meat product, or animal-derived material sent to a waste destination (including anaerobic digestion, incineration /controlled combustion, rendering with minimal valorisation (typically category 1 rendering), land application, sewer/wastewater treatment). For the purpose of this ambition, we are focused on material that*, if managed differently*, could have remained in the food chain. Of lower priority is material classified as 'inedible parts' of food. 'Inedible parts' include category 1 ABPs (e.g. specified risk material), feathers, hides, hair, etc. from processing; as well as bones, skin, etc. that typically would not be eaten at home / out of home. In most cases this material cannot be avoided, and so cannot typically be a target for waste reduction (although it is important to quantify these 'inedible parts', take steps to get maximum value from them, and minimise the impact of their use / disposal on the environment).

Figure 1 – Approximate scale of food waste and greenhouse gas emissions at different stages in the meat supply chain



See Appendix 1 for data sources and assumptions.

NB - all GHG / CO_2e values are estimates based on the GWP_{100} metric. There is ongoing discussion regarding alternative accounting approaches for short-lived biogenic methane, as summarised in https://www.theccc.org.uk/publication/land-use-policies-for-a-net-zero-uk/ p41-44.

3.1 Rearing / Primary Production

Rearing livestock and poultry is the stage of the supply chain in which significant resources are typically invested (e.g. water, feed, fuel, land, etc.), and where most GHG emissions occur. However, farms are also important sinks for carbon sequestration and storage in soils and vegetation, and are increasingly investing in renewable energy generation. Farms are therefore well-placed to also contribute to reducing the UK's overall GHG emissions.

Continued focus is being placed on improving both the health & welfare of animals and improving the environmental footprint of farming systems.

ACTION AREAS

Action is being particularly focused in the following areas:

1. Improving productive efficiency and reducing emissions from rearing. Focusing on ways to produce the same quantity of food, or more, with fewer inputs and lower emissions. This encompasses actions such as:

- On-farm measurement of metrics linked to improved productivity (e.g. AHDB's KPI Express).
- A continued focus on health and welfare outcomes, responsible anti-microbial use, improved biosecurity and disease risk mitigation.
- Ongoing genetic evaluations and research to improve productivity and reduce GHG emissions through breeding.
- Supply chain communications and feedback to rear animals that best match consumer demands for cuts, size, eating characteristics, etc.
- Actions to reduce emissions through better nutrient and slurry management, improving soil health and achieving farm nutrient balance.
- Research into feed additives and feeding regimes to increase conversion efficiency, or reduce direct emissions from ruminant livestock.

2. Reducing the environmental impact of producing feed. As well as improving the productive efficiency of feed *use* (i.e. as above), this encompasses actions to:

- Avoid deforestation linked to soya and other raw materials used in feed. Soya in particular is a valuable protein source that can improve productive efficiency, particularly in pig and poultry rearing. However, some cultivation methods are linked to destructive land use change, such as tropical deforestation and conversion of native vegetation, which is a major source of global GHG emissions. This has prompted action through the UK Roundtable on Sustainable Soya, and R&D into alternative feed formulations and/or breeding approaches that utilise less soya. Though used in lesser volumes in feed, the links between palm oil and destructive land use change are also widely known, with RSPO being the market lead for certifying sustainable supply and the UK Roundtable for Sourcing Sustainable Palm Oil providing a mechanism to track progress.

- Explore the potential for scale-up of soya alternatives – including novel feed ingredients and domestically-grown plant proteins such as legumes. Novel feed ingredients may include single cell proteins, algae, insects and additives such as amino acids. Insect Industries UK represents key stakeholders who are working together to deliver insect production at scale in the UK. A new WWF Roadmap to Accelerating Insect Protein in UK Feeds has also been published, setting out the actions needed by actors across the supply chain.
- Use more circular feed sources – e.g. optimising grass in livestock systems; or use of surplus from food production that are safe to eat by animals, with no effect on biosecurity or productive efficiency. This could include linking arable or horticultural and livestock farmers to reduce waste on farm.

3. Farmland carbon storage, protecting natural resources and renewable energy generation.
Recognising the positive contribution that farmland can make to reducing GHG emissions, protecting water resources and other natural capital benefits such as flood protection, this encompasses actions to:

- Increase the sequestration and storage of carbon on farmland – for example through improved grassland management, enhancing soil health and organic matter testing; enhancing and increasing hedgerows; woodland / shelter belt management and planting; and peatland / wetland restoration to reduce carbon losses.
- Manage natural assets on farmland - for example through interventions to reduce soil erosion, improve efficiency of nutrient use, increase woodland planting, buffer strips, ponds or wetland features. These actions all contribute to protecting natural assets, improving water quality, improving biodiversity, flood mitigation, etc.
- Generate renewable energy on-farm – for example through anaerobic digestion of animal manures; on-farm solar panels and wind turbines.

METRICS TO TRACK PROGRESS

As a supply chain we have made a commitment to help deliver productivity improvements, greenhouse gas (GHG) emissions reductions and protection of natural assets (e.g. soil, water) during livestock (cattle, sheep, pigs) and poultry rearing.

Consistent measurement at farm-level continues to be a significant challenge to help us understand progress against these aims.

One way of addressing this challenge is to agree a common approach to avoid confusion and enable clear and consistent messages to suppliers.

Since publishing our commitments in 2020 we have been working together to agree - as a starting point - some common metrics to track progress. These are set out in Table 3 and draw on a mix of measures that:

- Are measurable at scale - now; and
- In combination can drive the right progress, with the least risk of unintended consequences.

We recognise, however, that this is just a starting point. Measurement approaches continue to evolve as understanding grows and access to information improves. For example:

- Farm GHG calculators are important decision support tools that are useful for benchmarking relative progress. Credible tools use standard methodologies, but different inputs and assumptions mean that the GHG values generated by different tools are not strictly comparable. Farmers are encouraged to find a calculator that is best suited to their business; and to use it consistently to track change over time[1]. Cross-industry efforts are seeking to resolve the consistency challenges in the longer term.
- EnviroBench - under development by the AHDB. EnviroBench will showcase how good environmental management delivers sustainable financial benefits and the intention is for it to become the trusted source of information for the environmental footprint of UK livestock and crop production. Farmers and growers will have the ability to use the standardised data; to improve on farm performance and to access agricultural support payments/grants. EnviroBench will also provide more reliable sector-wide sustainability performance data that can be used to support confidence in buying home sourced products.
- A more holistic set of measures. It has long been recognised that focusing too much on one environmental challenge (e.g. GHG emissions) risks the unintended consequences of increasing other types of impact – such as biodiversity loss. Work is being convened by the Sustainable Food Trust, which is building an Alliance to agree a broader framework of metrics for measuring on-farm sustainability to create a levels of consistency across the globe. Importantly, this Global Farm Metric will seek to develop consensus on measurement approaches for important considerations not currently included in Table 3, such as soil carbon & biodiversity.

As such, we will review the metrics in Table 3 on a periodic basis. But for now this provides a place to start and a direction to aim for.

These metrics will help to track the respective sector's progress and contributions towards existing national-level targets across different timescales:

- NFU's vision of reaching net zero GHG emissions across the whole of UK agriculture by 2040;
- Courtauld Commitment target to reduce food system GHG emissions by 50% by 2030; and
- The UK's target to bring all GHG emissions to net zero by 2050.

In the next annual progress report we will update on:

- A baseline (where currently not available); and
- A forward trajectory.

[1] For example as outlined in: https://www.nfuonline.com/cross-sector/environment/climate-change/climate-change-news/greenhouse-gas-emissions-calculator-support/

Table 3 - KPIs for tracking progress

Sector	Headline KPIs	Reasoning	Baseline value (where known)
Poultry	• GHG footprint of feed (kg CO_2e / kg feed) • Average product footprint (kg CO_2e / kg carcase weight) In addition – there is also a need to consider these alongside industry-agreed welfare metrics and standards	• Feed ingredients and feeding efficiencies contribute the biggest proportion of the GHG impact of poultry and pig production. • Feed Conversion Ratio (FCR) is a commonly used measure of efficiency and is widely recorded. However, change in FCR is not always a good indicator of change in environmental impact – for example where FCR is improved through the use of higher intensity feed materials, or decreased through the use of lower nutrient value materials. • The full GHG footprint of feed is a more representative measure and is quantifiable at national-level. The Global Feed LCA Institute (GFLI) Database provides a standard reference dataset for translating feed quantities into GHG emissions – and, in future, other environmental metrics. • Full farmgate product footprint (kg CO_2e / kg carcase weight) is a more complete measure, but is currently subject to issues with inconsistency in accounting approaches. Year-on-year changes at farm-level are likely to be reliable when using the same GHG calculator tool. But published 'average product footprint' values do not currently provide a reliable sector-wide indicator and further work is being undertaken by Defra, AHDB and others to improve these estimates. • A combination of these metrics, alongside widely used welfare metrics will provide a balanced indication of progress and a good place to start.	• GHG footprint of feed: tbc. *AIC is working on a feed balance sheet for the UK and a baseline UK dataset for the GHG footprint of feed materials.* • Average product footprint: 4.6 kg CO_2e / kg bone-in carcase weight *
Pigs	• GHG footprint of feed (kg CO_2e / kg feed) • Average product footprint (kg CO_2e / kg carcase weight) In addition – a full set of productivity, health and welfare KPIs and benchmark values for pork production systems is compiled by AHDB and is available here.		• GHG footprint of feed: tbc *AIC is working on a feed balance sheet for the UK and a baseline UK dataset for the GHG footprint of feed materials.* • Average product footprint: 6.4 kg CO_2e / kg bone-in carcase weight *

Sector	Headline KPIs	Reasoning	Baseline value (where known)
Beef	• Average product footprint (kg CO_2e / kg carcase weight) • Mortality rate (%) • Slaughter age In addition – a full set of productivity, health and welfare KPIs and benchmark values for beef production systems is compiled by AHDB and is available here.	• Reducing mortality rates and slaughter age will have a positive impact on a farm's carbon footprint at the same time as increasing productivity, output and overall economic performance. However, these are only two indications of a much wider set of KPIs that need to be considered in the context of reducing carbon footprint on livestock farms. • Full farmgate product footprint (kg CO_2e / kg carcase weight) is a more complete measure, but is currently subject to issues with inconsistency in accounting approaches (as noted above). • A combination of these metrics, alongside widely used productivity, health & welfare metrics will provide a balanced indication of progress and a good place to start.	• Mortality Rate: tbc *To be sourced from BCMS and APHIS data* • Slaughter Age: tbc *To be sourced from AHDB data* • Average product footprint: UK (dairy herd): 10.7 kg CO_2e / kg bone-in carcase weight * UK (beef herd): 25.3 kg CO_2e / kg bone-in carcase weight * Wales (ave across systems): 13.7 kg CO_2e / kg product ** ***Please note these values are from different studies and so are not fully comparable***
Lamb	• Average product footprint (kg CO_2e / kg carcase weight) In addition – a full set of productivity, health and welfare KPIs and benchmark values for lamb production systems is compiled by AHDB and is available here.	• As noted above, there are significant data / accounting challenges that limit the ability to be able to track average product footprint as a reliable metric. However, it an important measure and so important to include as a headline KPI. • Many other relevant farm-level KPIs have been compiled by AHDB – but there are current challenges with being able to measure these at scale. Those that are more measurable, may be overly simplistic to consider in isolation, with potential to drive unintended consequences. As such we have not included any further KPIs at this stage.	• Average product footprint: UK: 17.4 kg CO_2e / kg bone-in carcase weight * Wales (ave across systems): 11.4 kg CO_2e / kg product ** ***Please note these values are from different studies and so are not fully comparable***

* Source: *Centre for Innovation Excellence in Livestock, 2020*, Table 1 (taken from original Defra, 2006 reference). **NB - the values published by CIEL in 2020 were cited as the best publicly available sources, but we note the age of the original data source and the critical need for more up-to-date estimates that are representative of UK production systems across all species.**

** Source: HCC (2021): The Welsh Way: Towards Global Leadership in Sustainable Lamb and Beef Production, Table 9 - averaged across systems.

OUR COLLECTIVE COMMITMENT TO ACTION

Recognising the important role that we, as a supply chain, can play; our commitment is to:

- ✓ Encourage and support our agricultural producers/suppliers to use GHG calculators to understand their on-farm emissions and aid development of GHG reduction plans. Focusing on the use of these calculators as a decision support tool, and recognising the uncertainty in absolute numbers[2].
- ✓ Encourage the use of common sector KPIs (Table 3) when engaging suppliers.
- ✓ Be clear on market requirements, to help inform production plans. And, where relevant, use the data we receive from FSA/FSS inspections to provide timely feedback to producers to help inform their animal health plans.
- ✓ Use our producer groups, and other Knowledge Transfer mechanisms, to share best practice, share insights on short / medium / longer term horizons and enable feedback from producers.
- ✓ Signpost sources of best practice guidance and advice providers, such as the guidance within AHDB's KPI Express / Farm Business Review tools and the Championing the Farmed Environment materials.
- ✓ Continue to invest in R&D and new technologies based on the latest science and evidence, to aid improvements in productivity and reduce the environmental impact of inputs.
- ✓ Deliver our commitments to source raw materials for use in feed that is cultivated in a way that protects against conversion of forests and valuable native vegetation.
- ✓ Support R&D and market development for soya alternatives, such as insect meal and other novel feed proteins, as well as domestic-grown soya alternatives such as legumes.
- ✓ Support collective action to protect water resources and other natural assets in key sourcing locations, e.g. through the Courtauld Water Ambition.

We will continue to report on the actions we have taken.

PROGRESS UPDATE 2020 - 2021

2020 and 2021 have been challenging years for the industry. Working within the constraints the Covid crisis has presented there have been a number of noteworthy successes. Not least, the agreement of some initial metrics to track progress (described above) - providing a starting point on which to build.

[2] A good summary of advice for farmers on the use of GHG calculator tools is available here: https://www.nfuonline.com/cross-sector/environment/climate-change/climate-change-news/greenhouse-gas-emissions-calculator-support/

Targeting action

Since Meat in a Net Zero World was first launched, in June 2020, there has been a step change in the number of businesses that have made public commitments to Net Zero or Science-Based GHG reduction targets that encompass the whole supply chain:

- More than 60% of the business supporters to this commitment report having either Net Zero or Science-Based GHG reduction targets that encompass their supply chain (scope 3) emissions.

Two key initiatives also continue to provide an important wider context:

- Net Zero: Farming's 2040 vision. The NFU has a game-changing vision to reach net zero GHG emissions for agricultural production by 2040[3]. In support of this, farmers have been making pledges of the measures they are adopting on farm: #Pledge2040.
- UK Cattle Sustainability Platform. The UK Cattle Sustainability Platform is a multi-stakeholder group focussed on driving beef sustainability across the UK and across all aspects of the value chain, from farm to fork. Spanning the core sustainability pillars of environmental impacts, animal medicines, animal health & welfare and farm management, specific targets have been developed, including an intensity reduction of 15% in GHG emissions by 2025, with intention to also develop a Net Zero ambition.

And, since the launch of Meat in a Net Zero World, two important wider industry roadmaps have been announced:

- BRC Climate Roadmap – The British Retail Consortium (BRC) published a new Climate Action Roadmap in 2020, with an ambitious target to move to Net Zero for all products sold in the UK by 2040; including specific milestones for zero deforestation in supply chains, supporting regenerative agriculture, GHG mitigation on farms and the delivery of NFU's Net Zero 2040 vision.
- FDF Roadmap to Net Zero – The Food and Drink Federation (FDF) recently announced its ambition on behalf of the sector to reach Net Zero by 2040. To provide further support to food and drink businesses, the FDF will also produce a Roadmap to Net Zero Project and accompanying 'handbook for businesses – launching November 2021.
- AIC Sustainability Roadmap – The Agricultural Industries Confederation (AIC) is the industry body for suppliers of inputs, trade assurance standards, and advice to farm. In 2020 they produced their first Sustainability Roadmap, outlining progress to date and forward commitments – including (among other actions) a commitment to: reduce the production-related GHG emissions of fertilisers and animal feeds by 80%-100%; improve the efficiency of use of these inputs overall to maximum potential; and increase the rates of incorporation of former foodstuffs and co-products from food and bio-fuel processing into animal feeds to maximum possible levels.

[3] NB – 'Net Zero' will be delivered across the whole industry combined, not individual enterprises, such as a livestock enterprise. However, each sector will have a role to play, particularly in delivering productivity improvements and reducing direct emissions, which together are estimated to contribute c.25% of the GHG savings needed (https://www.nfuonline.com/nfuonline/business/regulation/achieving-net-zero-farmings-2040-goal/).

Trialling new innovations

The Centre for Innovation Excellence in Livestock (CIEL) published a report in 2020 highlighting the challenge in meeting UK Net Zero goals for livestock. The report concluded that currently available technologies cannot deliver the industry's emissions reduction goal, and identified where further innovations and investment are needed. Priority areas for action that were identified include: improving efficiency; smart technology and precision farming; addressing nitrogen fertiliser use; novel and alternative feeds; and carbon sequestration.

Retailers and processors in turn have reported a significant, and increasing, amount of R&D activity being focused in these areas. With specific examples reported across:

- Feed trials – across all species, ranging from use of insect proteins and other novel ingredients, to methane-reducing additives, greater incorporation of food & drink co-products and former foodstuffs and soya reduction;
- Livestock breeding trials – ranging from investigating novel genotypes to different housing formats;
- Demonstration farms & supply chains – these are used to trial technologies and approaches, before communicating to the wider supply base. Some business have also reported using integrated supply chains, such as ABP's Blade Farming system, as an initial commercial test bed and proof of concept.

The CIEL report noted that, as well as significant investment in development of new technologies, education programmes need to accelerate adoption of currently available and proven approaches.

Supply chain communications

Despite being curtailed by Covid-19 restrictions, Knowledge Transfer (KT) activities continue to be a critical mechanism to share best practice, insights on latest developments, future horizons, etc.

Industry bodies, such as AHDB, HCC and QMS also raise the importance of getting consistent messaging out to as wide a range of individuals as possible, not just the early adopters and already engaged. These bodies have ongoing KT programmes and report that there are good signs of progress. Supply chain businesses have also reported the critical role that good communications play. Some examples of communications approaches taken include:

- Aldi have established working groups within their supply base, working with progressive suppliers across the poultry, dairy and pig supply chains. Focusing on an array of strategic projects with the aim of reducing emissions from agriculture. The workstreams focus on soy and feed, carbon footprinting and on farm plastics. The team are in the process of collating findings from the first year of a dairy farm climate project, and hope to replicate across other proteins in 2022.
- ASDA have farming groups in place with strategic suppliers across beef, lamb and poultry. These are used to aid discussions on best practice, disseminate latest findings from trials, discuss new technologies etc. They are also a platform to discuss key topics affecting the industry. Events, meetings and agricultural shows also provide opportunities for engagement – with Zoom meetings used to support KT efforts during Covid restrictions. Data portals from abattoirs provide producers with timely feedback to help inform their production and animal health plans.

- Co-op has established farming groups over a number of years that allow direct engagement with farm suppliers. These farming groups share best practice through farmer to farmer learning and input from experts. Pre-covid, meetings were primarily through on farm events but are now looking to fully utilise the potential of on-line meetings and move to a more hybrid model of on-line and in person. The team are working with independent consultants to identify meaningful, data driven actions to reduce carbon footprints, which will be delivered through the farming groups.
- Lidl are developing carbon reduction programmes with strategic meat suppliers. This includes: working with a key beef supplier to conduct carbon footprinting across a number of farm and helping them to develop carbon reduction plans; working with strategic pork suppliers to develop a sustainable soy transition plan; and working with a key poultry supplier to conduct a life cycle assessment from farm to fork as a foundation upon which to develop a reduction strategy.
- Marks & Spencer sources all its fresh meat from M&S Select Farms, who undertake annual assessments, which include welfare outcome measures. Since 2020, these assessments have also included environmental outcome measures to monitor environmental impact and understand environmental practices across M&S Select Farms in the UK. These cover subjects such as soil health, water quality and energy use. M&S has launched the Farming with Nature programme, to help farmers identify opportunities to make meaningful environmental enhancements to their farm businesses. This includes an Indicator Farm programme, with 17 farms trialling specific environmental initiatives. These farms are supported by independent experts to create action plans focused on carbon, soil, water and biodiversity and will measure outcomes and quantify impact, with this information shared across all M&S Select Farms to drive change. In addition, M&S runs an Executive-level Agricultural Leadership Programme in partnership with Cranfield University School of Management, to help raise awareness of the sustainability and environmental challenges facing farmers.
- Morrison's have set up farming groups in all of their direct farming supply chains, in support of a new target of becoming Net Zero in their direct farming base by 2030. Working with industry experts, the groups will work together to test, trial and understand what needs to be in place to ensure success. Other engagement approaches include: an incentives scheme to reward and promote Net Zero activities; development of two beef 'blueprint farms' to trial different farming methods; and a partnership with Harper Adams University to set up the School of Sustainable Food and Farming, delivering research, courses and qualifications to help educate farmers on more sustainable farming practices.
- Sainsbury's are working closely with livestock farmers and suppliers who will play a key role in reaching the retailer's Scope 3 target of a 30% reduction of absolute GHG emissions by 2030. They have been working with Farmer Development Groups across all main livestock species for over 10 years, with these groups providing a forum for discussion, data collection, sharing of best practice and continuous improvement towards sustainable, resilient and efficient value chains for the future. Additionally, Sainsbury's are incorporating existing workstreams into their overall plan for more sustainable production. This includes initiatives such as their long-term partnership with the Woodland Trust for carbon sequestration and improved biodiversity within woodland; data collection of Animal Health and Welfare outcomes to inform healthier, more efficient animals; and the use of farmer-linked models and schemes in key protein areas.

- Tesco shares best practice and insights with its agricultural supply chain through the Tesco supplier Network, which is an online community giving members a direct line to Tesco colleagues, industry experts and other suppliers around the world. The aims of the network are to: share knowledge and expertise; build a more sustainable supply chain; and co-create innovative solutions. Tesco also have Farming Groups that help build long-term relationships with farmers. The groups provide a forum to discuss sustainable production, customer needs, standards and ways to work more closely together. Throughout the year there are a number of webinars and farm walks covering various topics such as grassland management, genetics, nutrition, health and welfare, etc.

Delivering against zero deforestation commitments on soya

Progress is also being made on the complex task of ensuring that soya used in feed is sourced from physically traceable zero deforestation and conversion free sources:

- The UK Roundtable on Sustainable Soya brings together food & drink business, feed companies and industry bodies to work together to achieve a shared goal of a secure, resilient, sustainable supply of soya to the UK. Building momentum over the last 3 years, Efeca (facilitator of the Roundtable and wider UK Sustainable Soya Initiative) now estimate that 32% of soya imported into the UK in 2019 was covered by a deforestation and conversion free certified soya standard. In combination, the total proportion of soya imported into the UK in 2019 considered to be from sources at low risk of deforestation/conversion or covered by a deforestation and conversion free certified soya standard amounts to 62%. The eventual aim is for 100% deforestation-free and conversion-free sourcing.
- The Roundtable on Sustainable Soya Pork subgroup is currently compiling a plan which will help the sector to transition to fully sourcing sustainably produced soya. This is a complex process given the intricacies of the political climate of the countries involved and the subsequent lack of transparency, as well as the structure of the pork supply chain. Industry stakeholders will shortly be consulted with a view to the plan being published towards the end of 2021.
- The Roundtable on Sustainable Soya Beef and Lamb Working Group. Use in Western European cattle and sheep diets is not driving demand for soya, with only small quantities used, however this does not negate the need for action to ensure the soya used within the beef and sheep sectors is sustainable. The UK Roundtable on Sustainable Soya Beef and Lamb Working Group facilitates collaborative action within and across the sectors, working towards the common goal of sustainable soya usage.

Collective action to protect natural capital in key production areas

More than 100 supply chain businesses in total (across all sectors) are now supporting collective action to protect water resources and other natural assets in key livestock production areas through the Courtauld Water Ambition.

The Rivers Trust has established stewardship projects in a series of pilot areas across the UK, including three which are important production areas for livestock, pigs and poultry respectively: Tamar in South West England; CamEO/Broadlands in East Anglia; and Wye & Usk on the Welsh borders. Projects are seeking locally-important outcomes and are increasingly demonstrating how strong partnerships between a wide range of organisations and individuals are needed to protect the freshwater, soils and other natural assets that we rely on.

- In Tamar – 5 meat & dairy processors and retailers are supporting the project, alongside other local stakeholders, and 174 farm visits have been held over the last reporting year, with a wider reach to >1000 farmers across the catchment area. This has resulted in interventions having been implemented across 73 farms, including nearly 25,000 trees planted in strategic locations across the catchment to date - maximising carbon, water quality and biodiversity benefits. Other outcomes have included: mapping of producer locations & water risks to help target interventions appropriately; and development of new best practice guidance for farmers.
- In CamEO / Broadlands – 6 meat processors and retailers are supporting the project, alongside other local businesses and stakeholders – together reaching more than 5000 farmers with targeted messaging. New best practice guidance for improving soil stability and sustainability under pigs has been produced in partnership with Cranswick, showcasing regenerative farming in action. Interventions have been implemented across nearly 630ha of land, including cover crops, cultivation changes, buffer strip creation, tree and hedge planting and installation of 64 silt traps/wetlands to prevent soil loss into the rivers and create new habitats to improve biodiversity.
- In Wye & Usk – 7 meat and poultry processors and retailers are supporting the project, alongside other local businesses and stakeholders. 295 farm businesses were engaged during 2020, leading to 220 new whole farm plans. Further targeted efforts with the poultry sector have tackled diffuse pollution issues through outreach by Courtauld signatories Stonegate, Avara, Co-op, M&S and Tesco suppliers such as Noble Foods. Interventions (delivered via Countryside Stewardship) include 2208ha of grassland management improvements; 298km of watercourse buffers to protect from soil erosion, nutrients and sprays; 350km of fencing to protect habitats; over 27km of guttering; over 8km of underground drainage; and 82,000m2 of roofing for manure stores..

Further information is included in the 2021 Courtauld Commitment Annual Report.

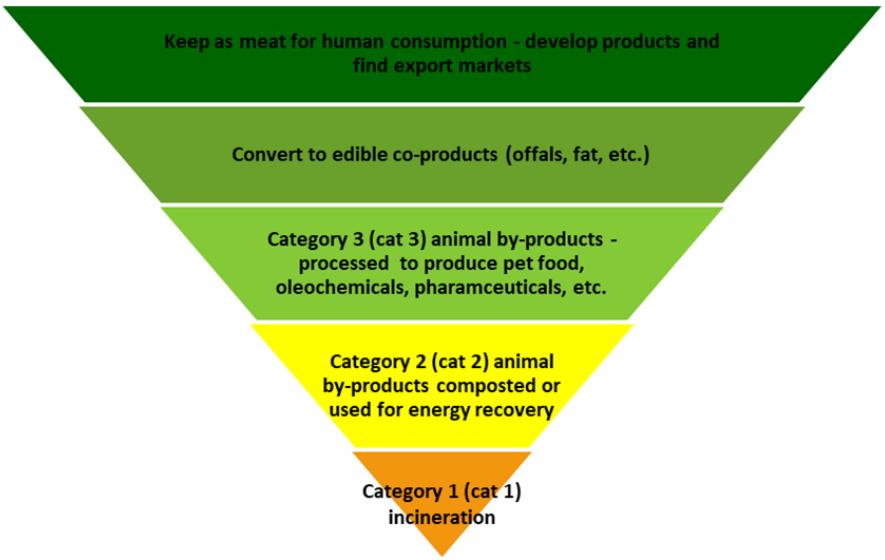
3.2 Processing

From the point of receipt at an abattoir, through cutting, processing and packing into final product, very little goes to waste. Currently, processors report that up to c.1-2% (sometimes less) of throughput ends up as ' wasted food' (excluding the inedible parts never intended for human consumption)[4]. Based on volumes processed in the UK[5], this equates to around 75,000 tonnes per annum. The majority of this food waste is used for renewable energy generation / via anaerobic digestion, or is spread on land as fertiliser.

Whilst waste levels are very low, resources like energy, fuel and water are used in processing and efforts are focused on reducing the amount - and impacts of - energy and water consumed.

ACTIONS AREAS

The industry has made significant gains to maximise the yield of products that can be sold for consumption, or other purposes – along the following hierarchy[6].



A 'best case' carcase balance for different species is shown in Table 2.

Table 4: Example benchmark for dead weight KPIs

KPI	Beef [1]	Sheep [1]	Pork [2]	Poultry [2]
% saleable product / throughput	71%	90%	85%	79%
% Cat 1 or 2 / throughput	10%	<1%	7%	15%
% Cat 3 / throughput	20%	10%	8%	6%

Sources: 1. MLC Services http://www.angiestuff.com/ADNet/index_htm_files/3a.%20Walsh%20MLC%20Adnet.pdf. Saleable product includes meat, offal, fat, edible co-products; 2. WRAP (2010). Resource Maps for Fresh Meat across Retail and Wholesale Supply Chains. Skin/feathers/blood discounted. http://www.wrap.org.uk/sites/files/wrap/RSC009-002_-_Meat_Resource_Map.pdf

[4] Food Waste Reduction Roadmap Progress Report 2019
[5] https://www.gov.uk/government/statistical-data-sets/agriculture-in-the-united-kingdom
[6] FABRA UK have prepared a series of factsheets covering various aspects related to Animal By-products. They cover everything from biosecurity, recycling and regulatory controls to outlets for animal by-products and future policy on waste.

From both a financial and environmental perspective, the aim is to maximise the proportion of saleable product and decrease the amount of material downgraded as either category 1or 2 by-products, as less value can be extracted from these materials and disposal costs are higher. However, there can be instances in which the most efficient balance of products is not achieved. Reasons why this can occur are:

- Limited access to available markets (e.g. for co-products) or services (e.g. cat 3 collections);
- Waste contracts – e.g. minimum volumes for viable cat 1 collections;
- Human error - mis-classifications, floor waste, etc.;
- Machine waste – e.g. non-saleable trim, residues from product changeovers; and
- Wash downs – and lack of visibility of 'food waste' losses to sewer.

Leading meat processing businesses have committed to adopt actions within the WRAP and IGD Food Waste Reduction Roadmap, which calls on businesses to set an ambitious food waste reduction target, report on progress and take action to reduce food waste. As well as intake of animals, the processing sector uses other resources – e.g. water and energy / fuel. Leading businesses have been focusing effort on improving energy efficiency, switching to renewables, reducing water consumption and improving water quality.

OUR COMMITMENT TO ACTION

We are aiming for more than 75% of the UK's meat processing capacity to be taking action to:

- ✓ Reduce food waste in processing operations by 50% by 2030, in line with the best practice outlined in the Food Waste Reduction Roadmap.
- ✓ Reduce GHG emissions from processing operations. Best practice is to set a science-based target, in line with the criteria set by the Science Based Targets Initiative.
- ✓ Improve the efficiency of water use in processing operations and actively support wider water stewardship in key sourcing areas, through the Courtauld Water Ambition.

PROGRESS UPDATE 2020 - 2021

- ➢ Based on information reported to WRAP, we estimate that 27 businesses comprising c. 75% of UK meat processing sector (by turnover) have now committed to the Food Waste Reduction Roadmap and have set a target to reduce food waste. In the last reporting year (2020), they collectively reported more than 20,000 tonnes of food waste reduction (an average c.30% absolute reduction amongst the 5 businesses that have reported year-on-year data).
- ➢ All of the meat processors supporting this commitment have set a GHG reduction target (9 of these businesses also have Science-Based targets approved or in development) and have also reported year-on-year improvements - in some cases up to 30% reduction in emissions intensity (scope 1 and 2) over the last year.
- ➢ All of these businesses and reported having water efficiency targets and have demonstrated year-on-year improvements – in some cases up to 15% reduction in intensity of water use.
- ➢ 7 major meat processors are now also actively supporting water stewardship projects in key sourcing areas, through the Courtauld Water Ambition.

3.3 Point of Sale – Retail

Around 10,000 tonnes of meat were estimated to have been discarded at retail outlets in 2015 (latest full compositional dataset available)[7]. This represented 0.3% of reported meat purchases[8].

Whilst only a small proportion of meat items are discarded at this stage, meat is a high-value category and has been the focus for continuous improvement and innovation.

ACTION AREAS

There has been significant investment to reduce waste in-store, notably through:

- Packaging innovations – such as skin packs and modified atmosphere packaging to extend shelf life, prevent browning, etc. These innovations help reduce waste at home; and one retailer has also quantified how new packaging to extend shelf life on steaks has reduced waste in-store by 8%[9]. The benefit of this reduction in waste; as well as extending the life for consumers at home far outweighs the resources used in additional packaging[10].
- Continuous improvements in forecasting and stock control systems.
- Developing systems and processes to divert more food surplus to redistribution organisations and to pet food, instead of general waste management.

The way that products are packaged and sold can also help reduce wastage at home. This has been a further area of focus, for example by:

- Helping citizens to buy the right amount (e.g. by providing smaller packs for individuals; or providing individual portions on counters, or as individual quick frozen items);
- Giving consumers as long as possible to use items (shelf life and open life);
- Making it clear when products can be frozen – and making it easier to defrost, or cook them from frozen;
- Giving advice on serving sizes / cooking the right amount / following cooking instructions; and
- Providing tips and advice on what to do with leftovers.

The most important areas for action to help reduce the waste of meat products are outlined in Section 3.5.

In the distribution and storage of meat products, the retail sector also uses other resources – e.g. water and energy / fuel. Whilst total use of these is relatively small in comparison with other

[7] Quantification of food surplus, waste and related materials in the supply chain, WRAP 2016. Adjusted to meat vs fish based on relative purchase data from Defra's Family Foods Survey.
[8] Defra's Family Foods Survey
[9] Food Waste Reduction Roadmap Progress Report 2019
[10] e.g. as reported in http://www.wrap.org.uk/sites/files/wrap/packaging_design_to_reduce.pdf; and BPF%20brochure%20WEB2.pdf

stages in the supply chain, leading businesses have been focusing effort on improving energy efficiency, switching to renewables, reducing water consumption, etc.

OUR COMMITMENT TO ACTION

All UK retailers have already committed to reduce food waste in their own operations by 50% by 2030, in line with the best practice outlined in the Food Waste Reduction Roadmap.

As part of this, our commitment is to:

- ✓ Continue to invest in innovations to reduce waste occurring at point of sale.
- ✓ Where waste is unavoidable, increase the amount sent to redistribution organisations.
- ✓ Adopt known best practice to help consumers get the most from their meat purchases and throw less meat away (measured via the KPIs in Section 3.5).

We also commit to:

- ✓ Reduce GHG emissions from retail operations (e.g. by adopting a GHG reduction target in line with the principles of the Science Based Targets Initiative).
- ✓ Improve the efficiency of water use in retail operations and actively support wider water stewardship in key sourcing areas, through the Courtauld Water Ambition.

PROGRESS UPDATE 2020 - 2021

- ➢ Six retailers[11] have so far published food waste data for 2020/21, revealing a collective reduction in food waste of 12,000 tonnes compared to the previous year, and 29,600 tonnes compared to their respective baselines. This represents an average 17% reduction (across all food types, not just meat).

- ➢ Specific actions to tackle meat waste in store over the last year have included introducing alternative discounting strategies, category reviews to identify opportunities such as shelf life extension and trialling the viability of converting meat waste from stores to pet feed.

- ➢ All of the retailers listed on page 3 reported have set a GHG reduction target (9 of these businesses also have Net Zero or Science-Based targets approved or in development). Across all retail (not just food), BRC recently reported[12] a 49% reduction in GHG emissions from stores and transportation since 2005.

- ➢ All of these businesses also reported having water efficiency targets – and have also reported water use efficiency improvements, in some cases up to 15% over the last year.

- ➢ 5 retailers are now also actively supporting water stewardship projects in key livestock, pig and poultry production areas, through the Courtauld Water Ambition.

[11] Tesco, The Co-op,, Morrisons, M&S, Sainsbury's, Waitrose
[12] https://brc.org.uk/news/corporate-affairs/retailers-halve-carbon-emissions-since-2005/

3.4 Point of Sale – Hospitality and Food Service

Around 50,000 tonnes of meat were estimated to have been discarded at hospitality and food service (HaFS) outlets / sites in 2012[13].

Further research is being undertaken to update this estimate.

Being predominantly comprised of multiple small outlets and sites, a key challenge for this sector is to be able to accurately measure the amount of food wasted in kitchens and by customers, understand why it occurs, and target reduction efforts to best effect.

ACTION AREAS

Food waste occurs in hospitality and food service operations for three main reasons:

- Spoilage – food that is not used in time (e.g. goes out of date)
- Preparation - food that is thrown away during preparation (e.g. offcuts)
- Plate – food that is left on customers' plates

WRAP is undertaking further work to understand the relative scale of waste across these for meat products – including the principle causes and potential solutions.

Some known challenges are:

- Regulations related to labelling meat for freezing / longer storage.
- Customer returns - e.g. as result of eating quality. Whilst all supply chains strive to produce the quality demanded by their customers (and specifications based on blueprints originally produced by the Meat and Livestock Commission are widely used), the Beef Eating Quality and Lamb Eating Quality projects in Wales are testing an enhanced carcase grading system based on eating quality – which helps tackle this challenge earlier on in the supply chain.

In the preparation and storage of meat, and other, products, the hospitality and food service sector also uses other resources – e.g. water and energy / fuel. Whilst total use of these is relatively small in comparison with other stages in the supply chain, leading businesses have been focusing efforts on improving energy efficiency, switching to renewables, reducing water consumption, etc.

[13] Overview of Waste in the UK Hospitality and Food Service Sector, WRAP 2013. Latest dataset available. 'Avoidable' meat waste only (not including bones, skin). Adjusted to meat vs fish based on relative purchase data from Defra's Family Foods Survey.

OUR COMMITMENT TO ACTION

The hospitality and food service sector has already set itself some challenging targets to reduce food waste, within a Hospitality and Food Service Action Plan. This action plan has targets (by 2030) for all large hospitality and food service businesses to:

- ✓ Set an ambitious food waste reduction target (e.g. to halve food waste by 2030).
- ✓ Robustly measure food waste and report on their progress towards reducing food waste.
- ✓ Actively engage with their staff and consumers on food waste reduction.
- ✓ Have food waste reduction plans in place with suppliers.

As part of this, we commit to working with WRAP, the Sustainable Restaurant Association (SRA), and others, to understand the principal reasons why meat items are wasted in hospitality and food service operations; and support the development of a playbook of interventions to help reduce meat waste.

We also commit to:

- ✓ Reduce GHG emissions from hospitality and food service operations (e.g. by adopting a GHG reduction target in line with the principles of the Science Based Targets Initiative).
- ✓ Improve the efficiency of water use in hospitality and food service operations and actively support wider water stewardship in key sourcing areas, through the Courtauld 2025 Water Ambition.

PROGRESS UPDATE 2020 - 2021

In these unprecedented times, the hospitality and food service sector has continued to show its determination to take action.

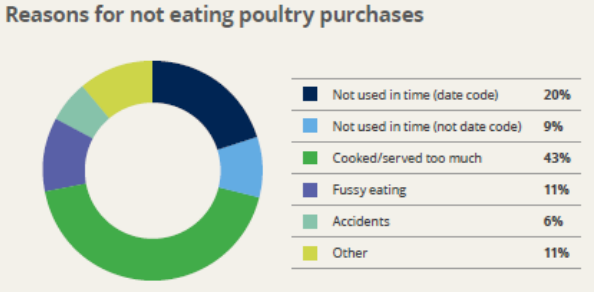
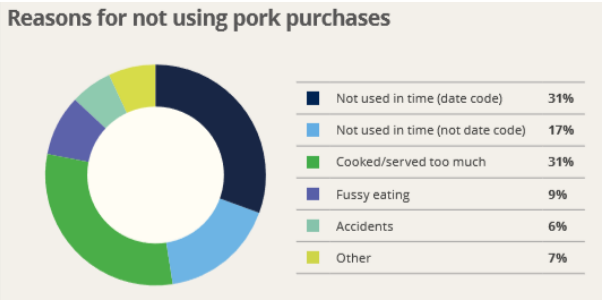
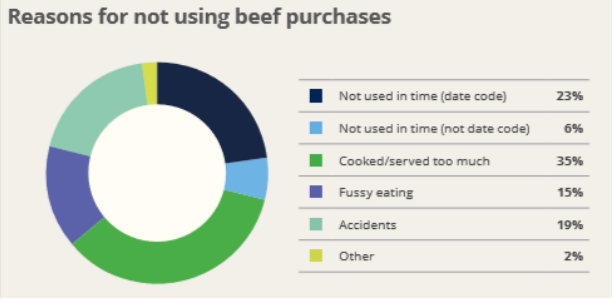
- 35 hospitality and food service businesses have now committed to the Food Waste Reduction Roadmap. objectives (up from 24 in 2019 – nearly a 50% increase despite a challenging year).
- The sector is exemplary in its efforts to share good practice. For example, the award-winning Guardians of Grub campaign has been developed by the sector, for the sector, and has been recently focusing on reopening right. Guardians of Grub makes available a wide range of resources which can help any business, big or small, to target, measure, and act on reducing wasted food. Those taking action have reported quick and impressive results, leading to big savings.
- Businesses are also starting to set new climate objectives through initiatives such as the BRC Climate Roadmap and the Zero Carbon Forum.

3.5 Waste at Home

WRAP's evidence suggests that – once purchased and at home – more than 200,000 tonnes of meat that could have been eaten (>10% of purchases) are discarded every year (latest dataset: 2012).

This is an enormous waste of the precious resources that have been invested in their production. The reasons why food is a thrown away at home are many and complex. Available evidence from householder diaries and compositional analysis is shown Figure 2. Notable, in particular, is the 80,000 tonnes/year that is thrown away because it is 'not used in time' (e.g. the 'Use By' date, or the 'once opened use within …' date had expired).

Figure 2: Scale and reasons for meat waste at home

• 280,000 tonnes (34% purchases) of poultry are thrown away each year • 110,000 tonnes (13% purchases) of it is wasted food – not, skin, bones, etc. • Majority is chicken carcass meat (i.e. meat left on whole birds)	
• 146,000 tonnes of pork products are thrown away each year • This includes sausages (34,000t), sliced ham (22,000t), bacon (21,000t) and carcase meat (21,000t) • 99,000 tonnes (12% of purchases) of it is wasted food that could have been eaten • 20% was thrown away unopened, or in nearly full packs	
• 56,000 tonnes of beef products are thrown away each year • 34,000 tonnes (8% purchases) of it is wasted food – not, skin, bones, etc. • 17% was packaged when thrown away • Most was thrown away in larger instances (>400g)	

Source: https://wrap.org.uk/resources/report/household-food-drink-waste-product-focus

[NB – these values differ slightly from restated values subsequently published. New estimates are anticipated in 2022]

ACTION AREAS

The way products are packaged, labelled and priced can make a significant difference on waste levels at home. There is also a huge role for more education/ awareness-raising on the actions householders can take to reduce waste (e.g. freezing/ defrosting safely and with confidence, use of leftovers).

Based on WRAP's available evidence, the five priority actions to reduce meat waste at home are:

1. Maximising the shelf life available to consumers (i.e. the amount of time remaining on the 'Use By' date). Retailers constantly need to strike a balance between on-shelf availability, providing shelf life for consumers and reducing in-store waste. But investigating ways to ensure consumers have more time to eat what they buy is a known priority. WRAP's most recent survey of products on-shelf found that average available shelf life for a number of high volume meat items had increased slightly between 2011 and 2019 (e.g. chicken breasts, sliced ham), or was already high (e.g. bacon)[14]. There are limits on the extent to which shelf life can be feasibly extended, but it remains a focus for innovation and continuous improvement.
2. Extending, clarifying or removing 'open life' statements on-pack. For example '*Once opened use within x days*'. These statements are only advised when needed for food safety *in addition* to the date label (i.e. where an opened pack could become harmful before the date code expires). WRAP's most recent survey of products on-shelf found that some bacon and sausage packs carry no open life statement, for example. If these statements are needed for quality purposes, rather than safety purposes, then the term '*best within*' is advised. In a recent survey, 55% of respondents reported that they 'regularly' or 'quite often' refer to these open life statements[15]. On this basis, removing, or extending open life statements is estimated to have the potential to reduce meat waste at home by an additional 10,000 tonnes/year [14].
3. Helping customers choose the right pack size for their needs. WRAP's evidence suggests that having a wider range of pack-sizes/ formats at the right price could help prevent more than 20,000 tonnes/year of meat products going to waste[14]. This is because single person households (and homes in which householders eat as individuals) waste 40% more per capita than other households, with the primary reason cited as not being able to buy packs that are the right size for their needs. These households are growing in number and will continue to do so in the next 20 years, which presents a significant risk to escalating food waste. WRAP's most recent survey of products on-shelf found that small packs of many meat items were found in the majority of stores sampled, and at a reasonable price point[14]. Individual portions of many meat items are also available through deli/ meat counters in some retailers, and as easily portioned frozen products (e.g. individually frozen chicken breasts). However, further action is needed in some areas to make smaller packs of key items i) more widely available at the right price point; and ii) attractive to consumers. The latter is important because of consumer concerns over additional packaging for smaller items – which do not reflect the reality of the unnecessary packaging (and cost) when items are purchased and then thrown away.

[14] WRAP Retail Survey 2019: http://www.wrap.org.uk/content/retail-survey-2019. A further survey is being undertaken in 2021 (in-store research was not possible in 2020 due to Covid restrictions)

[15] WRAP citizen food waste tracker survey, May 2019. Unpublished.

4. Helping to encourage more people to freeze (and then use) meat products instead of throwing them away. WRAP estimates that increasing freezing (and use) of key meat items could reduce waste from items not used in time by c.15,000 tonnes/year[14]. With fast-paced, time-poor lifestyles and lower levels of food skills, the time taken to defrost items, and consumer nervousness around how to defrost safely is a significant challenge. There is a need for solutions to make it easier for consumers to use their frozen items – with the easiest option being cook from frozen. Cook from frozen instructions were not found on any of the meat items sampled in WRAP's most recent on-shelf survey[14]. For some meat items, cooking from frozen may not be possible (for food safety reasons). However, this is an area in which further action and innovation is needed. There is also a need for the basics on-pack: a snowflake logo, and clear information about freezing and defrosting safely. On-pack information also needs to be coupled with wider consumer awareness-raising.
5. Encouraging more creative use of leftovers. This applies in particular to whole joints/ whole birds, or other items which are not individually portioned. For example, nearly 50,000 tonnes of poultry that could have been eaten are reported to be thrown away a year, with the reason given as 'cooked or served too much' (Figure 2). The majority of this is meat on carcases. Changing consumer behaviour in this regard is challenging, but there is an important role for more recipes and tips - either on-pack where space allows, or through other communications. On-pack information also needs to be coupled with wider consumer awareness-raising by, for example, supporting Love Food Hate Waste campaign activity. As another example, NFU's autumn turkey campaign provides information on using leftovers, through social media, leaflets, etc.

OUR COMMITMENT TO ACTION

Recognising the role that we can play in helping to reduce food waste at home, our commitment is to:

- ✓ Adopt best practice for on-pack labelling and guidance across the five priority areas identified above.
- ✓ Work on new solutions and innovations.
- ✓ Support consumer-facing campaigns, such as Love Food Hate Waste, to increase awareness and understanding of ways to reduce waste.

Our overarching ambition is to halve the amount of wasted meat products thrown away at home, which would mean >100,000 tonnes/year less waste and c.2 million tonnes avoided GHG emissions.

Progress will be demonstrated via the KPIs set out in Table 5 – evidenced through WRAP's annual Retail and consumer surveys. WRAP will also repeat its household food waste survey on a periodic basis and generate a UK-level estimate, for comparison with 2007 and 2012 data.

PROGRESS UPDATE 2020 - 2021

A full review against the KPIs set out in Table 5 has not been possible across 2020-2021, due to Covid restrictions. Household behaviours over this period are also unlikely to provide a fully representative picture.

WRAP undertook a series of reports detailing how UK citizens' food habits, behaviours and attitudes changed over the course of the pandemic[16]. The findings show that there is significant scope for positive change. For example:

- During lockdown almost 4 in 5 of us changed the way in which we managed food at home – adopted good practices such as pre-shop planning, fridge and freezer management and creatively using leftovers;
- 70% expressed a desire to maintain one of more of these behaviours;
- Use of guidance like Love Food Hate Waste materials increased significantly, and 75% of those that used these resources did something differently.

These behaviours need cementing in order to endure, and some myths continue to need busting – such as the finding that only 58% of citizens surveyed in 2020 know that poultry can be frozen up to the 'Use By' date.

WRAPs latest food waste trends survey (July 2021) revealed that whilst positive food management behaviours adopted during lockdown led to a 43% decline in food waste, as the UK reopens household food waste may be rising (based on self-reported waste data).

Across the four key foods monitored, levels of bread, chicken, milk and potato waste fell from nearly a quarter of all items purchased (November 2019) to 13.7% in April 2020. Levels of waste bounced back slightly in June 2020 but were still 26% lower than in 2019 by the end of 2020. The latest survey shows an increase in reported food waste coinciding with lockdown restrictions easing. In July 2021 food waste was on par with pre-pandemic levels at 19.7%, with three in 10 people once again falling into the category of "high food wasters" - up from 20% in April last year.

The survey suggests this rise is due to two overarching factors: firstly, citizens dropping new habits adopted as time pressures return (with 44% of people reporting feeling more 'time poor'). Secondly, more people are eating out or buying takeaways meaning the food intended to be eaten at home is replaced by a meal or take-out and can end up going to waste.

To help reverse this increase in self-reported food waste, WRAP want more businesses and signatories to Courtauld Commitment 2030 to support its focus on household food waste. WRAP wants to galvanise support from retailers, food producers and manufacturers, local authorities, and community groups to support Love Food Hate Waste and ensure the positive food management behaviours people adopted become the 'new normal', not a lockdown footnote.

[16] https://wrap.org.uk/resources/report/life-under-covid-19-food-waste-attitudes-and-behaviours-2020

A positive response from industry to help enable this has been to:

- Continue progress in adopting known best practices for on-pack labelling and guidance across the five priority areas identified. In particular, all retailers have now removed the term 'Freeze on Day of Purchase' from packaging – or are working towards this. WRAP's advice is to remove this statement, as it can cause confusion and lead to householders throwing away food instead of safely freezing it up until the Use By or Best Before date. During our 2019 Retail Survey, around 1/3 of meat items were found to carry a 'Freeze on day of purchase' statement. A move away from this will help realise the c.15,000 tonnes/year[14] reduction in waste that WRAP estimates could result from increasing freezing (and use) of key meat items. On-pack information also needs to be coupled with wider consumer awareness-raising.
- Work on new solutions and innovations – in particular in recent industry discussions there has been agreement to focus effort on developing and trialling behaviour change interventions to tackle barriers to freezing/ defrosting/ using meat.
- Support for awareness raising campaigns, such as Food Waste Action Week. There have also been excellent examples of 'leftover' campaigns in particular following events such as Easter and Christmas.

Food Waste Action Week - A week of awareness and action to end food waste

An inaugural Food Waste Action Week was held between 1-7 March 2021 – encouraging people to adopt behaviours that help them make the most of the food they buy. The nation was set the challenge to share experiences of cutting food waste to as near to zero as possible, with tips posted across social media to help make food go further, and last longer, with competition prizes to be won. The connection between wasted food and the environment was made clearer than ever, addressing the fact that while 81% of people are concerned about climate change, only 37% (as o f November 2020) understand how wasting food contributes to it.

This message landed well – with one in three UK adults reporting they heard or saw messaging about wasted food during this first annual week of action. Almost 50% of those who recall the campaign say they have, or are planning, to do something different as a result.

More than 135 businesses and organisations gave their support, helping drive awareness (example images overleaf) – including:

- 2 Sisters competition inviting recipes for using up leftovers from a Sunday roast dinner;
- ABP's targeted messaging on social media channels;
- Cranswick's messaging on livery and Ready Steady Cook challenge for NPD teams;
- Dunbia's social media videos featuring their chef's favourite recipe for making the most of the leftovers of a Sunday roast, and recommendations on freezing, defrosting and batch cooking;
- Hilton Food Group's War on Waste awareness program, including messaging to staff on how to minimise waste at home.

Building on 2021's success, Food Waste Action Week 2022 dates announced as 7-13 March 2022.


WASTING FOOD FEEDS CLIMATE CHANGE.
CRANSWICK
Great British Taste
lovefoodhatewaste.com
wrap
CCF193


STOP WASTE
SAVE MEAT
dunbia
TOP TIP #1
PLAN YOUR MEALS.
Always check the 'use by' date and store your meat in a fridge at 0-5°c.
#FoodWasteActionWeek


SUSTAINABILITY
HOW TO MAKE THE MOST OF LAMB LEFTOVERS
Lining up a rack of lamb for Easter but don't want it to go to waste? Here's how to turn your leftovers into lunch.
By Asda Good Living,
9th February 2021


Quality Naturally
HILTON FOOD GROUP
We're launching our
WAR ON WASTE!
Food Waste Action Week
Monday 1st to 7th March
-50% by 2030
FOOD
Reducing processing waste and ensuring as much food as possible is used for human consumption.
Last year in our UK Meat and Fish factories we wasted over 1,000 tonnes of edible food, that's more than 5 million portions.
HILTON
Food Group plc
-15% by 2025
PACKAGING
We know packaging waste has significant impacts on our planet and oceans. As a large user of packaging it's our responsibility to limit this impact. If we wasted 5% of our trays in our UK sites that would be over 7 million trays in the bin!
-10% by 2025
WATER
The water we use creates carbon emissions to heat and treat. The emissions from hot water heating last year in our UK sites equates to the emissions of 2,000 cars a year.
To help save money and waste less food at home scan the QR Code
WASTING FOOD FEEDS CLIMATE CHANGE.
#FoodWasteActionWeek
lovefoodhatewaste.com
wrap
How we target and address waste
Transport
Motion
Overproduction
Defects
T I M W O O D S
Inventory
Waiting
Over Processing
Skills

Table 5: KPIs for actions to reduce meat waste at home

KPI	Best practice ambition by 2025	Relevant products and current position (WRAP Retail Survey 2019)
Average days shelf life found in store % products with ≤2 days life	+ 1 day increase from 2019 baseline >95% items with more than 2 days life	**Chicken breasts** – 5.2 days (9% ≤2 days) **Whole chicken** - 4.7 days (13% ≤2 days) **Beef mince** – 4.1 days (19% ≤2 days) **Beef burgers** - 4.1 days (5% ≤2 days) **Bacon** – 21 days (2% ≤2 days) **Sausages** – 6.6 days (8% ≤2 days) **Ham** – 12.8 (2% ≤2 days)
Presence of open life statements	Where not required for food safety – 100% with no statement, or '*…best within x days*')	**Bacon** – 4% of products with no statement **Sausages** – 10% with no statement
Range of days open life given	Variation in open life statements minimised	**Chicken breasts** – 1 day or use immediately **Beef mince** – 1 day or use immediately **Beef burgers** -1 day or use immediately **Bacon** – 2 or 3 days where present **Sausages** – 1 day or 2 days where present **Ham** – all 2 days
Availability of small packs and price differential between small and larger packs*	100% availability – either packed or on counters. Not more than 35% more expensive per kg	**Chicken breasts** – small pack found in 78% of stores (35% more expensive per kg) **Bacon** – small pack found in 63% of stores (17% more expensive per kg) **Sausages** – small pack in 76% of stores (34% more expensive per kg) **Ham** – small pack found at 1 retailer only (45% more expensive per kg)
% products marked as suitable for freezing / with snowflake logo	100% of applicable product marked as suitable for freezing and with a snowflake logo	**All fresh/processed meat items** (except ham/other deli-meats) - 56%
% products saying "Freeze on Day of Purchase"	0% of products saying Freeze on Day of Purchase. Best practice is to use "Freeze as soon as possible, but always by the date mark shown"	**All fresh/processed meat items** (except ham/other deli-meats) - 30% *NB – this is as sampled in the 2019 Retail Survey. Self-reporting by retailers has suggested that this position will change significantly in the next survey].*
% products with cook from frozen instructions	Increase in adoption (100% is unlikely as some will not be feasible for food safety)	**All fresh/processed meat items** (except ham/other deli-meats) – 0%
% householders reporting they freeze (and subsequently use) key meat items	>75% reporting regular freezing / use	**Chicken (all items)** – 75% reported freezing some of purchases / 68% then defrosted and used **Pork (all items)** – 67% reported freezing some of purchases / 41% then defrosted and used **Beef (all items)** – 73% reported freezing some of purchases / 55% then defrosted and used **Lamb (all items)** – 63% reported freezing some of purchases / 36% then defrosted and used
% products with leftover recipes / tips	100% products carrying recipes or tips – where space allows	**Whole chicken** – 7% (one retailer) **All other meat items** – 0%

NB – KPIs cover the most important action areas for fresh / chilled products (not frozen products). Provision of deli/meat counters and frozen products are also important ways to help reduce waste at home, but evidence suggest that a proportion of shoppers will always default to pre-packed fresh products, rather than frozen/loose.

* Defined as items that could be consumed by 1 person within the open life. For chicken this included 2-packs and split packs; for bacon this included 4- and 6-packs (including split pack formats); for sausages this included 6-packs; and for ham this included 70g packs. Research has found ≤ 35% to be the level of price difference that presents less of a barrier to purchase.

Appendix 1: Data Sources for GHG and Food Waste Estimates

This appendix outlines the data sources and assumptions made in developing the baseline GHG and food waste values within Figure 1

GHG emissions during rearing

GHG emissions itemised within the 2017 UK GHG inventory were allocated to livestock & poultry rearing for meat in the following proportions:

- 50% of cattle enteric fermentation and waste management (the remainder assumed for dairy)
- 100% of sheep and pigs enteric fermentation and waste management
- 100% of poultry waste management
- One third (33%) of direct and indirect soil emissions – an assumption based on the relative volume of UK crop production used as home-grown feed (Source: Defra statistics)
- 50% of stationary and mobile combustion emissions – an assumption based on likely relative land area for livestock and feed production
- Total emissions from these sources in these proportions = 23 Mt CO_2e

GHG emissions from imported feed were taken from a recent WRAP report and adjusted as follows:

- 90% of imported feed was assumed to be used in animal rearing for meat production – on the basis that 2/3rd of imported feed emissions were associated with soya production overseas, and soya is used more commonly in pigs and poultry diets.
- The WRAP estimate did not include any approximation of GHG emissions resulting from deforestation in feed supply chains. A 2013 FAO study reported an approximate 50-100% increase in GHG emissions associated with land use change for feed imported for use in production systems in Western Europe. Using this as a guide, a 75% increase was assumed, accounting for the mix of species. However, this is noted as an assumption with significant uncertainty.
- Total emissions from overseas feed production for UK meat, based on these assumptions = 7 Mt CO_2e

Potential for carbon storage during rearing

Source: Final UK greenhouse gas emissions national statistics: 1990 -2017, Department for Business, Energy and Industrial Strategy/National Statistics, March 2019.

This value (9 Mt CO_2e) refers to the ongoing annual carbon sequestration in grassland soils as a result of land use change in all UK grasslands that have been converted from another land use since 1970. This annual carbon sequestration as a result of land use change will continue until a new soil carbon equilibrium is reached (100-300 years in England and Wales and 300-750 years in Scotland), or until there is another change in land use. Standard grassland management practices in the UK do not have a significant impact on soil carbon that can be separated from the soil carbon stock change associated with historic land use change.

GHG emissions and waste from meat processing: GHG value based on energy consumption data from the Office for National Statistics and converted into GHG emissions using BEIS GHG conversion factors. Waste data from confidential reporting to WRAP

GHG emissions and waste from retail: GHG value taken from 2020 WRAP 2020 report and allocated to meat products based on relative purchasing data from Defra Family Food Survey. Waste value from WRAP 2015 report and adjusted for meat vs fish based on relative purchasing.

GHG emissions and waste at home: GHG value taken from 2020 WRAP report and allocated to meat products based on relative purchasing data from Defra Family Food Survey. Food waste data: see Figure 2

GHG emissions and waste from hospitality and food service: GHG value taken from WRAP 2020 report and allocated to meat products based on relative purchasing data from Defra Family Food Survey. Waste value from WRAP 2013 report and adjusted for meat vs fish based on relative purchasing.

‘There has never been a more critical time for action. We are facing a warming world, with more people and less land, water, energy and other resources to go around.

‘As an industry we are committing to work together to ensure that we use these resources efficiently and minimise our impact on the environment, whilst safeguarding the health & welfare of our animals and the livelihoods of our producers.

‘Never has it been more important that we produce food in a sustainable manner, including reducing food waste from farm to fork. By working collectively, we aim to make the UK meat industry a world-leading example of efficient and sustainable meat production and supply.’

wrap.org.uk/sustainable-meat
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