UK PET FOOD

UK PET FOOD'S HANDBOOK TO HELP IMPROVE SUSTAINABILITY OF PET FOOD

Original research and support by 3Keel

FOREWORD

"UK Pet Food's mission is to advance pet health and wellbeing with quality nutrition from a sustainable, progressive UK Pet Food industry. Sustainable and nutritious foods help keep pets healthy and there is a significant body of research that shows pets are pivotal for human health and the wider society we live in.

To better understand the impact of the ingredients we use, UK Pet Food partnered with leading independent analysts 3Keel to commission research into key ingredients.

3Keel brought a wealth of knowledge having worked with the food and drink industry, retailers, and the farming sector. This ensured a robust approach and a deep understanding of our supply chain.

The publication of this excellent handbook for UK Pet Food manufacturers marks an important moment in our journey and commitment to more sustainable pet food production. It provides a practical tool - driving action to mitigate the impacts of the ingredients we use. It enables companies of all sizes to make informed decisions on sourcing ingredients.

Whilst this handbook considers the ingredients sourcing aspect of your businesses, a company making change does need to consider the whole process. We are working hard to support the membership and ensure a sustainable pet food industry and a sustainable pet population."

MICHAEL BELLINGHAM

UK Pet Food Chief Executive

"There is currently a lack of robust data on the environmental impacts of pet food production, and none that is UK focused; we wanted to address this knowledge gap. We know that food ingredients account for 66% of Green House Gas emissions within the UK food and drink sector, so commissioning a report on commonly used pet food ingredients in the UK was our starting point. Converting the data and findings into a practical guide for members ensures we help build understanding and make it easier for members to act. The member 'action plan' is on pages 14-20 However, pages 7-13 include important report findings on the environmental impacts of our ingredients, which is key in setting the scene."

NICOLE PALEY

UK Pet Food Deputy Chief Executive & Sustainability lead

THOUGHTS FROM OUR SECTOR

UK Pet Food represents over 100 members who are responsible for feeding 90% of the nation's pets. Our members produce a diverse range of foods for a diverse pet population. Through our membership we have a dedicated sustainability committee. This expertise has supported the development of this handbook.

WILL BUSHELL

UK Pet Food Sustainability Co-Chair (IPN)

"The right methodology based on science, which is also consistent with an existing European standard, is important for the integrity of this report. 3Keel interrogated the various recognised methods, which ensured total confidence in the approach."

GREG VAN PRAAGH

UK Pet Food Sustainability Co-Chair (Benyfit Natural)

"The pet food industry plays a vital role in supporting the UK in delivering its wider 2050 sustainability goals. Through a dedicated Sustainability Committee at UK Pet Food, we develop education and tools to give members the help they need."

CLAIRE ROBINSON-DAVIES

UK Pet Food Chair (Nestle Purina)

"As the pet food industry, we believe we have a responsibility to maintain a balance between the positive societal benefits of pet ownership and protecting the environment for future generations, which is why this work is so important."

CONTENTS

> UK Pet Food has three core pillars of activity: Sustainability, Safety & Standards and Nutrition, Animal Welfare underpins all of UK Pet Food's work.

NICOLE PALEY

UK Pet Food Deputy Chief Executive & Sustainability lead

EXECUTIVE SUMMARY

UK Pet Food commissioned this study to improve understanding of how pet food contributes to the environmental impacts of the food system. There is growing awareness of the environmental impacts of food production and consumption, although the environmental impacts of pet food have often been underrepresented in research.

The biggest impact across the food sector in the UK comes from producing the actual ingredients, prompting us to focus on the impact of pet food ingredients in this study.

This UK Pet Food study estimates the environmental impacts of seven pet food ingredients sold in the UK and compares this to the wider UK food sector impacts. It uses a rigorous assessment method, called economic allocation, in line with industry and scientific standards. This approach allows for the inclusion of different relative impacts of animal products (such as muscle meat, offal and other by-products), giving a more representative assessment of the real impacts of pet food ingredients.

It is hoped that this study will help pet food manufacturers to understand their main impacts, and to identify and implement steps to reduce the impacts of their products. For more detail on the methodology see page 21.

WE FOCUSED ON SEVEN COMMON PLANT AND ANIMAL INGREDIENTS.

The ingredients constitute 81% of ingredients of cat and dog food sold in the UK and includes the different parts of the animal used (muscle, offal, rendered meat etc).

Soy was not included as a direct ingredient as the impacts of soy are already reasonably well understood, but we do refer to soy in terms of potential deforestation risk through soy in livestock feed.

ANIMAL

BEEF

POULTRY

FISH

PLANT

WHEAT

MAIZE

RICE

POTATO

WE LOOKED AT A RANGE OF METRICS QUANTIFY THE MOST HARMFUL ENVIRONMENTAL IMPACTS OF FOOD PRODUCTION.

The metrics take into account the different impacts of different ingredients.

GREENHOUSE GAS EMISSIONS (tCO_2e)

LAND USE (hectares)

DEFORESTATION (risk)

WATER USE (megalitres)

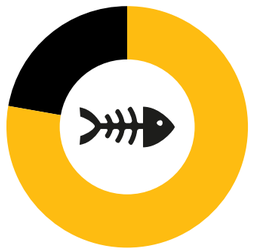
WATER QUALITY (ecotoxicity)

WHY FOOD MATTERS

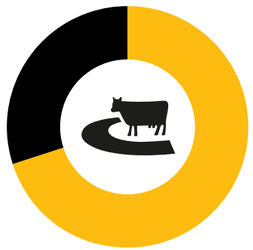
While the food and agriculture sector is vital to human well-being it is also a major cause of environmental harm and significant driver of climate change.

26%
of global greenhouse gas emissions come from food

50%
of the world's habitable land is used for agriculture



78%
of global ocean and freshwater eutrophication is caused by agriculture.



70%
of global freshwater withdrawals are used for agriculture

KEY MESSAGE

Whilst most people only think about food production and consumption from a human perspective, pet food accounts for a sizeable proportion of food system emissions, land use, and water consumption. This report underlines the pet food industry's responsibility and opportunity to address the environmental impacts of its ingredients.

UK PET FOOD

THE ENVIRONMENTAL IMPACTS OF FOOD CONSUMED IN THE UK

22%
of total greenhouse gas (GHG) emissions in 2019 (158 million tonnes CO2e) were caused by the UK food system.

27,000 ha
of tropical deforestation annually can be attributed to UK consumption of imported agricultural commodities.

73%
of UK land is used for agriculture (17.5 million hectares in 2020), 85% of which is used for grazing or growing feed for animals.

4,645 litres per person per day
is the average water footprint, taking into account agriculture, industry and household use in the UK.

KEY FINDINGS OF PET FOOD IMPACTS

Beef is the highest-impact ingredient. It produces 46% of the GHG emissions and uses over 70% of total land use.

Muscle meat typically has the highest impact of the different animal by-products.

Animal ingredients have significantly higher environmental impacts than plant ingredients.

Potato is the lowest-impact ingredient.

Rice cultivation consumes more water than any other assessed ingredient.

KEY FINDINGS OF PET FOOD IMPACTS

All seven of the ingredients have environmental impacts across the metrics assessed.

Using data from surveys of UK Pet Food members and analysis by a pet food industry expert, we found that the seven pet food ingredients have environmental impacts across all five metrics assessed.

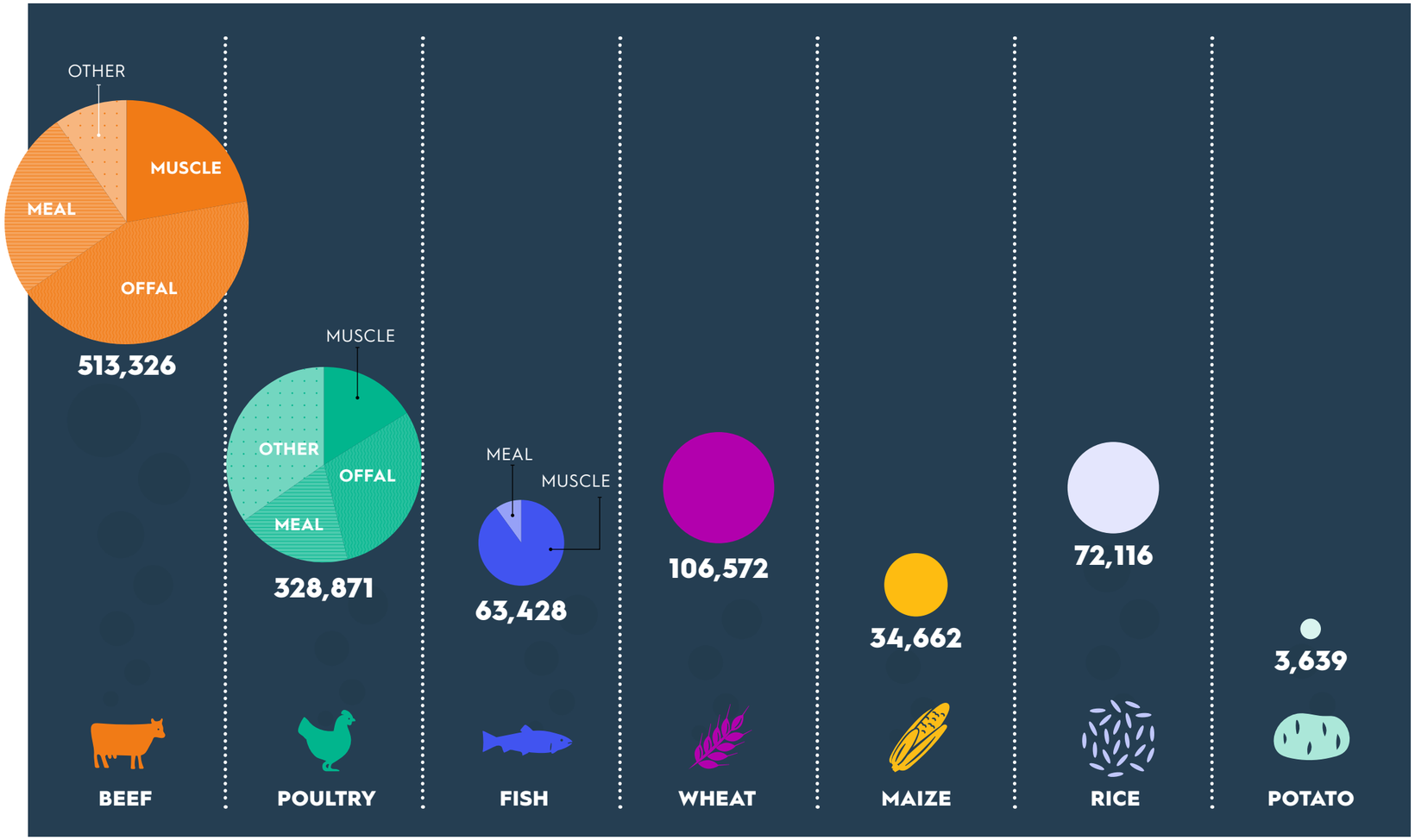
The scale of these impacts, relative to the UK food and drink sector, ranges from 1% of water pollution to 6% of water use. These figures are lower than some previous academic studies of pet food which did not take account of the lower value of most animal-based content in pet food.

Pet food ingredients account for **1.2%** of emissions from ingredient production for food and drink consumed in the UK

ENVIRONMENTAL METRIC	IMPACTS (OF 7 ASSESSED INGREDIENTS)	PUTTING THE NUMBERS IN CONTEXT
GHG emissions	**1.2** $MtCO_2e$	Pet food ingredients account for **1.2%** of emissions from ingredients production for food and drink consumed in the UK
Land use	**2,700** km^2	**1.6%** of the UK's total agricultural area
Deforested area	**34%** of soy embedded in UK pet food is associated with a "very high" deforestation risk	
Water consumption	**4,600** million m^3	**6%** of the water used to produce food and drink consumed in the UK
Water pollution	**12,000** t - nitrogen **440** t - phosphates	**1%** of UK nitrogen losses

KEY FINDINGS
GHG EMISSIONS

TOTAL GREENHOUSE GAS EMISSIONS PER INGREDIENT TYPE



HEADLINE MESSAGE

- GHG emissions from ingredients in scope totalled 1,202,505 tCO2e, equivalent to 1.2% of emissions from food and drink consumed in the UK.

BIGGEST IMPACT

- Meat ingredients account for over 80% of these emissions.
- Muscle meat is the highest impact meat ingredient, whereas rendered meals have by far the lowest impact. This is due to economic allocation: muscle meat has the highest impact due to its greater relative cost.

LOWEST IMPACT

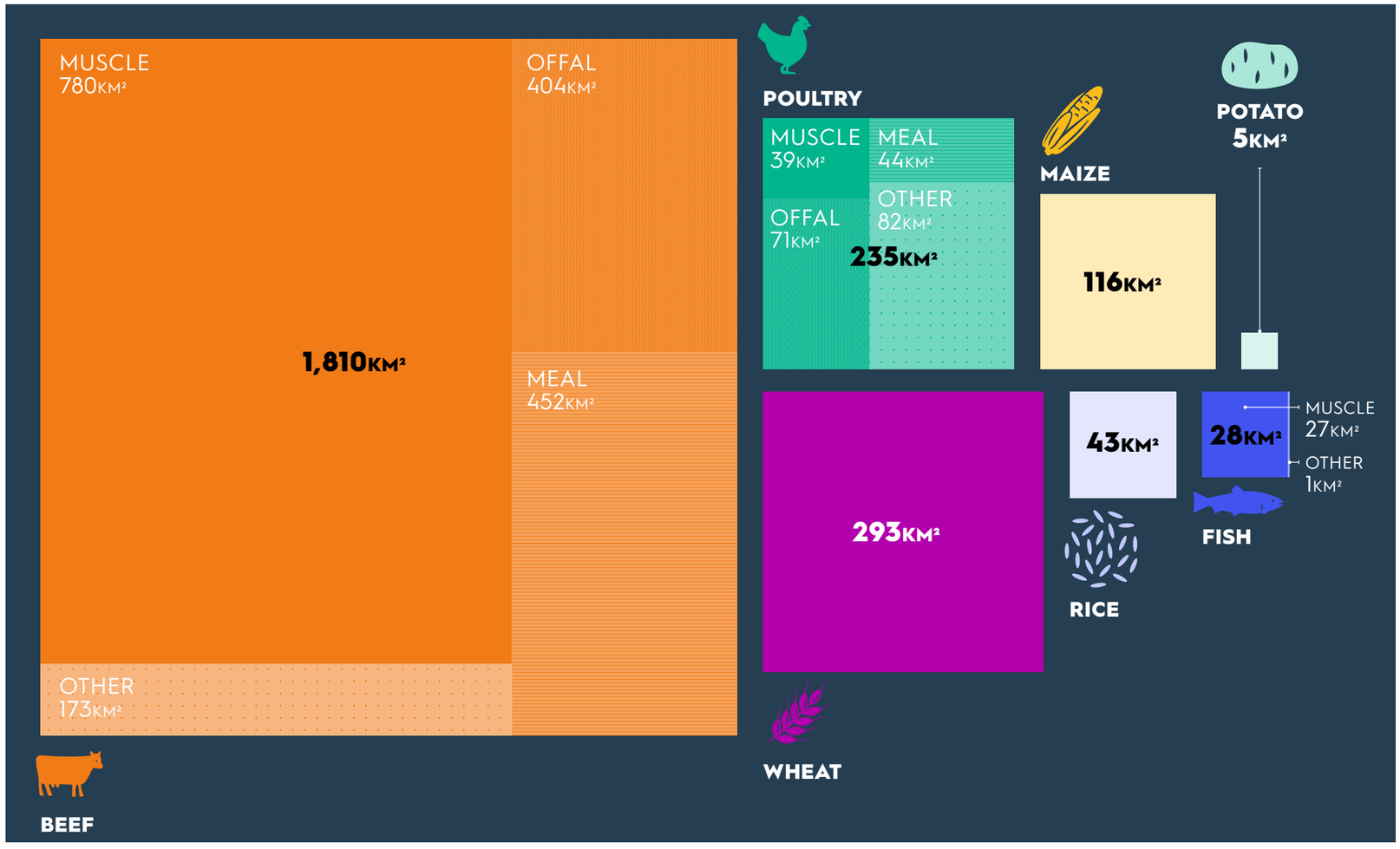
- Per 1000 kcal, plant ingredients have significantly lower GHG emissions than most animal co-products.

OTHER IMPORTANT INFORMATION

- Wheat is the dominant source of plant-related emissions, contributing 9% of total emissions; due to the large volumes of wheat used in pet food.
- For a plant ingredient, rice has a high emissions intensity as production requires land to be flooded, which produces large volumes of methane.

KEY FINDINGS
LAND USE

TOTAL LAND USE PER INGREDIENT TYPE



HEADLINE MESSAGE

- Land use, in the UK and overseas, totalled 2,710 km². This is equivalent to 1.6% of the land used for agriculture in the UK.

BIGGEST IMPACT

- Beef has a disproportionate impact on land use (over 70% of ingredients assessed). Cattle require large areas of land for grazing and growing feed inputs, which is often in regions of the world at high risk of deforestation.

LOWEST IMPACT

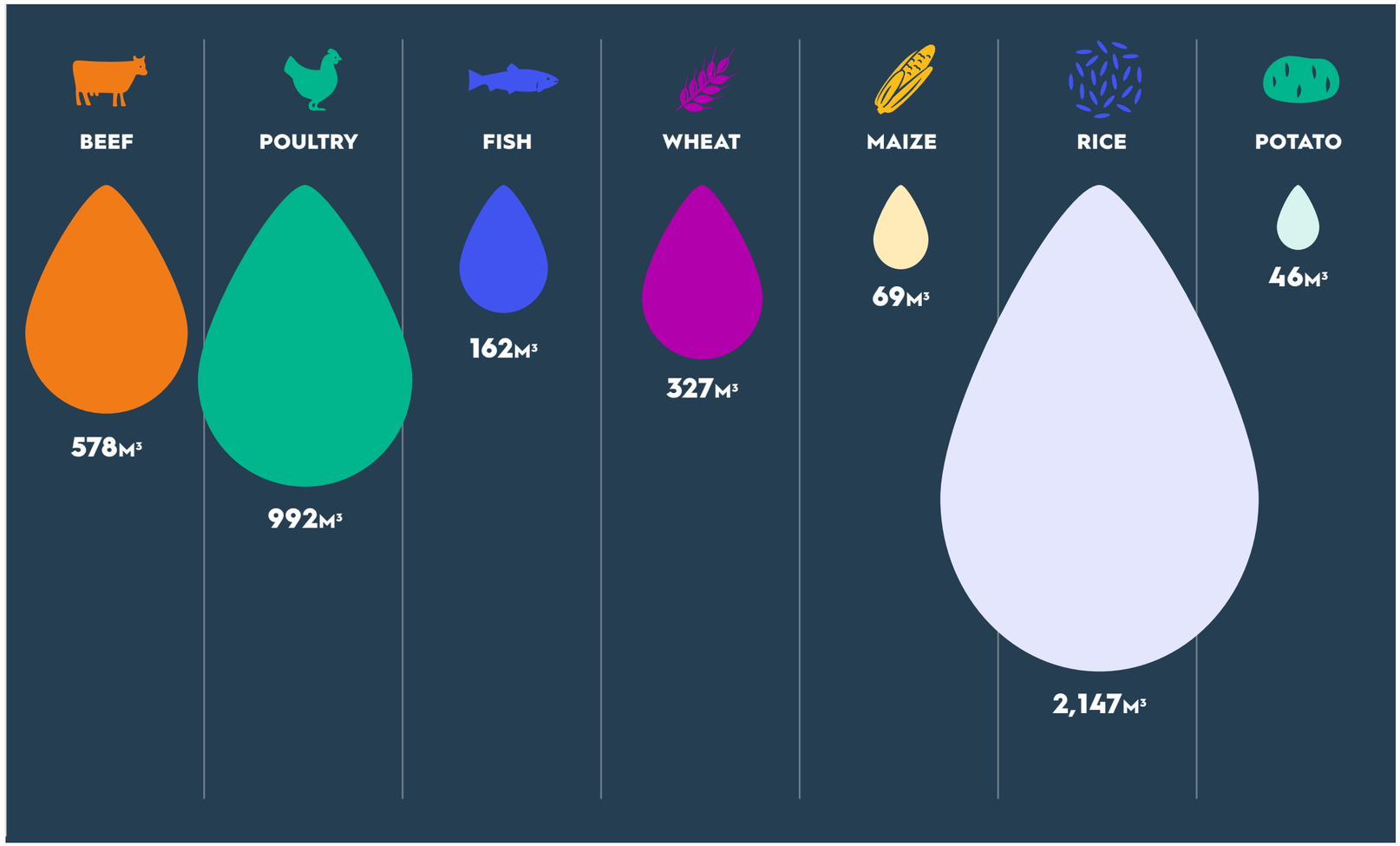
- Per 1000 kcal, plant ingredients have significantly lower land use than most animal co-products.

OTHER IMPORTANT INFORMATION

- Wheat production is the second largest contributor to land use. This is due to the large volumes of wheat procured rather than a high land use intensity factor

KEY FINDINGS
WATER USE

TOTAL WATER USE PER INGREDIENT TYPE



HEADLINE MESSAGE:

- Water use was equivalent to 6% of the total used to produce food and drink consumed in the UK (4,630 million m3).

BIGGEST IMPACT:

- Per 1000 kcal, rice is the most water-intensive ingredient. This is due to the large volumes of water required to irrigate rice paddies.
- Beef and (farmed) fish are water-intensive products, because of the water needed to sustain and feed animals over time.

LOWEST IMPACT:

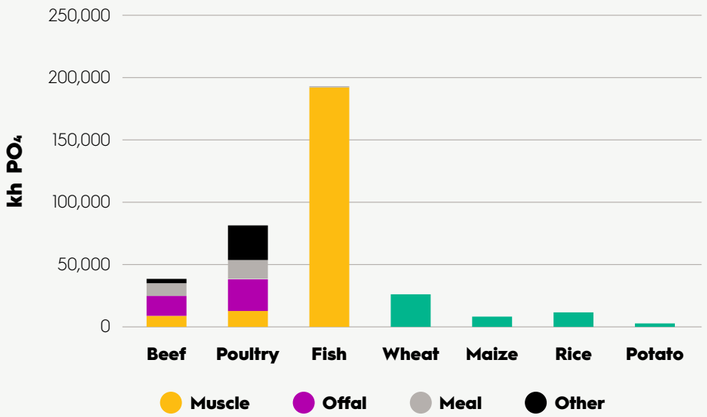
- Wheat and Maize have the lowest water use impact per unit calorie.

OTHER INTERESTING INFORMATION:

- Poultry requires the most water among the animal products due to the large volume of poultry procured (36% of all ingredients by weight).

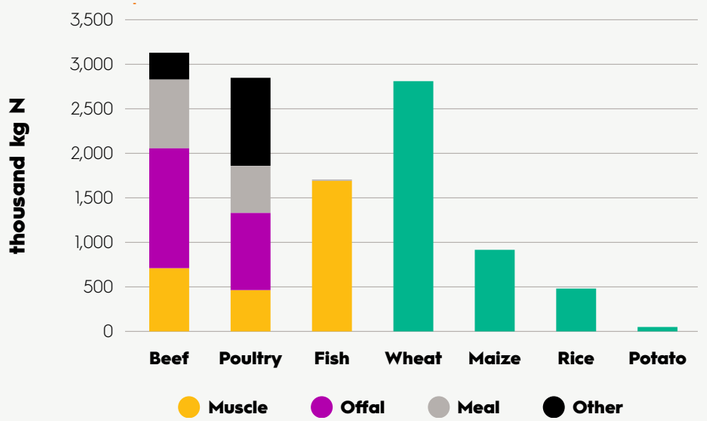
KEY FINDINGS
WATER POLLUTION

FRESHWATER EUTROPHICATION
(TOTAL AND PER 1000KCAL)



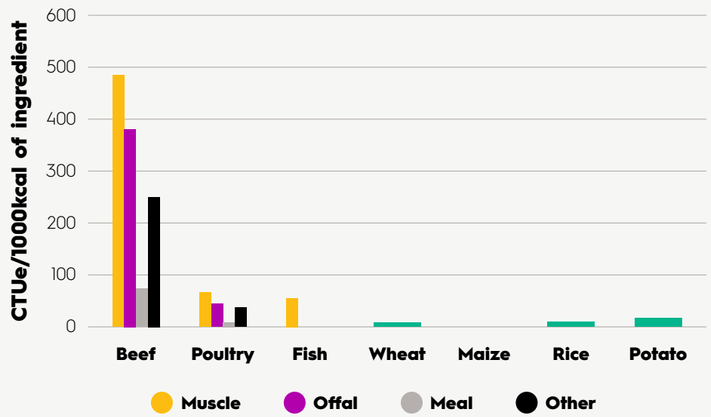
- Animal products are the main contributors to freshwater eutrophication; due agricultural runoff.
- Fish meat is by far the largest contributor to freshwater eutrophication.
- Poultry is the second largest contributor to freshwater eutrophication. The intensive farming of birds creates large volumes of manure, which seeps into local waterways and disrupts nutrient balances.

MARINE EUTROPHICATION
(TOTAL AND PER 1000KCAL)



- All seven ingredients contribute to marine eutrophication. Nitrates from these sources inevitably leach into waterways which in turn flow into the sea.
- Animal products have a much higher impact. As with freshwater eutrophication, (farmed) fish is by far the largest cause of eutrophication when considered by unit calorie.

WATER ECOTOXICITY
(TOTAL AND PER 1000KCAL)



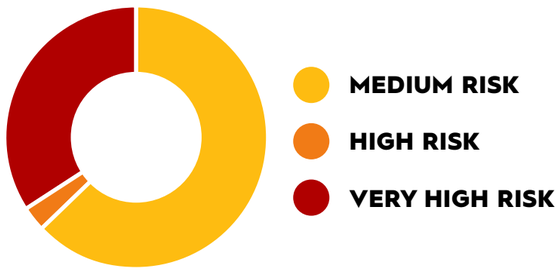
- All assessed ingredients contribute to ecotoxicity through the release of pesticides, antibiotics, hormones, and bacteria into the environment.
- Per unit calorie, beef is by far the most significant contributor to ecotoxicity. Poultry and beef are the dominant contributors to ecotoxicity.

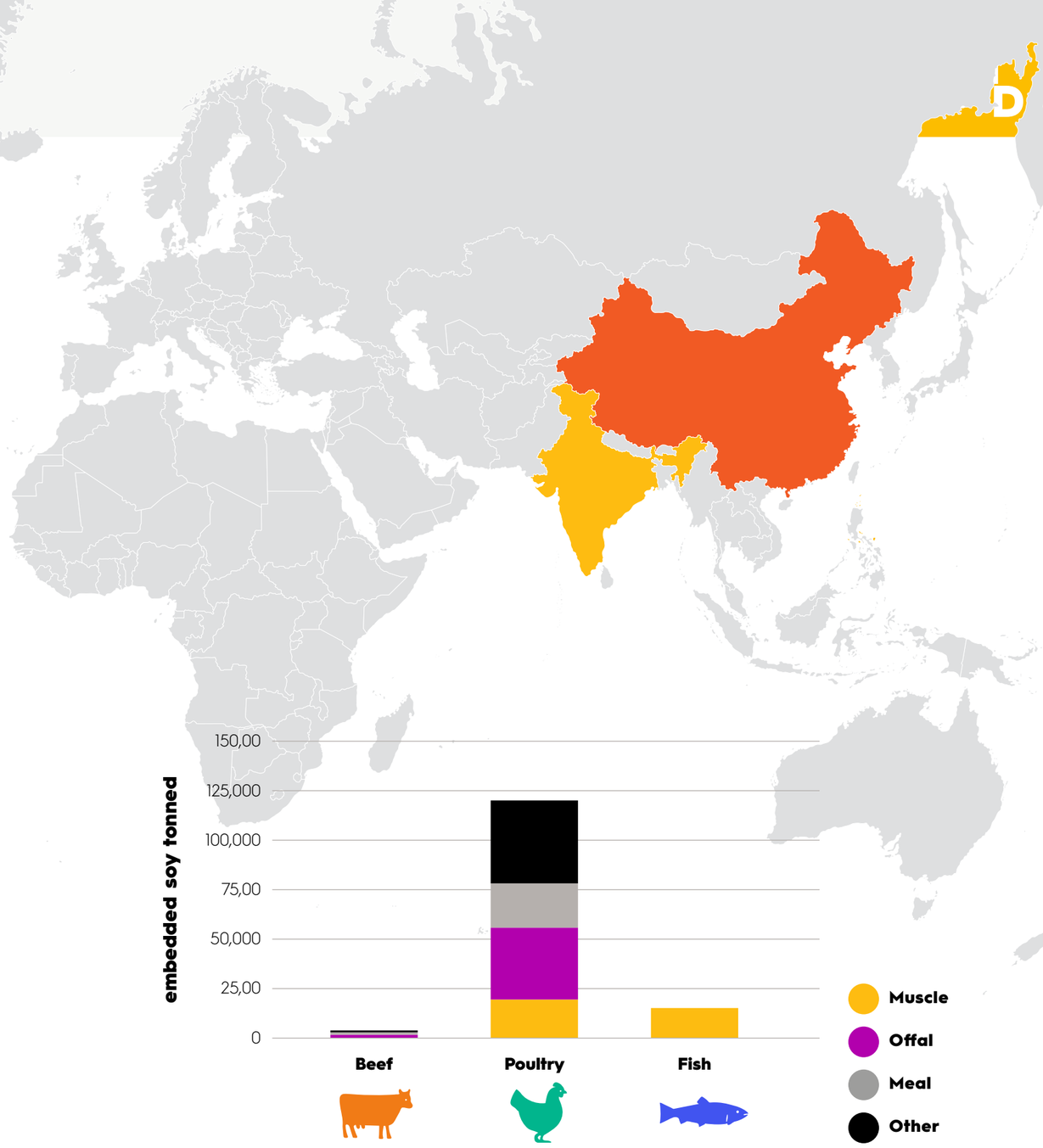
KEY FINDINGS
DEFORESTATION RISK FROM SOY

None of the seven ingredients under analysis directly pose a deforestation risk (given beef is sourced from UK or Europe rather than tropical regions).

This report assessed deforestation according to the risk of deforestation related to soy feed used as livestock feed in the production of beef, chicken and fish. The results show the estimated risk level rather than the actual amount of deforestation attributable to the pet food industry.

34% of soy embedded in UK pet food is sourced from regions with a “very high” deforestation risk factor, 3% from “high” risk regions, and 63% from “medium” risk regions.





The vast majority of the deforestation risk is related to poultry. This is due to the large amount of soy used to feed poultry generally.

AN ACTION PLAN
UNDERSTANDING YOUR IMPACTS

WHAT ARE THE SUMMARY FINDINGS

Beef has the highest overall environmental impact

Muscle meat has the highest impact in terms of the type of animal product

In general, animal products have significantly greater environmental impacts compared to plant foods

Potato has the lowest environmental impact amongst the plant foods analysed

WHAT DOES THIS MEAN FOR YOU?

This research allows you to get an understanding of your collective impacts as a sector.

It is not an individual analysis of the products sold by an individual business but it does give an indication of the likely impacts for a pet food business in the UK.

The following action plan is intended to help you as a business to map out what you can do next.

AN ACTION PLAN
OUR FIVE STEP PLAN

1

Identify your ingredients with the greatest impacts, especially for your high selling ranges.

2

Engage with your suppliers to reduce the relative impact of the “big impact” ingredient.

3

Understand how you can reformulate your products to use less of the “big impact” ingredients.

4

Develop a plan for accurately measuring the impacts specific to your product ranges and mapping an impact reduction strategy.

5

Engage with your customers about sustainability and nutrition to help them make informed choices that are good for their pet and the planet.

AN ACTION PLAN
OUR FIVE STEP PLAN

STEP 1
INGREDIENT HOTSPOTS

Identify the likely "big impact" ingredients for your key products for

- Greenhouse gas emissions
- Land use
- Water use
- Water pollution

Which products are you buying most of?

Are you buying muscle, offal or other types?

What "hotspots" does this give you for the different environmental impacts?

STEP 2
SUPPLIER ENGAGEMENT

Can you engage with your suppliers to understand if they have strategies to reduce impacts for "big impact" products?

Questions to ask suppliers include:

- Do they have sustainability strategies and targets in place?
- Do they have data on the specific environmental impacts of the products you buy from them?

It is also worth considering collective action as a sector to engage with suppliers together and reduce the time and cost of doing this individually.

STEP 3
POTENTIAL PRODUCT REFORMULATIONS

Can you redesign any of these key products to substitute some of the "big impact" ingredients for other ingredients?

Possible substitutions will be:

- Substitute muscle meat for offal or meal with lower impacts
- Substitute one type of animal product for another type of animal product
- Substitute animal products for plant products

See the section on benefits and trade-offs for more information.

STEP 4
DETAILED ANALYSIS AND PLAN FOR YOUR BUSINESS

The findings of this first report are sector-wide and should only be seen as indicative for an individual business.

Having gone through steps 1 to 3, a business can plan for a specific analysis of impacts for its own business, map potential reductions, and set clear targets for example around net zero, biodiversity, water use and water pollution.

It is important to see the environmental impacts of the ingredients used alongside other issues such as animal welfare and nutrition.

STEP 5
ENGAGE WITH YOUR CUSTOMERS

UK Pet Food has a range of factsheets that can be used to engage with your customers on topics related to sustainability whilst ensuring the right nutrition for your pet. These include vegan and vegetarian diets for pets, insect protein-based pet foods, the recyclability of pet food packaging and healthy weight management.

These are designed to help you have conversations with your customers helping them make choices that are best for the pet and the planet.

https://www.ukpetfood.org/information-centre/all-uk-pet-food-resources.html

STEP 2: SUPPLIER ENGAGEMENT
WHERE TO START

Supplier engagement is important to understand what your specific suppliers are doing in terms of sustainability, animal welfare and other social issues such as human rights in the workforce. Animal welfare and social issues were not within the scope of the original study so not covered here, but are important topics to engage with your suppliers.

UK PET FOOD RESOURCES

The Pet Sustainability Coalition have some excellent tools to support members in their online toolkit. Covering certifications, animal welfare, and engaging with suppliers on sustainable protein: This includes a company and supplier code of conduct and purchasing policy guide.
https://petsustainability.org/performance-supply-2/

Pet Sustainability's Four Factor Framework for Sustainable Proteins - This resource is for pet food manufacturers and other members of the supply chain to evaluate the sustainability performance of proteins used in pet foods. This report will outline foundational concepts, key issues, and best practices associated with pet protein sustainability.

Third Party Certifications - This resource by the Pet Sustainability Coalition helps manufactures determine which certifications can aid your company in achieving its sustainability goals.

KEY QUESTIONS TO ASK YOUR SUPPLIERS...

- Do they have any current environmental policy including commitments and targets such as net zero, zero deforestation, reducing waste?

- Have these commitments been verified by a third party, or aligned with existing standards (such as science-based targets initiative)?

- Are they measuring their own impacts for key metrics used in this study?
  - Greenhouse gas emissions
  - Water use
  - Water pollution
  - Land-use, especially for deforestation or land-use conversion for soy to be used in livestock feed or beef.

- If so, have these been verified by a third party or used a recognised tool for measurement?

STEP 3: PRODUCT REFORMULATION
ENVIRONMENTAL BENEFITS AND TRADE-OFFS

Selecting sustainable ingredients requires a consideration of the range of different environmental impacts. For example, a kilogram of fish may contribute fewer greenhouse gas emissions than a kilogram of beef but cause more water pollution.

Based on our findings from this report, we have highlighted below some potential ingredient substitutions and the associated trade offs that might arise.

Please note that this relates to environmental issues only. Issues of nutrition, animal welfare and customer expectations should also be considered alongside these.

Our results also aggregate each ingredients' production practices, meaning that these trade offs therefore don't differentiate between sustainable production systems (e.g. regenerative farming techniques) and should be taken as generic implications.

See the next pages for more information on nutrition issues and engaging with your suppliers.

POTENTIAL SUBSTITUTIONS	ENVIRONMENTAL BENEFITS	POTENTIAL TRADE-OFFS
RED MEAT TO WHITE MEAT (eg beef to chicken)	▸ Lower GHG emissions, significantly lower land use and lower water use.	▸ Poultry has high water pollution risk. ▸ While not assessed directly in this report, poultry has strong connections to land use conversion and deforestation due to soy in animal (livestock) feed.
RED MEAT TO FISH (eg beef to salmon)	▸ Lower GHG emissions and land use. ▸ Lower water use only when switching from muscle and offal.	▸ Farmed fish has high water pollution risk. ▸ Wild caught fish stocks are under threat.
MUSCLE MEAT TO OFFAL (beef as the best example)	▸ Lower impacts across all environmental metrics assessed.	▸ No major trade-offs.
MEAT TO PLANT (eg poultry to potato)	▸ Significantly less impact across all environmental metrics assessed.	▸ No major trade-offs.

STEP 3: PRODUCT REFORMULATION
WATCH-OUTS TO AVOID NEGATIVE NUTRITIONAL CONSEQUENCES

While nutrition was not part of the original study, at UK Pet Food we recognise the importance of nutrition for people's pets. The two pages on nutrition are additional content from UK Pet Food to complement the study carried out by 3Keel on environmental impacts.

KEY WATCH-OUTS

▸ Consider the data: Substituting meats needs to be based on nutritional outcomes and driven by data held on the nutritional composition of the raw materials used.

▸ Consider the needs of the pet. Product attributes and claims should be evaluated alongside food intolerances and food allergies or the specific requirements of pets with certain dietary needs.

▸ Consider the preferences of pets and owners. Changes to ingredients need to be carefully considered alongside digestibility, palatability, format, texture, visual appearance, and faeces quality.

▸ Consider NPD: Reformulation should be considered as part of any NPD to reduce environmental impact of pet food recipes within a brands portfolio.

"When considering alternative ingredients in order to reduce the environmental impact of pet food, it is critical that manufacturers do not incur "nutritional penalties". Any adjustments require careful reformulation with careful nutritional analysis of all the ingredients involved, both of those you are replacing and those you are replacing them with."

DR JOHN LOWE
UK Pet Food Veterinary Nutrition Committee

"Any diet reformulation needs to be considered within the context of the nutritional requirements of the pet but also other product attributes such as digestibility, palatability, format, texture, visual appearance and faeces quality."

DR ANDREW MILLER
Chair, UK Pet Food Veterinary Nutrition Committee

STEP 3: PRODUCT REFORMULATION
LOOKING AT NUTRIENT PROFILE OF INGREDIENTS IN MORE DETAIL

For the substitutions shown on page 17, UK Pet Food recommends you consider also the following from a nutrition perspective.

POTENTIAL SUBSTITUTIONS	NUTRITIONAL CONSIDERATIONS
RED MEAT TO WHITE MEAT (eg beef to chicken)	▸ When substituting red meat to meat with lower impacts, we must consider ash, Ca and P levels and ratio - especially MBM, which is more often beef based.
RED MEAT TO FISH (eg beef to salmon)	▸ When substituting red meat to fish, it is important to consider the nutrient composition of the food (e.g., high Selenium, vitamin D3 from salmon) plus the need to assess for metal contamination when using marine based ingredients.
MUSCLE MEAT TO OFFAL (beef as the best example)	▸ When substituting muscle meat to offal or meat with lower impacts, we must consider ash, Ca and P levels and ratio - especially MBM, which is more often beef based.
MEAT TO PLANT (eg poultry to potato)	▸ When substituting meat to plant, it is important to consider that potato or plant proteins need to be evaluated carefully in terms of nutrient composition e.g., amino acids, fatty acids, and minerals in particular. ▸ Manufacturers also need monitor to guard against risks such as mycotoxins and other contaminants in which can grow in a variety of crops and foodstuffs.

THE METHODOLOGY IN MORE DETAIL
HOW WE CHOSE AND ASSESSED THE INGREDIENTS

Our research focused on seven common pet food ingredients.
They were selected because:

- they are some of the most widely used and represent 81% of all ingredients in pet food sold in the UK (by weight).
- they cover a variety of production systems that represent different environmental impacts e.g. farmed animals require a lot of land; rice requires large amounts of freshwater, and so on.

For the animal by-products, the study takes account of the parts of the animal used, thus enabling manufacturers to quantify and distinguish between the impacts of using different parts of an animal.

We considered a range of metrics that represent the most harmful environmental impacts of food production.

For a full breakdown of our methods check out our full report (chapter 6).

ENVIRONMENTAL METRIC	DEFINITION	ASSOCIATED IMPACTS
Greenhouse gas emissions (tonnes CO2e)	Emissions of greenhouse gasses (carbon dioxide, methane, nitrous oxide, etc.) estimated to contribute to global warming over a 100-year period.	Climate change, extreme weather events, reduced air quality.
Land use (hectares)	Agricultural land use measures how much land we occupy for farming each year. This is important because it limits the availability of land for natural ecosystems and their services, like carbon removal.	Climate change, biodiversity loss, soil erosion, desertification.
Water use (megalitres)	Water use is the process of measuring how much water is consumed by a particular activity, taking into account the water availability of the region where the activity occurs.	Water pollution, drought, groundwater depletion, desertification.
Water quality (tonnes nitrogen and phosphate, proxy unit for ecotoxicity)	Water quality takes into account freshwater eutrophication (pollution caused by the addition of nutrients) and freshwater ecotoxicity (the harm a substance can cause to plants and animals living in freshwater environments).	Water pollution, eutrophication, biodiversity loss.
Deforestation (risk)	The deforestation risk factor is a qualitative measure, indicating what proportion of embedded soy (soy used to feed animals) is from regions at risk of deforestation.	Biodiversity loss, soil erosion, desertification.

THE METHODOLOGY IN MORE DETAIL

HOW THE RESEARCH WAS CARRIED OUT

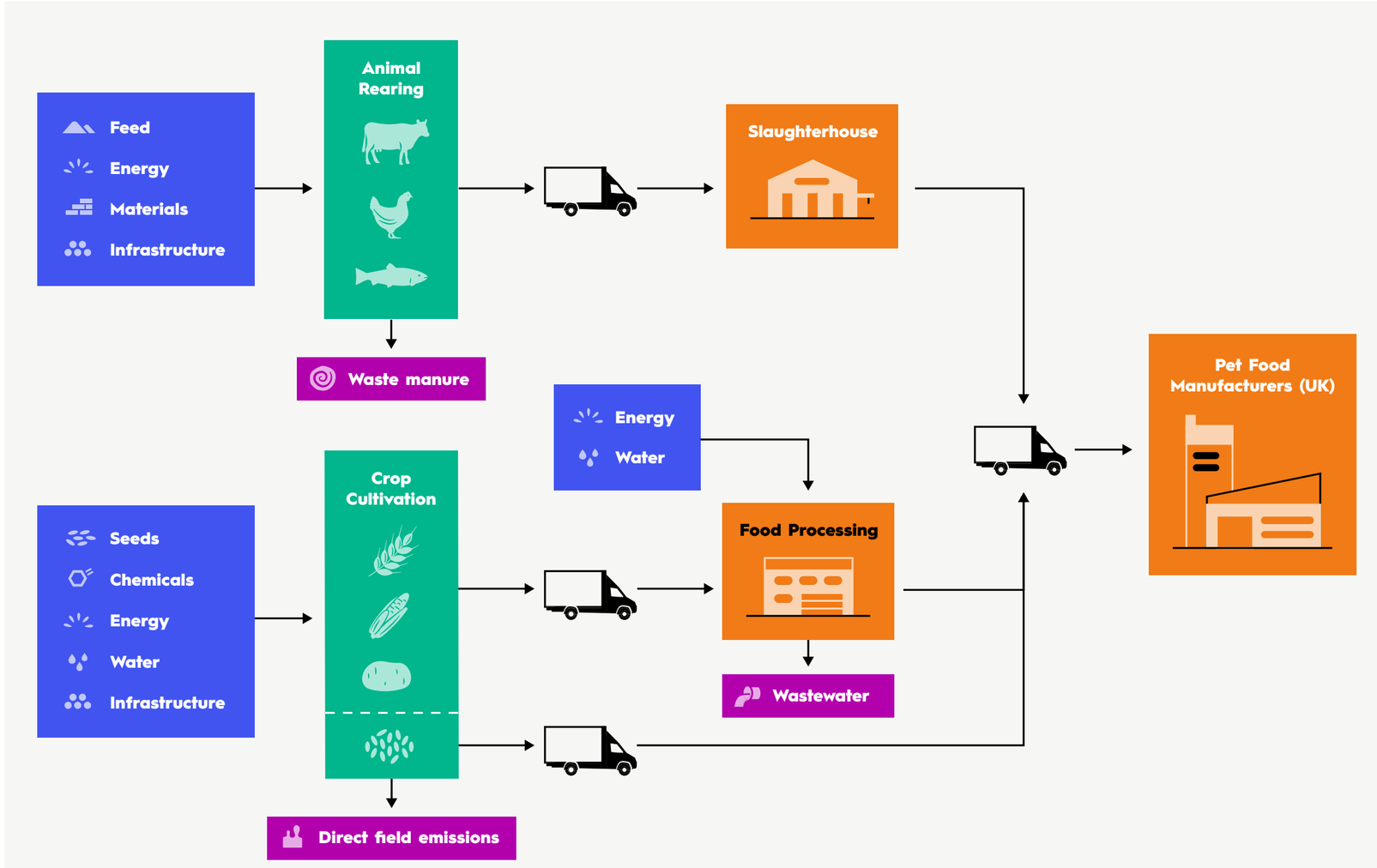
Our research looks at the environmental impacts of pet food ingredients up to the point they reach the manufacturer (factory gate). This includes impacts from animal rearing and crop cultivation, as well as transport to ingredient processing and transport to pet food manufacturers.

This stage of the value chain is the most significant in terms of environmental impact. For example, ingredients account for 65% of emissions related to food and drink consumed in the UK, compared to just 3% for packaging.

90% of total estimated ingredients in pet food sold in the UK in 2021 are considered in this study. We used data from surveys distributed in January 2022 to members of UK Pet Food and additional input from an industry expert. The total weight of the seven pet food ingredients analysed is 725,000 tonnes, which supply the pet food industry with over £2.78 billion of UK retail sales.

To estimate the upstream environmental impacts of obtaining raw materials to produce pet food ingredients, like rearing animals at farms, catching fish by different methods, and growing crops, the EcoInvent database (v3.8) was used. This database reflects regional averages, rather than specific supply chains of individual manufacturers.

For a detailed breakdown of what was within scope and the methodology, check out our full report (chapters 5 and 6).



THE METHODOLOGY IN MORE DETAIL

HOW WE ASSESSED THE ENVIRONMENTAL IMPACT OF DIFFERENT INGREDIENTS

Estimates of environmental impacts of pet foods can vary widely due to methodological differences in how those impacts are measured. The most significant difference is in how researchers allocate impacts to animal by-products (ABPs). For example, a chicken farm produces meat, eggs, offal, feathers, rendered meal and other products. How should the environmental impacts of chicken farming be assigned to each of these products?

One view had been to consider ABPs used in pet food as having insignificant environmental impacts because they could be considered an undesirable by-product or waste product if not eaten by pets. In reality however there are many alternative uses and markets for ABPs, so it is unlikely they would go to waste if not used in pet foods. For example, offal is used to make medicines and cosmetics; fat is used as a biofuel; and bone meal in fertilisers. This means that such ABPs should not be considered waste products and the pet food industry's demand for should take some responsibility for its environmental impacts.

How researchers account for the environmental impacts of ABPs can follow two methods:

Economic allocation:

- Distributing the environmental impact between animal co-products in proportion to the total economic value of the products.

Physical allocation:

- Distributes impacts in proportion to a physical property of the products, such as weight, energy, or fat content.

In line with the Product Environmental Footprint Category Rules (PEFCR) established by the European pet food industry and considered the industry standard we chose to use economic allocation to apportion environmental impact.

Physical allocation has the advantage of simplicity, but it misrepresents some systems. For example, gold mining produces not just gold but a low value aggregate product. Because the aggregate produced weighs thousands of times the gold itself, a physical allocation would assign nearly all the impacts of gold mining to aggregate production. Similarly, if offal was allocated the same environmental impacts as muscle meat by weight, it could be considered misrepresentative.

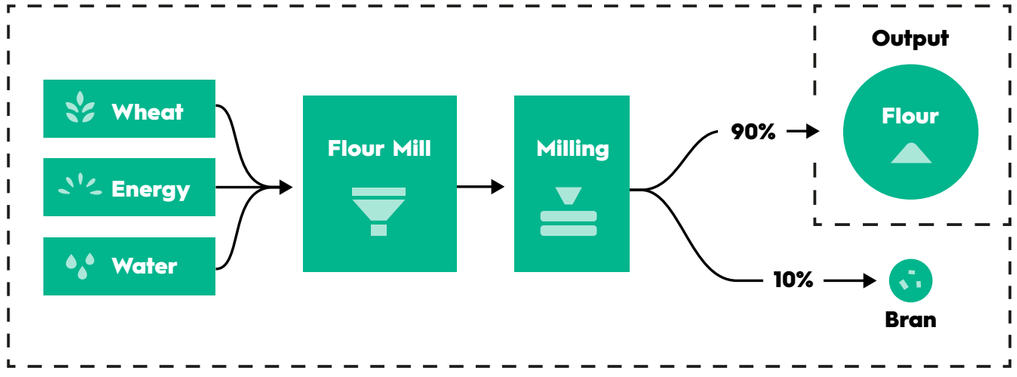
Economic allocation is considered preferable in this case because: ABPs are a secondary reason for raising livestock it would be misrepresentative to allocate the same impact as prime cuts of meat.

livestock farmers and fishermen do receive money for ABPs, so their production provides part of their business case and should take some share of the responsibility for the environmental impacts.

For this approach the impacts are based on the economic value derived from each co-product. For example, if 90% of the value from flour milling is derived from the flour and just 10% from the bran, these figures are used to apportion impacts to each product. This method was adopted for the current study and is combined with the mass fraction of animal products (how much each cut of meat weighs) to calculate an allocation factor.

For more information on the method used, please see the full report.

SYSTEM BOUNDARY: Economic Allocation



WHERE CAN YOU FIND OUT MORE?

With a dedicated Sustainability Committee, UK Pet Food focuses on four priority areas:

PACKAGING RECYCLABILITY

SUSTAINABLE INGREDIENTS

ANIMAL WELFARE

ENVIRONMENTAL IMPACTS

The committee is open to all members, so please join us to shape the way to a more sustainable future.

You can read more about our priorities at https://www.ukpetfood.org/our-work/sustainability.html

The UK Pet Food Sustainability Hub for members provides tools and resources to support you on your sustainability journeys.

https://www.ukpetfood.org/ukpetfood-member-homepage/sustainability-hub.html

FURTHER READING

Whilst this handbook considers the ingredients sourcing aspect of your businesses, a company making change does need to consider the whole process. Other useful resources on the wider topic of environmental sustainability include:

Pet Sustainability Coalition Resources

The Pet Sustainability Coalition also provides a wealth of information on sustainable practices in the pet industry. Noteworthy tools include:

- Pet Sustainability Coalition Supply Chain Code of Conduct - This template is designed to help companies develop guidelines to ensure that its suppliers engage in social and environmental practices that are aligned with its brand values.
- The PSC Sustainability Lens tool is a simple step-by-step process with downloadable surveys, agendas, and presentations to help your company develop a sustainability strategy.This unique lens can be used to evaluate and prioritise individual sustainability projects and initiatives.
- SDG Action Manager | UN Global Compact: Pet Sustainability Coalition's SDG Action Manager Assessment – based on the 17 social and environmental areas of the UN's Global Compact's Sustainable Development Goals. Pet industry professionals have free access to the SDG Action Manager.
- Creating a Sustainability Team is a featured PSC tool to help businesses establish and manage an internal sustainability team. This guide will present industry best practices and examples of common sustainability team structures.
- Pet Sustainability's Four Factor Framework for Sustainable Proteins - This resource is for pet food manufacturers and other members of the supply chain to evaluate the sustainability performance of proteins used in pet foods. This report will outline foundational concepts, key issues, and best practices associated with pet protein sustainability.
- Third Party Certifications - This resource developed by the Pet Sustainability Coalition helps manufactures determine which certifications can aid your company in achieving its sustainability goals.
- Purchasing Guidelines - This guide was created to help your organisation purchase more sustainable materials while preserving key financial and performance standards. The guide contains both a Purchasing Policy and a Vendor Letter template that can be customised for your business.

Useful resources for information and action :

- FDF Achieving Net Zero Handbook: An SME friendly guide to achieving net zero. Split into chapters covering main areas with clear 'Act now' points for each. Whilst developed for food and drink businesses, this can also be used by pet food manufacturers.
- Building your Net Zero roadmap: a guide for industry leaders and decision makers (igd.com)
- Product Environmental Footprint of Pet Food Products (PEFCR). Work has already started with the development of the methodology to calculate the Environmental Footprint of pet food products. In 2018 the European Commission endorsed the Product Environmental Footprint Category Rules (PEFCR). This includes the full life cycle of a pet food product, 'from cradle to grave', including the following life cycle stages: ingredient sourcing, packaging production, pet food manufacturing, distribution, use and packaging 'end of life' (EOL).
- You can read more about this official EU methodology to calculate the environmental footprint of products endorsed for cat and dog food.
- Ellen Macarthur's Reuse – Rethinking Packaging - a framework for understanding packaging reuse models.
- The Packaging Federation's collection of fact sheets cover a range of topics from minimising the amount of packaging, to conducting a Life Cycle Assessment.
- The UK Plastic Pact

GLOSSARY

Agricultural runoff - the portion of rainfall that runs over agricultural land and then into streams as surface water.

Economic allocation – A means of distributing the environmental impact between products, in this case animal co-products, in proportion to the total economic value of the products.

Ecotoxicity - the harm a substance can cause to plants and animals living in freshwater environments. Ecotoxicity from crop production is linked to pesticides, herbicides, and other chemicals used to grow plants and from livestock practices such as manure management, including the use of pharmaceuticals.

Global warming potential (GWP) – GWP was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO2). Global Warming Potential is measured in carbon dioxide equivalents (CO2e).

Greenhouse gas (GHG) emissions - Greenhouse gases constitute a group of gases contributing to global warming and climate change, including carbon dioxide, methane and nitrous oxides.

Physical allocation – A means of distributing the environmental impact in proportion to a physical property of the products, such as weight, energy, or fat content.

Water eutrophication - a build-up of nutrient runoff from agricultural practices, which cause algae growth that threatens the biodiversity of freshwater environments. This is caused by nitrogen loss to the environment via animal wastes, fertilisers and other sources.

UK Pet Food
Aviation House
125 Kingsway
London WC2B 6NH

www.ukpetfood.org

Advancing Pet health and well-being with quality nutrition from a sustainable, progressive pet food industry