



trusted petfood
ingredients



**POSSIBILITIES
FOR MOVING
TOWARDS
A MORE
SUSTAINABLE
PET FOOD
INDUSTRY**

E-paper by IQI
Trusted Petfood
Ingredients

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As the number of companion animals continues to increase around the world, more and more pets need to be fed, requiring more pet food than ever and increasing the global impact. The 2021 UN Climate Change Conference (COP26) in Glasgow has emphasized the need for all industries, including the pet food industry, to become more sustainable in the way they do business. This is crucial to remaining relevant in the future, both as an industry and as individual pet food companies. Growing consumer interest in aspects such as sustainability, animal welfare, organic food, and social responsibility will take the lead in the years to come.

Sustainable practices are defined by the UN as meeting the needs of the present global community without compromising the ability of future generations to meet their needs. For the pet food industry, as part of the system of food and feed production, this requires nutritional sustainability: providing

sufficient energy and essential nutrients to maintain good health in a population without compromising the ability of future generations to meet their nutritional needs, taking ecological, social, and economic aspects into account. The UN has defined 17 sustainable development goals (SDGs) as part of the

2030 Agenda for Sustainable Development, defined as a plan of action for people, planet and prosperity. For IQI, the two most relevant SDGs for the pet food industry are SDG12 ('responsible consumption and production') and SDG14 ('life below water').

ULTIMATELY, THE SUPPLY CHAIN FOR EACH PET FOOD PRODUCT SHOULD BE FULLY TRANSPARENT

Responsible and sustainable production

The goal of SDG12 is to ensure sustainable consumption and production patterns. Food production uses energy, water, and other resources, and also generates waste and greenhouse gas emissions from production, processing, and shipping. The aim of sustainable food production is to minimize the impact on the environment, such as use of water, energy, and land. Ultimately, the supply chain for each pet food product should be fully transparent in terms of resources used for production and the carbon footprint, which should reflect the total greenhouse gas (GHG) emissions for transport.

Use of water, energy, and land for production, as well as the carbon footprint for transport, vary greatly for different plant- and animal-based ingredients and depend on the production strategy and geographical location. One way of reducing the carbon footprint for transport is using locally sourced ingredients. The possibilities for this are limited, however, since not all ingredients are available from local production. Certain animal-based ingredients, such as lamb meal for example, are much

more difficult to source locally. Other ingredients, such as insect protein or Miscanthus grass, which are discussed further in this paper, may require a specific climate and would require a lot of energy to produce them in their non-natural environment.

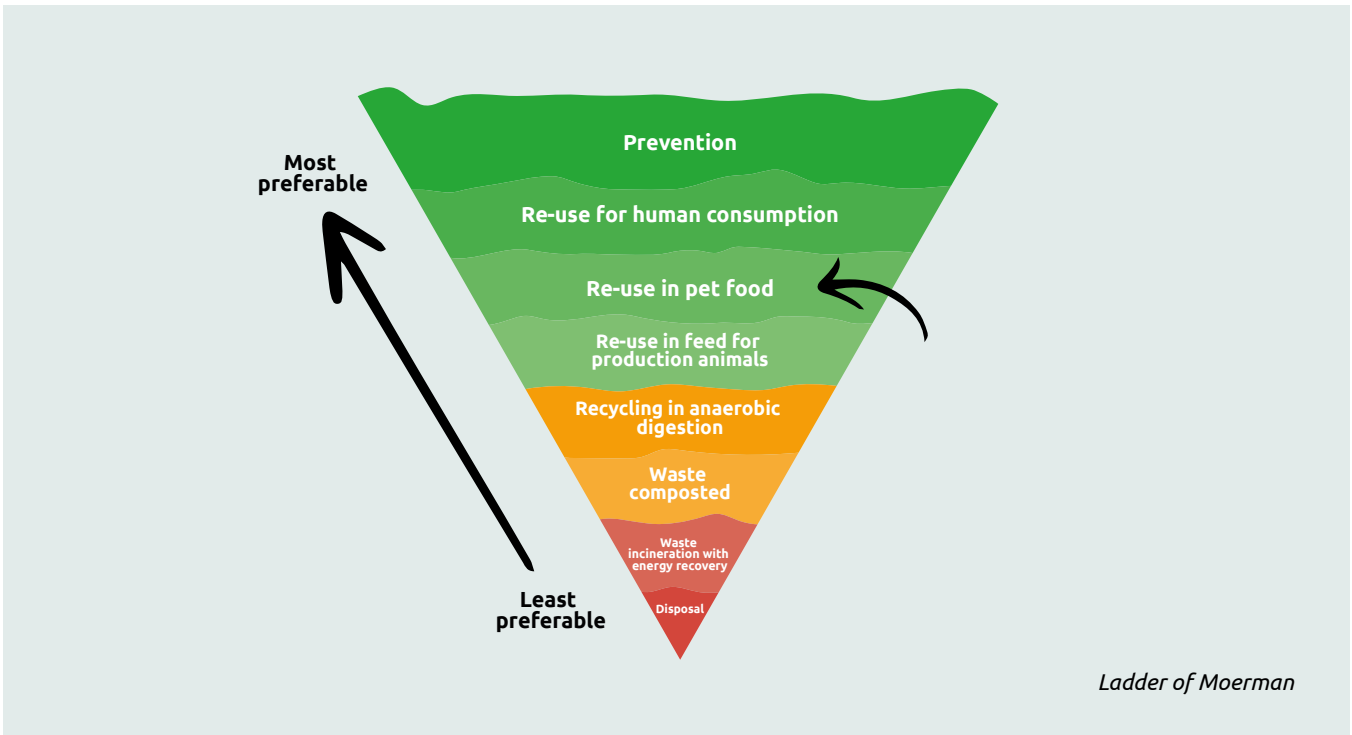
The meat and dairy industries generally have the largest ecological impact of all food production. The use of water, energy, and land, as well as the carbon footprint for producing, processing, and the distance covered when shipping or transporting animal products, is higher than for plant-based foods. According to the UN, the production of animal feed like soybean also endangers biodiversity in producing countries. According to the UN's Food and Agriculture Organization (FAO), livestock production accounts for 70% of all agricultural land use, while global demand for livestock products is expected to more than double between 2000 and 2050 (from 229 million tonnes to 465 million tonnes). Fish production and consumption has also increased dramatically in the past five decades. Meeting the increasing global demand for marine proteins will require innovative solutions.

Use of side streams

The impact of food production can be reduced by either reducing the use of resources or by utilizing the resources more effectively. When using animal- or plant-based ingredients for pet food applications, for example, the most sustainable option is to utilize products from side streams of human production to prevent them from going to waste. Preventing or reducing food waste is an important aspect of contributing to SDG12.

The waste management hierarchy indicates an order of preference for action to reduce and manage waste, aiming to extract the maximum practical benefits from products and to generate the minimum amount of waste. The food waste hierarchy, as visualized by Moerman's Ladder, indicates specifically how much value can still be extracted from food that is threatened to be wasted. High up in the ladder is prevention of food becoming waste, followed by use for

human food, conversion to human food, and use in animal food. Less preferred options, lower down the ladder, include use as raw materials for industry, processing to make fertilizer, use for sustainable energy, and the least preferred option is burning or dumping. This is not reflected, however, by the prices paid in today's market for alternative energy.



A unique aspect of the pet food industry is that many pet food ingredients, such as protein products, fats, and oils, are based on side streams and by-products of the human food manufacturing industry. Separating side streams at the production sites provides the opportunity to make ingredients fully traceable in terms of quality, organic status, sustainability, or animal welfare. IQI is a leader in the use of side streams from human food production, including animal products, such as lamb meal, salmon meal, salmon oil, fish oil, and duck meal.

The rendering industry has long been an example of sustainability in action by recovering, re-using, and recycling valuable materials from side streams and by-products. According to the North American Renderers Association (NARA), renderers in the US recover and re-use 99% of "leftovers" from approximately half of the animal that is not used as meat for human consumption. The NARA claims that rendering avoids at least 90% of potential greenhouse gas emissions compared to industrial composting and sequesters five times

the amount of greenhouse gas emissions as it emits. With the increasing focus on reducing the environmental impact of food production, the European Fat Processors and Renderers Association (EFPPRA) launched its Sustainability Charter. This examines how rendering companies can further build on their long-standing sustainability credentials to benefit the climate, health, and society in line with the UN SDGs and support a safe, healthy, and sustainable animal-based food chain.

Conservation and sustainable use of marine resources

The goal of SDG14 is to conserve and sustainably use the oceans, seas, and marine resources for sustainable development. The most important aim of SDG14 in relation to the pet food industry is reducing overfishing, not only to prevent fishery collapse and ultimate depletion of the world's oceans, but also to ensure a healthy balance between fishing activities by big companies and by global communities, so that they can continue to rely on fishing stocks for their livelihood.

Fish are mainly used as a source of protein and long-chain omega-3 fatty acids in pet food ingredients. If and when fish-based ingredients are used for pet food applications, they should

come from a sustainable source that adheres to fishing quotas and is preferably MSC-certified. Although fish from the aqua feed industry, such as farmed salmon, does not directly impact wild fish stocks, in many cases the aqua feed industry still relies on wild fish meal. Insects have enormous potential to replace fish meal and fish oil to support the sustainable growth of the aquaculture sector and help meet rising demand for animal proteins. Furthermore, the industry is plagued by salmon lice and contaminants in the water in the coastal areas in which the aqua feed industry is located. A possible solution may be provided by land-based fish farming, where the circumstances are easier to control.

As already mentioned, marine-based protein can be replaced by alternative sources of protein to reduce pressure on fish stocks. But microalgae also present unique opportunities as a source of essential DHA long-chain omega-3 fatty acids to replace salmon oil or fish oil in pet food applications. In particular, microalgae grown under controlled conditions through heterotrophic fermentation offer a fully traceable, sustainable, clean, and high-quality source of DHA long-chain omega-3 fatty acid – with a higher concentration of omega3s and lower levels of heavy metals and other contaminants compared to salmon oil or fish oil. The high-quality algae DHA (AlgaPrime) supplied by IQI Trusted Pet-food Ingredients, for example, has an environmental impact approximately 40% lower than that of fish oil.



THE PET FOOD INDUSTRY WILL BE CONFRONTED WITH AN INCREASING ANIMAL AND MARINE PROTEIN DEFICIENCY

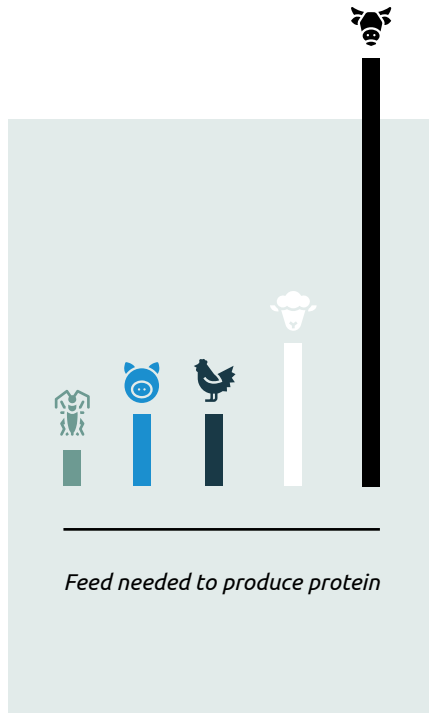
Alternative protein

With global demand for protein growing rapidly, the pet food industry will need to address two important issues in the coming years. On the one hand, the pet food industry will be confronted with an increasing animal and marine protein deficiency that cannot be covered solely through the use of side streams from human food production. On the other hand, ways need to be found to cater to consumer interest in sustainability, animal welfare, and vegan/hybrid pet food. Solutions for both issues can be found in the use of alternative proteins, for example by switching from traditional animal-based to plant-based or other, more novel sources of protein with similar functionality and palatability.

Examples of classical alternative protein sources are potato protein, wheat gluten, and corn gluten. Newer alternative protein sources are based on rice, non-GMO soy, and pulses, such as peas, faba beans, and chickpeas. Another category is hybrid fermented vegetable-based alternative protein made from vegetable protein and yeast. Novel alternative protein sources that have been introduced onto the pet food market more recently include hemp, algae, single-cell proteins, and insects.

Insect protein

The production of insect protein is an important trend in the pet food industry to keep up with increasing worldwide demand for animal protein. Insects are a far more sustainable alternative to mainstream sources of animal protein, such as beef, pork, chicken, or even fish, while also being nutritious and healthy. Many insects are a high-quality source of protein containing good fats as well as high levels of calcium, iron, and zinc. Their production requires far less food, water, and space compared to beef or other livestock, such as pork or chicken. Furthermore, insects suitable for use in pet food do not produce methane, which is one of the strongest greenhouse gases.



Because they are cold-blooded, insects are very efficient at converting feed into protein. According to the UN Food and Agriculture Organization, crickets, for example, need 12 times less feed than cattle, four times less feed than sheep, and two times less feed than pigs and broiler chickens to produce the same amount of protein. When comparing 100 grams of ground beef and grasshopper, the insect yields 20.6 grams of protein containing 6.1 grams of fat, 35.2 milligrams of calcium and 5 milligrams of iron compared to 26 grams of beef protein containing 18 grams of fat, 13 milligrams of calcium and 3.5 milligrams of iron.





The only insect species currently commercially viable for pet food applications is black soldier fly (BSF, *hermetia illucens*) larvae and meal. BSF larvae are a high-quality source of protein and other nutrients, containing more zinc and iron than lean meat and more calcium than milk. BSF larvae offer a more sustainable, healthy alter-

native to both meat and plant proteins. BSF larvae produced on less than half a hectare of land contain more protein than cattle grazing on around 1200 hectares, or 52 hectares of soybeans. The black soldier fly comes from Vietnam due to the favourable environmental conditions (steady temperature of 30 degrees Celsius year round) and the

abundant supply of feedstock. The carbon footprint of transporting the BSF meal to Europe or North America is more than offset and it is very likely that South East Asia will become the largest market for BSF meal for use in pet food and aqua feed.

Finding the most sustainable alternatives

Besides the examples already mentioned in this paper, many more possibilities can be found to increase the sustainability of pet food. One of the main nutrients in dry pet food is carbohydrate starch. This can be supplied via cereals or even from grain-free sources. For humans, an important starch source is bread, which is predominantly produced from wheat. Non-utilized bread or parts of bread offer a great (gelatinized) starch source for pets. IQI offers bread meal produced from bread slices from the production of toasted bread that has low levels of fat and sugars

and is totally free of any packaging materials. The carbon footprint of bread meal is approximately 20% of that of wheat grain, wheat flour, barley grain, or maize, and only a fraction of the carbon footprint of rice flour.

Another example is Miscanthus fiber, also known as Elephant Grass, which can be used as a more sustainable, all-natural, and fully traceable alternative to powdered cellulose. Both are rich in insoluble dietary fibers, but purified cellulose powder is produced from wood fibers, originating from

different kinds of tree, that need to undergo a chemical process to remove the lignins and hemicellulose. Miscanthus fiber comes from a non-GMO perennial crop, grown in the USA, which is harvested and lightly processed into the final product using no chemicals or other added ingredients. According to the Global Metrics for Sustainable Feed initiative of the Global Feed LCA Institute (GFLI), the environmental impact of Miscanthus fiber compared to powdered cellulose is approximately 86% less fossil fuel use, 87% less GHG emissions and 97% less water use.

Relation between sustainability and animal welfare

IQI believes that working to achieve sustainability for the pet food industry can be directly combined with meeting growing consumer interest in other areas, such as animal welfare. Although animal welfare is not explicitly mentioned in the UN SDGs, research has already indicated that working to achieve the SDGs is comparable to working to improve animal welfare.

In fact, when analyzing the impact of achieving an SDG, improving sustainability shows to be more effective than making improvements for the sake of animal welfare. The two SDGs for which this mutual reinforcing is strongest are SDG 12 ('responsible consumption and production') and SDG 14 ('life below water'). Most of the targets under these two SDGs are also considered relevant

to animal welfare. IQI considers SDG 12 and SDG 14 to be the two most relevant SDGs for the pet food industry. Establishing and drawing attention to the relationships between animal welfare and the SDGs helps to highlight the importance of animal welfare when implementing the UN SDGs in practice.

**THE BIGGEST IMPACT CAN
BE MADE THROUGH OUR
COOPERATION WITH OUR
PARTNERS AND SUPPLIERS,
BY FINDING AND DEVELOPING
MORE SUSTAINABLE
ALTERNATIVES**

Sustainability goals for IQI

IQI Trusted Petfood Ingredients is dedicated to improving sustainability and animal welfare in our industry by working towards achieving SDG 12 and SDG 14. One way of doing so is by optimizing our operations in terms of transport, to reduce GHG emissions, and energy and water use at our offices and warehouses. By far the biggest impact can be made

through cooperating with our partners and suppliers, such as Olvea, who reports on their sustainability process in a very transparent way. Together, we try to find and develop more sustainable alternatives to the current sources of protein, fat, and carbohydrates for pet food applications. To strengthen our ambitions, in 2020 IQI became a mem-

ber of the Pet Sustainability Coalition (PSC), a non-profit organization that accelerates sustainability in the pet food industry. IQI supports PSC's vision of a thriving and collaborative pet food industry that creates a positive impact on the communities and environments in which we do business.

Want to know more?

[UN – Department of Economic and Social Affairs, Sustainable Development](#)

[Animal Welfare and the United Nations Sustainable Development Goals](#)

[Pet Sustainability Coalition \(PSC\)](#)

[European Fat Processors and Renderers Association \(EFPPA\)](#)

[North American Renderers Association \(NARA\)](#)

About IQI Trusted Petfood Ingredients

IQI Trusted Petfood Ingredients is a global distributor of premium-claim ingredients to the top brands in the pet food industry. Founded in 1994 as a trading company in raw pet food materials, today IQI offers an extensive variety of services to aid and assist our customers and suppliers worldwide. IQI Trusted Petfood Ingredients employs highly skilled personnel, owns and operates a global network of logistical hubs, and relies on a global supply network to obtain the purest natural resources available.

For IQI, quality is key. IQI Trusted Petfood Ingredients goes to great lengths to ensure the quality of its products and develop innovative new products. IQI also invests a great deal in maximizing the quality of its partnerships. Since this business is all about trust, IQI needs to bond with its partners to succeed. By working closely with both its customers and suppliers, IQI creates full transparency in the supply chain. IQI oversees and controls every step in the process from source to shelf and supplies products that are pure and traceable to their source.

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