Moving to deforestation free animal feed

2018 RETAIL SOY INITIATIVE

OCTOBER 2019

3keel

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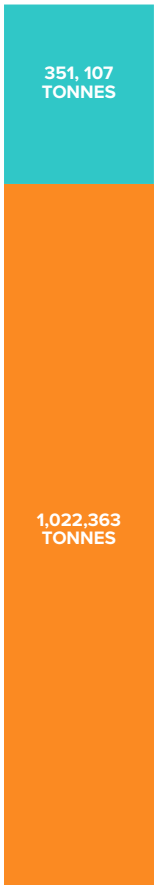
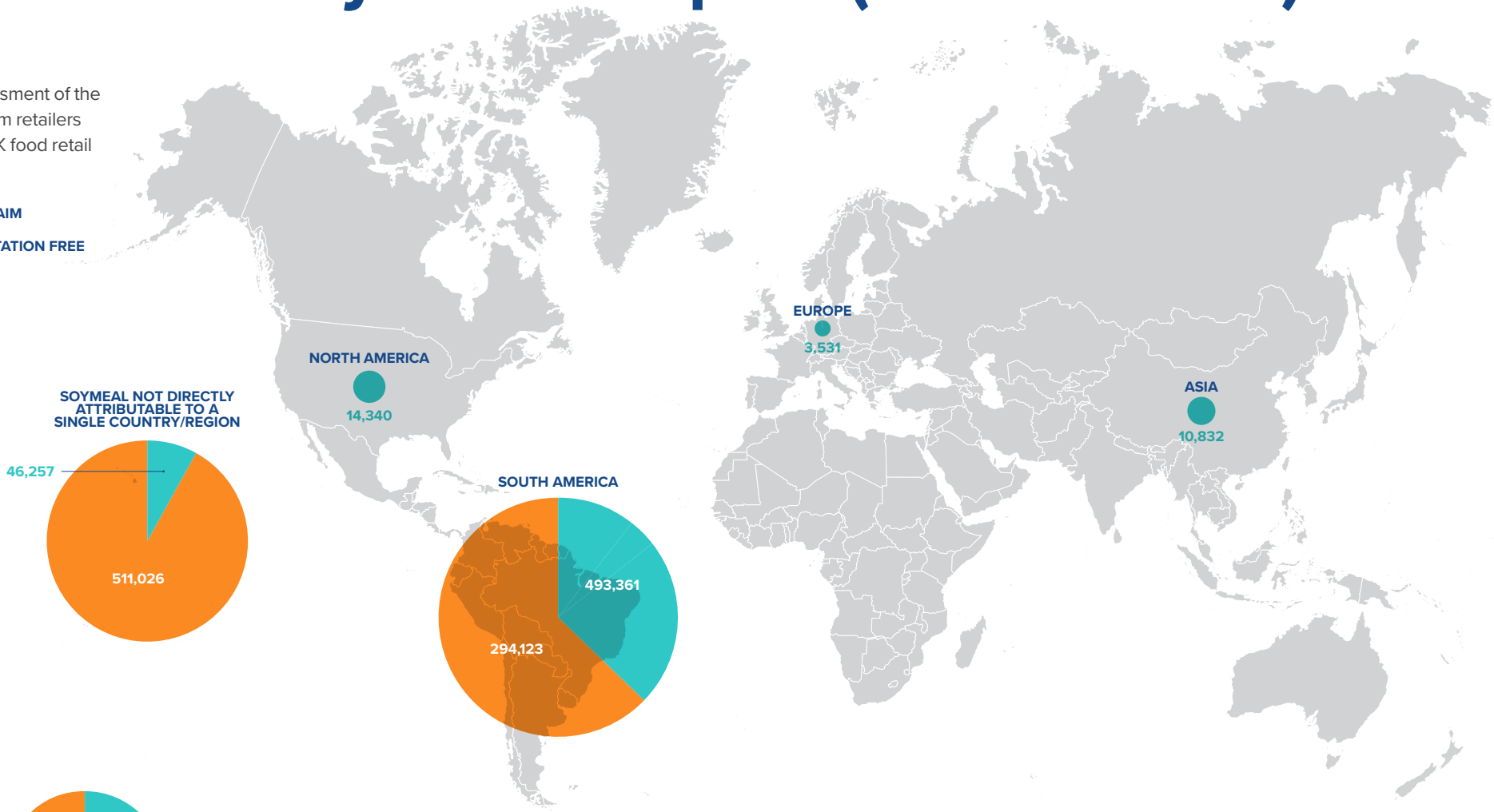
2018 UK Retail Soymeal Footprint (1.37m tonnes)

Key findings from an assessment of the livestock supply chains from retailers representing 78% of the UK food retail market.

- DEFORESTATION FREE CLAIM
- NOT CERTIFIED DEFORESTATION FREE





POULTRY
651,918 TONNES
37%

PORK
304,313 TONNES
10%

EGGS
136,308 TONNES
2%

BEEF AND LAMB
105,642 TONNES
0%

MILK
89,281 TONNES
30%

BUTTER AND CHEESE
35,123 TONNES
6%

SALMON
31,366 TONNES
74%

OTHER
19,520 TONNES
2%

Executive Summary

Soymeal is one of the key proteins used in livestock feed, particularly for poultry and pork production. Over the past few decades there has been a surge in supply and demand for soymeal from South America, and Brazil is now the largest producer of soy in the world.

Committed to zero net deforestation

In 2010 the Consumer Goods Forum adopted a resolution calling on its members to achieve net zero deforestation in their supply chains by 2020. Since this time retailers have played a leading role in identifying, defining, and promoting more responsible sourcing practices to deliver on this commitment for soy. These efforts have ultimately led to the creation of new supply chain policies that have launched since 2018 covering the direct and indirect supplier requirements.

Assessing European supply chains

This analysis builds on work undertaken by four retailers in 2017 to quantify and map the use of soymeal in their UK products that highlighted feed as being responsible for 97% of the total soy embedded within their products on the shelf. It expands the method originally used to European supply chains through the addition of two more retailers, whilst adjusting the approach to reflect the requirements of new retail policies. Although this assessment collected soymeal information across Europe, this report only presents the soymeal used within products on UK shelves to present a more complete picture in that market.

An approach fit for purpose

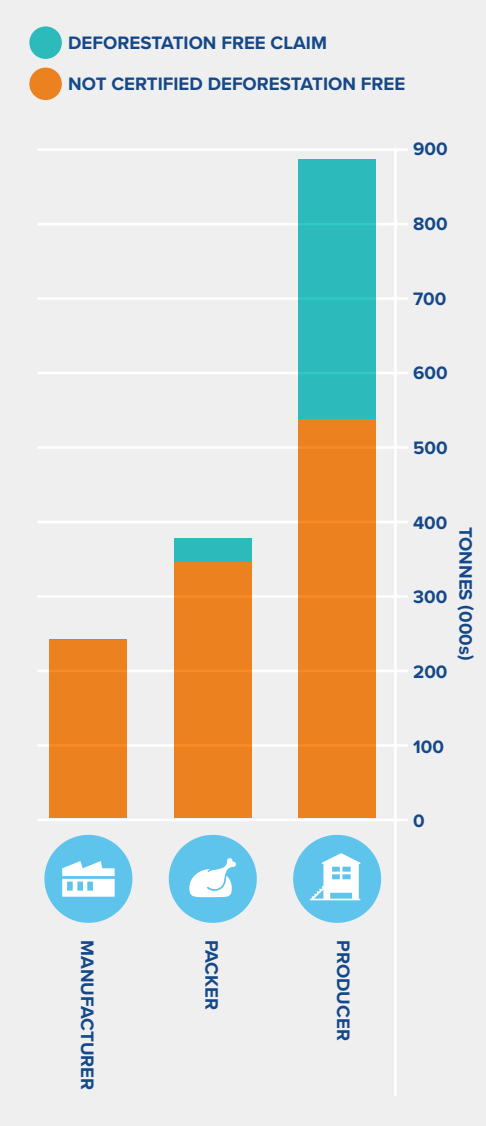
3Keel worked with seven European retailers* and their 219 livestock producer, packer, and manufacturing supply chains to:

- **Quantify** the amount of soymeal present in animal feed used in 2018;
- **Identify** where the soy was produced; and
- **Determine** whether any of the soymeal carried a recognised deforestation free production certification.

Retail suppliers were classified by their role in the livestock supply chain to reflect their proximity and access to actual soymeal information in their products. Those rearing livestock directly were both the most likely to have accurate data as well as those that generally had evidence of sourcing deforestation free soymeal. Approximately 59% of the soymeal assessed is from companies that were able to provide primary data on their soymeal use. The balance 41% was calculated using conversion factors from other studies.

Moving towards deforestation free soymeal

26% of the soymeal assessed was shown to be sourced from a region free from deforestation or to a certification demonstrating that it did not contribute to land conversion in South America. There are differences in the degree to which individual retail supply chains are structured, along with the age and engagement of policies they have had with their suppliers, that have enabled most proteins to have at least one company that is able to demonstrate that having a verified deforestation free supply is possible. These efforts now need to be scaled.



Opportunities to increase verifiable deforestation free soymeal in the livestock supply chain

Production System

- Data system capture to enable tracking and transparency
- Defining and developing physical sustainable soy supply chains
- Incorporating deforestation free elements into feed specifications

Retailers

- Engage and support industry transformation
- Long term vision for what a sustainable soy supply chain looks like
- Support full supply chain consistency in collecting and reporting soymeal information.

Policy Makers

- Consider trade level requirements for soymeal
- Improve standards and certification systems to extend through the downstream food supply chain

*Aldi South, ASDA, Co-op, Marks & Spencer, Sainsbury's, Tesco, and Waitrose & Partners

Contents

Background

Soy production is on the rise

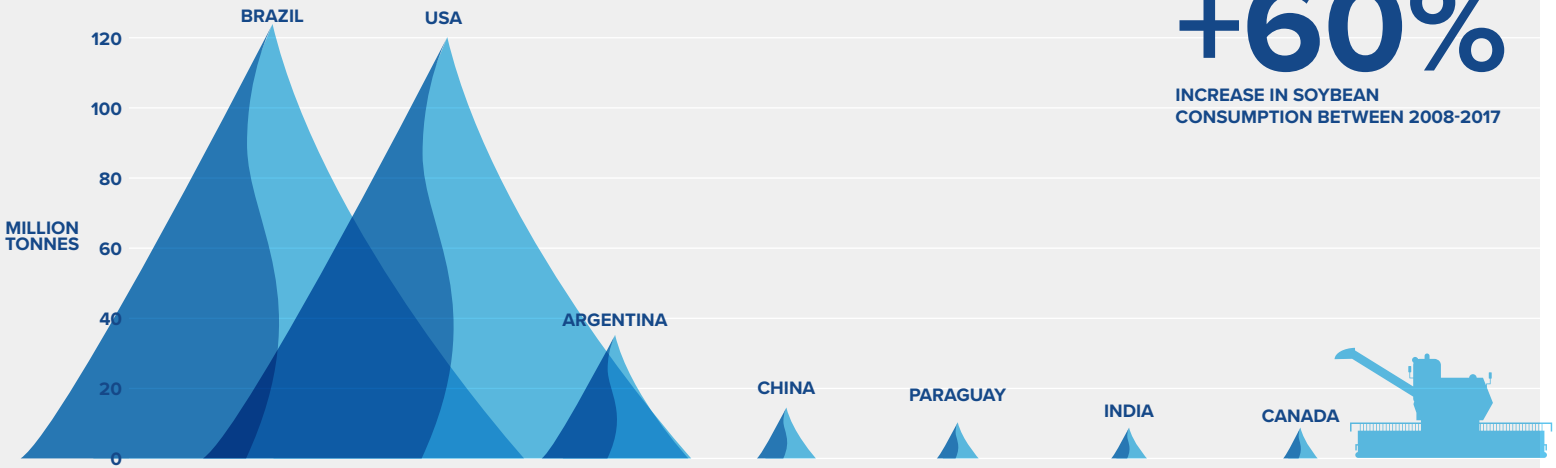
Soy is the most efficient source of protein per hectare in the world. Its qualities enable it to be used effectively and is a critical ingredient in animal feed, as well as being a staple ingredient in vegan and vegetarian diets. However it is the former, as animal feed, where more than 75% of all soy is used in the feed system, dwarfing the relatively small portion that is directly consumed by society once oils and derivatives are removed.

As the population increases and diets become more meat-based, demand for soy is rapidly rising. In particular, demand for both animal protein and soy product has grown with Brazil now being the biggest producer. China is the largest soybean consumer in the world and consumes over half of the world's production. Europe, on the other hand, is the second biggest importer of soymeal consuming 12% of global production, approximately 90% of which is used for animal feed.

It is in South America that soy production is expanding most rapidly to meet demand. Over the last twenty years, production has increased five fold in Brazil and by over 700% in Argentina, where over half of all agricultural land is now used for soybeans. Although it has facilitated economic development in some areas, the rapid growth of soy production in the region has been associated with environmental and social sustainability issues, including deforestation.

Whilst the soy supply chain is complex, the market is largely controlled by a few dominant producers and traders. In Brazil for instance, the six largest traders together account for almost 60% of soy exports. These companies can play a large part in solving the sustainability issues linked to soy production. Given that the existence of zero-deforestation commitments have not yet delivered the desired outcomes, it is important for commitments to be accompanied by concrete action plans and monitoring processes, with one of the most common methods used by companies to date being the purchase soy certified under a certification scheme, such as RTRS.

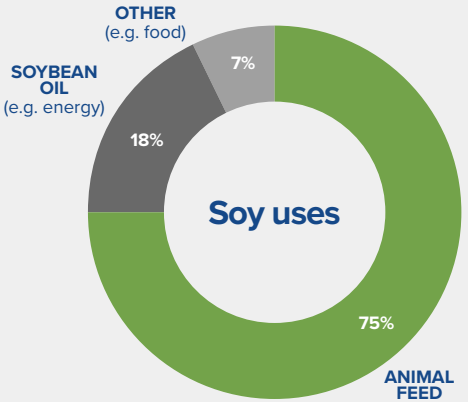
Global soy production (2017-2018)



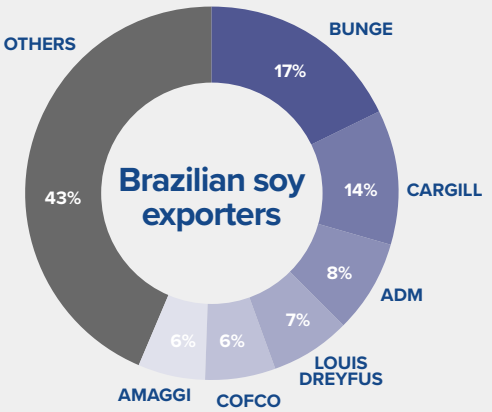
+60%

INCREASE IN SOYBEAN CONSUMPTION BETWEEN 2008-2017

Source: USDA (2019) World Agricultural Production, Circular Series WAP 9-19 (September 2019)



Source: Brack, D. et. al. (2016) Agricultural commodity supply chains: trade, consumption and deforestation, Chatham House.



Source: Trase (2017)

Working to end deforestation (and land conversion)

In 2010 the Consumer Goods Forum (CGF) adopted a resolution to commit its members to achieving 'zero-net deforestation' in their supply chains by 2020. This ambition requires companies to assess the risks of forest loss from their demand and to implement policies and standards to ensure that it does not result from their operations. Over time it became clear that 'deforestation' itself, however, required a clear definition that CGF members and their supply chains could work towards which it presented in its Sustainable Soy Guidelines (2016, v2) as:

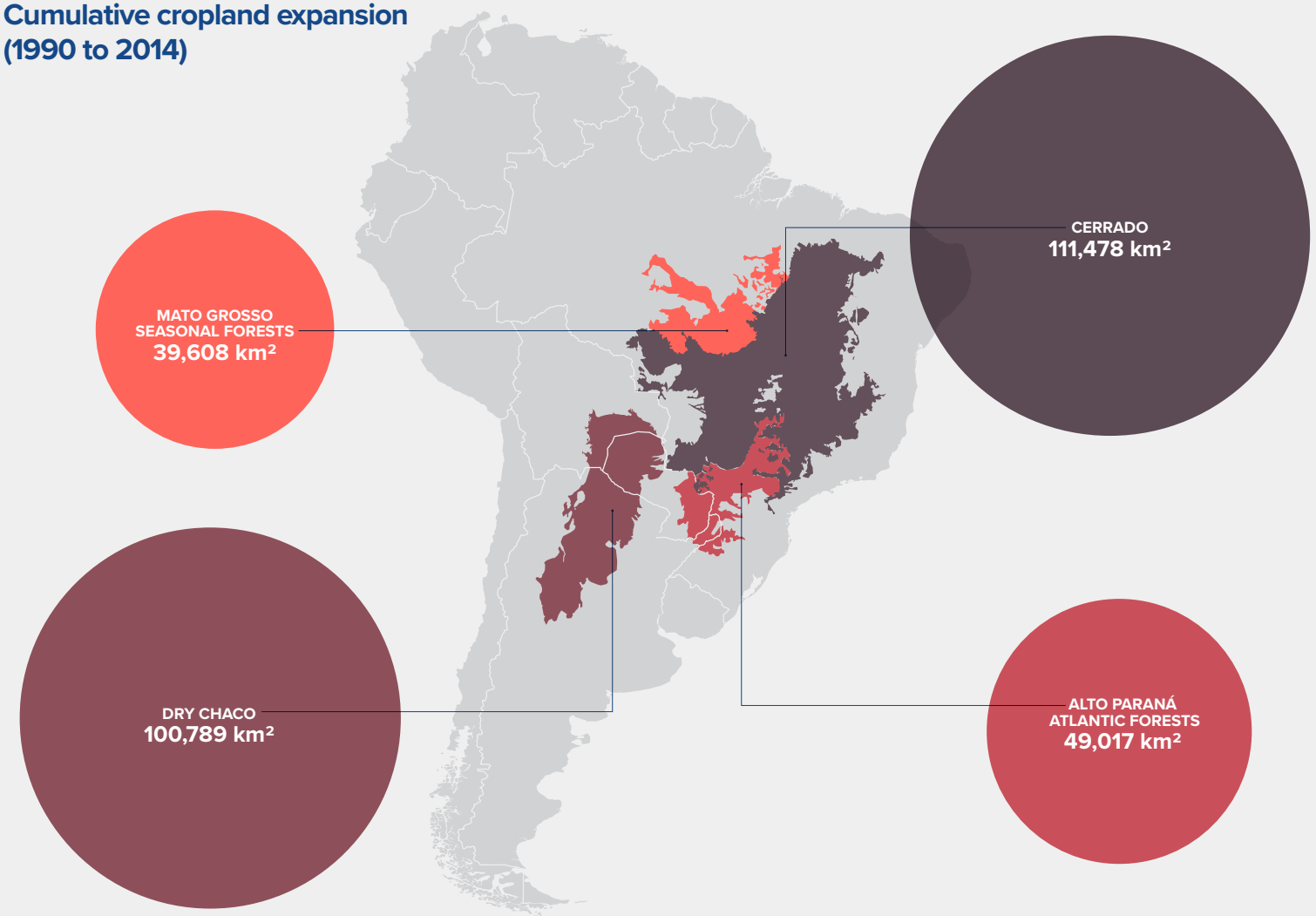
Prohibit[ing] production on land with native forests, riparian vegetation, natural wetlands, steep slopes and areas designated by law to serve the purpose of native conservation and/or cultural and social protection, or High Conservation Value (HCV)

This definition includes the loss of grassland with high biodiversity value. Including this aspect of land use change within the understanding of deforestation incorporates biomes such as the Cerrado region in Brazil where forests are not present and the highest rate of land conversions are occurring to support soy production.

Certifying deforestation free

Over fifty different standards exist on the ITC Standards Map regarding the production and trade of soy. Of these, there are only a few that currently incorporate the CGF definition of zero deforestation.

Cumulative cropland expansion (1990 to 2014)



Source: Graesser, J. et al (2018) Environ. Res. Lett. 13 13 084021 doi:10.1088/1748-9326/aad5bf)

Understanding progress, unlocking opportunities

Household and investor appreciation of the impacts of deforestation on our natural world and habitats is on the rise. What was once a niche topic for environmentalists is now being discussed by activist shareholders as the lens of impact focuses on the challenges we face in addressing this concern. This is in no small part due to the efforts of non-profit organisations in bringing these matters to light in an effective way.

Soy is one of the commodities that is considered a driver and has therefore been the focus of company efforts to ensure their sourcing practices are consistent with their aims. However, as an indirect commodity in products, it is often difficult for end product manufacturers and retailers to know how much, and where, soy is present.

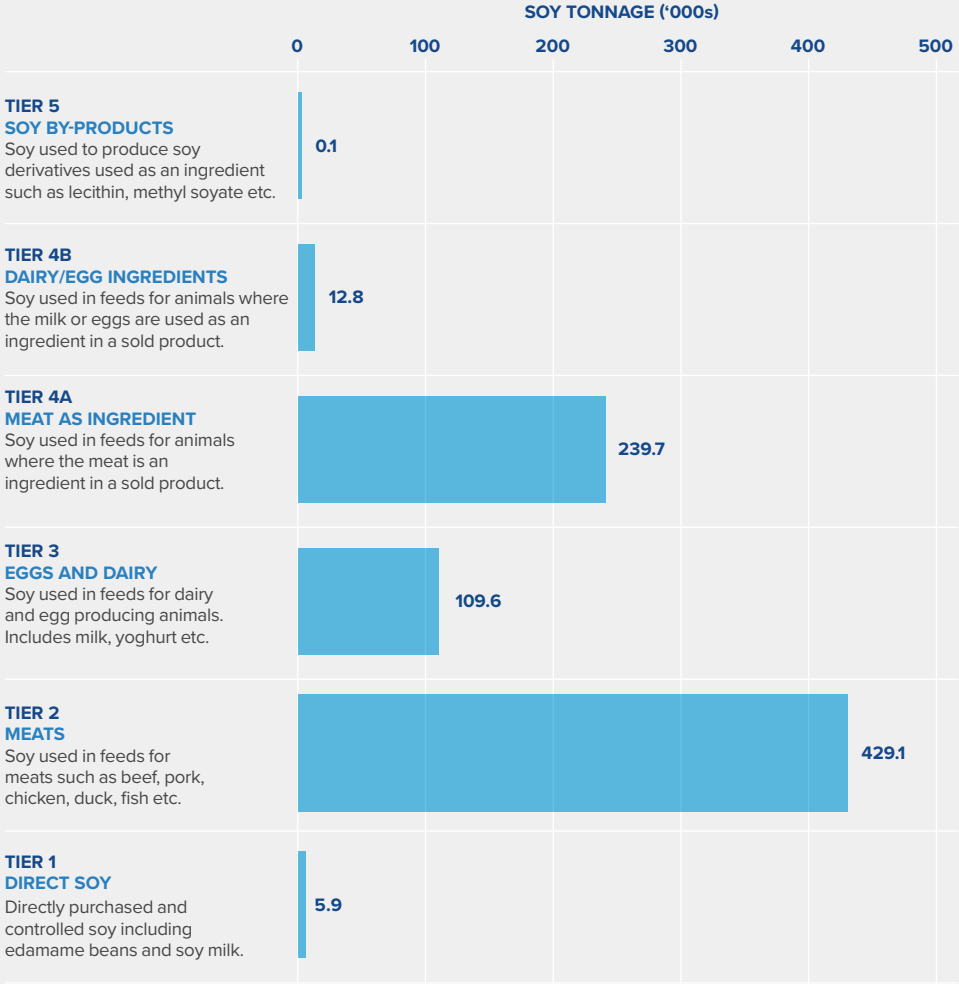
Following the adoption of the CGF Resolution, many companies began mapping their supply chains to answer this question. This process, however, was quickly found to be complex requiring some steps to be taken to simplify and highlight where company focus should be, leading to the development of the CGF Soy Ladder (see right) to classify what types of products were being produced using soymeal.

A collective approach

In 2017 a group of four UK retailers joined together to test this model in practice by working with KPMG to understand where and how soy was present in their own brand products. The results, shown on the right, indicate that more than 97% of the soy embedded in what a customer takes home is present in the animal feed used to rear livestock. Only a small fraction of soy is present in their visible soy products (e.g. soy milk).

In 2018, seven UK and European retailers approached 3Keel LLP to repeat and expand the 2017 supply chain analysis to incorporate a greater degree of primary data in their understanding of how their indirect animal feed supply chains are addressing deforestation. Given the understanding of the relatively low presence of soy in direct products, only livestock supply chains have been assessed in this assessment. Direct soy and by-product use were not requested for further analysis given their relatively low volumes.

KMPG soy mapping results for four UK retail supply chains 2017



Source: KPMG (2017) Soy reporting initiative, Final public report (March 2017)

A traceable system with a transparency challenge

It is a requirement that all companies in the food system are able to trace back the origins of their materials to the farm level. This level of traceability is necessary to ensure that businesses are able to effectively act on concerns related to food safety and contamination when they arise.

Mixing materials

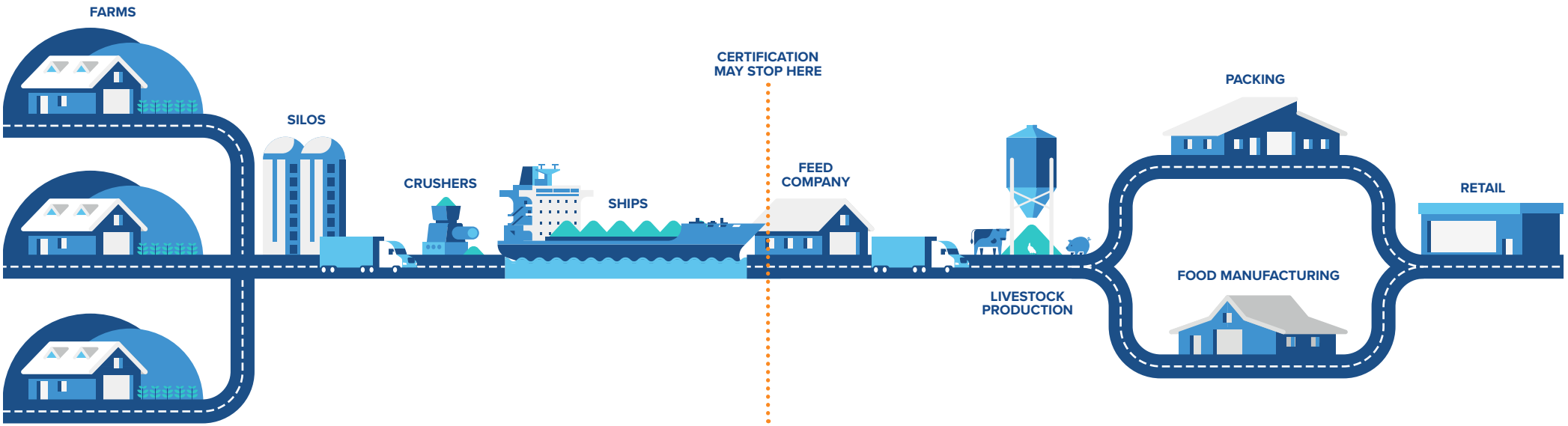
In the absence of demand for certain characteristics or protein profiles of the feed, many producers may buy soy from 'any origin' in their specification. Unlike some commodity products with end customer visibility – such as coffee – soy does not have household recognition as being part of the livestock system and few, if any, products are sold stating that soy is part of the product. These factors combine to support a system that has largely, but not exclusively, developed around transport and sales efficiencies in the absence of segregated pathways. There are exceptions to this, as evidenced by non-GM supply chains, but a relatively low volume of soy moves through these supply chains at a higher cost.

Chain of custody approaches

Certification schemes certifying the origin of materials include tight controls on the monitoring of material flows between companies. The soy supply chain is no exception to this, however the point at which soy is no longer sold as 'soy' to the customer is the point at which the certification system tends to stop. For example, a company importing certified soymeal would have a certificate stating that origin and certification status of the material, but a farmer buying a feed mix that includes soy does not necessarily have an indication on the invoice or delivery note that says it contains certified material.

Snapshot assessments

The highly dynamic nature of commodity supply chains means that although on a day-to-day basis information is available, companies may not be storing information in aggregate for historical time-based reporting. In other words, a snapshot of a supply chain from origin to store is available on any given day, but without an impetus to report on specific issues over the course of a year, companies operating in the food supply chain may not have to tools readily available to report across a long period of time.



Approach

Harmonising an analytical method

Seven retailers[1] representing 78% of the UK grocery retail market worked with 3Keel to standardise a process to answer three primary questions (see right).

How much soy is embodied in the products on our shelf?

Where was the soy produced?

Has any soy been supplied certified to a zero deforestation standard?

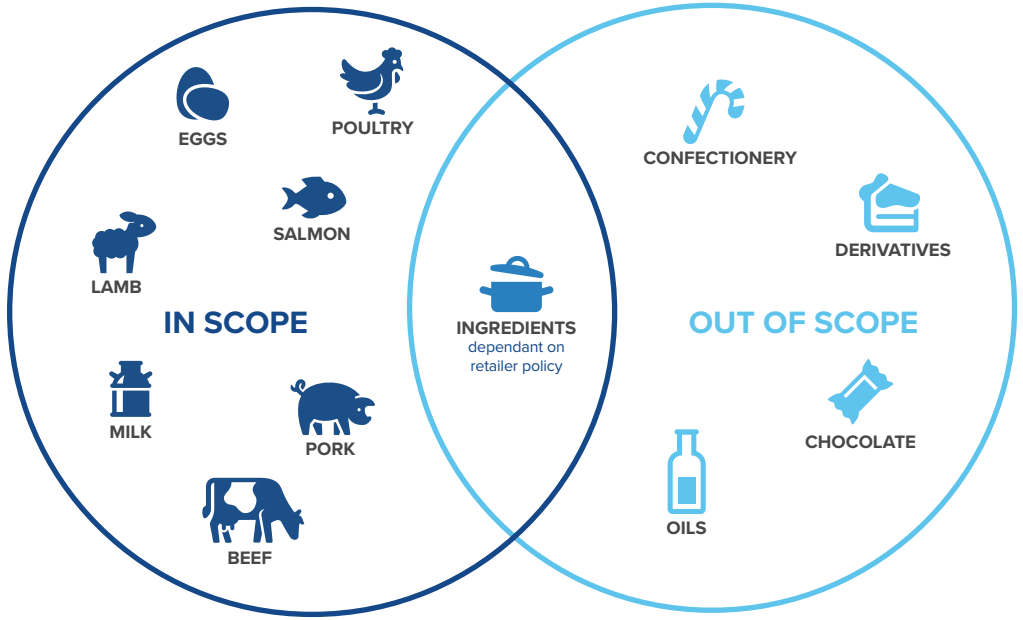
These three questions were given equal importance when engaging the companies contributing to this survey. Unlike other environmental metrics, like climate change contributions through global warming potential of materials, reducing soy use in products is not the goal of assessing whether or not it is contributing to deforestation given its highly efficient properties as a protein source. The importance placed by retailers on ensuring soy is not causing deforestation is therefore only credibly answered if it can be demonstrated that they know where it comes from, whether it was produced responsibly, and how much it is they are using. Answering only one or two of these questions will not provide the necessary information to the retailer to ensure their supply chain is delivering upon its ambitions.

Scope

As more than 97% of soy use in these retail supply chains is within animal feed, data was only collected from suppliers delivering products from animal origin as whole animal proteins (e.g. chicken meat, eggs) or where they were used as ingredients in prepared foods (e.g. sandwiches, pies). The definition of an ingredient can extend fairly broadly when identifying relevant suppliers and supply chains to assess. As the by-products of animals are used in various capacities, there are questions that arise dependent on the nature of the composition, quantity and critical nature of the material to the product when determining whether the product is in scope.

In 2018, retailer policies on disclosure and action on soymeal were not consistent and some data may be missing from this assessment where ingredients may have been outside the scope of a particular retailer's data requirements. In general, the scope of assessment is any product that is visibly from an animal being included whilst those that are sub-ingredients or derivatives are not (e.g. gelatine in a candy, butter in cake).

The data presented is for UK retail operations only. As not every UK retailer participated in this work, the full UK retail soy footprint is not provided in this summary.



1 Aldi South, ASDA, Co-op, Marks & Spencer, Sainsbury's, Tesco, and Waitrose & Partners

Collecting soy information

The CGF Soy Ladder provides a helpful starting point in understanding how the ultimate sellers of products – brands and retailers – can identify and quantify the amount of soy present in different types of products. From a retailer perspective, this is a very helpful approach for determining where their influence may be in addressing different types of products on the shelf, but it is less helpful when collecting information.

Companies have to be involved in the feeding of animals throughout their life in order to know how much soy is used in their production. There may be multiple companies involved in an animal's life – from breeding to finishing – with different feed rations and consumption in each stage.

Suppliers also operate in different functions throughout the product development process. Whilst a livestock producer may have access to the feed ration, or to the mixing of soy into the feed themselves, manufacturers making prepared foods may not have any contact with the producers. These distinctions make it important to classify the retailer's direct suppliers – those being engaged – in a way that was reflective of the information they would be capable of providing information.

Three types of suppliers were classified:

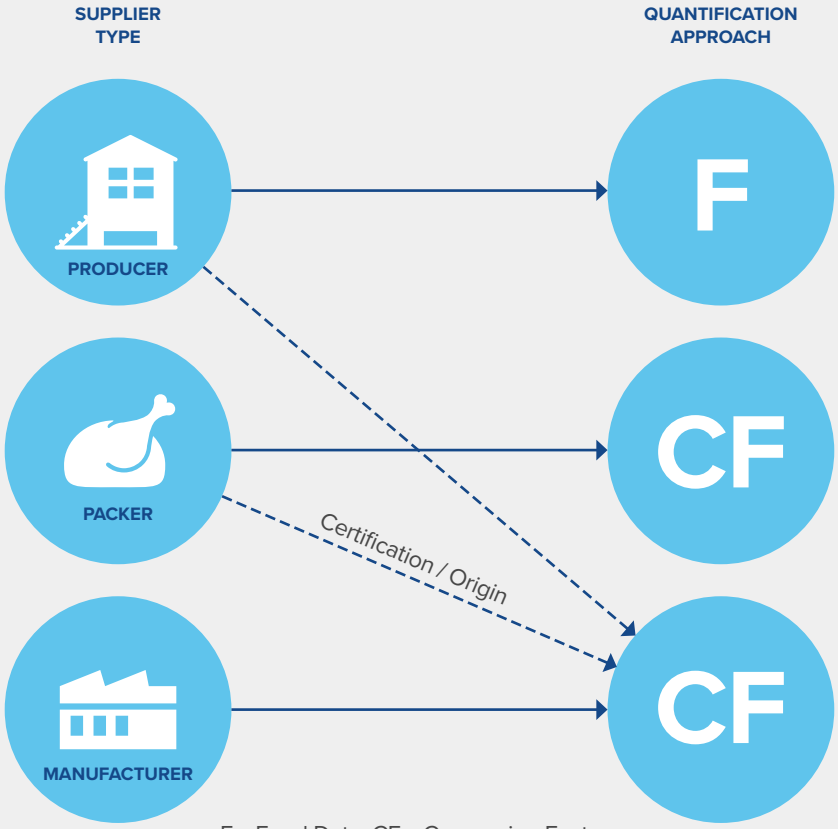
PRODUCER
A company that rears animals directly and controls feed. They know the content of feed and/or soy, as well as the trader.

PACKER
A company that does not directly rear animals, but buys from farmers that do. This includes conglomerates sourcing from hundreds or thousands of farms.

MANUFACTURER
A company that purchases livestock products from other businesses that have not been involved in direct rearing.

As Packers and Manufacturers do not have direct access to feed and soy information in their supply chain – which may be decided by companies two or three tiers behind their own operations – farm sampling and conversion factors* were used for calculating the soy embodied in the products they supply. Where conversion factors were required, a selection was made of an appropriate value based upon the protein type and country the livestock was reared in. 41% of soy has been calculated using conversion factors, with the balance 59% coming from producer specific feed data. For more information, see product-specific data in the Appendix.

219
companies engaged



F = Feed Data; CF = Conversion Factor

Certifying 'deforestation free'

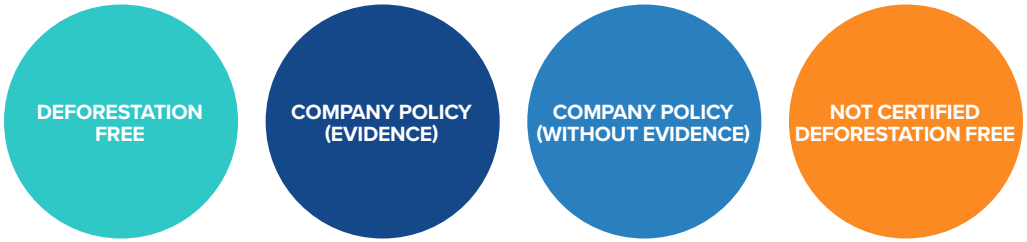
All suppliers were requested to provide evidence of any claims of the use of soymeal certified to one of the standards accepted by the retailers as being deforestation free (see right). Acceptable forms of evidence were documents that stated the retail supplier's name and any official documentation related to the certification scheme such as:

- **Certificates** issued by the scheme for the volume claimed (e.g. company name in RTRS public registry, CRS certificate).
- **Invoices** or **delivery notes** explicitly stating the materials supplied were certified.

In some supply chains, these forms of evidence were available whilst in others named evidence was not.

Without a named document with the retailer's supplier's name, the material claim was not considered to be certified deforestation free. However, in some situations this evidence gap resulted from the limitations of the certification standards and supply chain transparency rather than a complete absence of evidence.

In light of these considerations, four classifications of company claims were established to communicate the degree of certainty associated with deforestation free claims.



- Evidence supplied to an acceptable standard with the retail supplier's name present on the documentation.
- Sourced from a region not at risk of deforestation or land conversion (e.g. USA).

- Feed supplier or trader has a policy of only sourcing certified material.
- Evidence of sourcing was provided but no documents were able to connect the materials to the retailer's direct supplier.

- Feed supplier or trader has a policy of sourcing or supplying certified material, but no evidence was available to substantiate the claim.

- No use of one of the recognised deforestation free soy standards claimed.
- Other standards may be used covering this feed (e.g. FEFAC, AIM).

Standards addressing forest and native vegetation conversion

Between 2015 and 2018 a range of assessments have taken place regarding the coverage of the more than fifty standards affecting soy and feed and the degree to which they deliver on 'zero net deforestation'. Although many soy standards address aspects of deforestation, the primary distinguishing factor of the standards just below that have been claimed by supply chains during this assessment are that they address all aspects of deforestation and land conversion, not just illegal deforestation. Although not every retailer included in the assessment accepts the same standards as achieving their own deforestation targets, all have been included in the definition of 'deforestation free' as used in this summary report.

Non-governmental organisation or publicly governed standards

RTRS – The Roundtable on Responsible Soy was formed in 2006 to establish private-public dialogue on sustainable soy production. As of 2018, almost 4.5 million tonnes of soy were certified to this standard.

ProTerra – The ProTerra Foundation is a not-for-profit organisation promoting transparency and responsible production practices in the feed sector. As of 2016, approximately 3.6 million tonnes of soy were certified to this standard.

Donau Soya / Europe Soya – Founded in 2012 to support the development of a European protein production and supply system. As of 2018, 4.7 million tonnes of soybeans were produced in the Donau Soya region.

ISCC PLUS – The International Sustainability and Carbon Certification system covers a range of issues across the food and feed supply chain. In 2018, approximately 258 thousand hectares of soy production were certified to this standard.

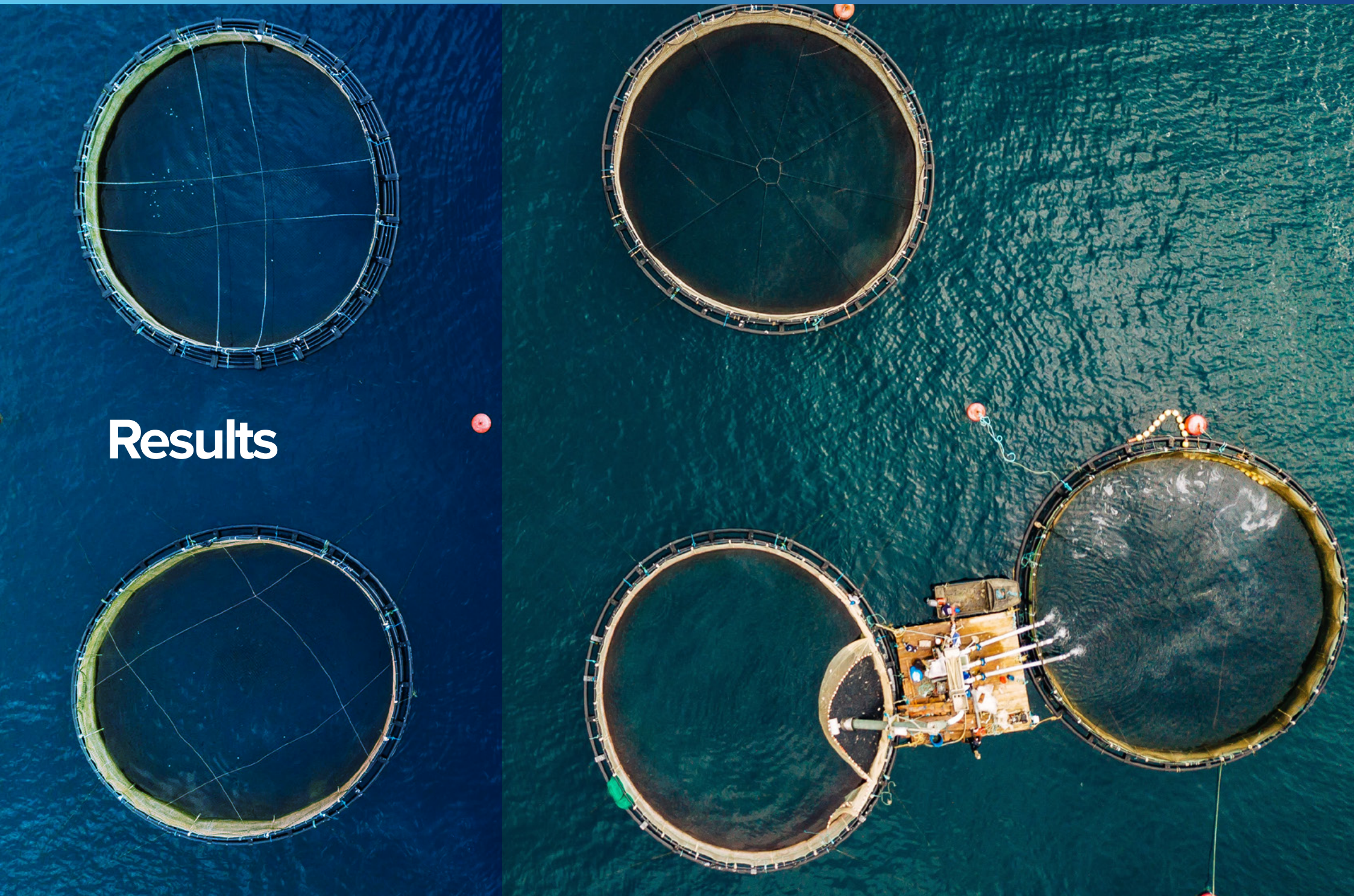
Private Sector standards

Company developed standards are less transparent and are developed and governed by the business rather than a stakeholder group. The two standards below were used by suppliers and were determined to satisfy most retailer requirements.

Cefetra (CRS)

Cargill Triple S

Results



2018 UK Soymeal Footprint (1.37m tonnes)

• Producers and packers are those companies that are closest to the feed procurement process. These suppliers contributed to 84% of the total soymeal footprint, resulting in complex manufacturing supply chains contributing the balance 16%.

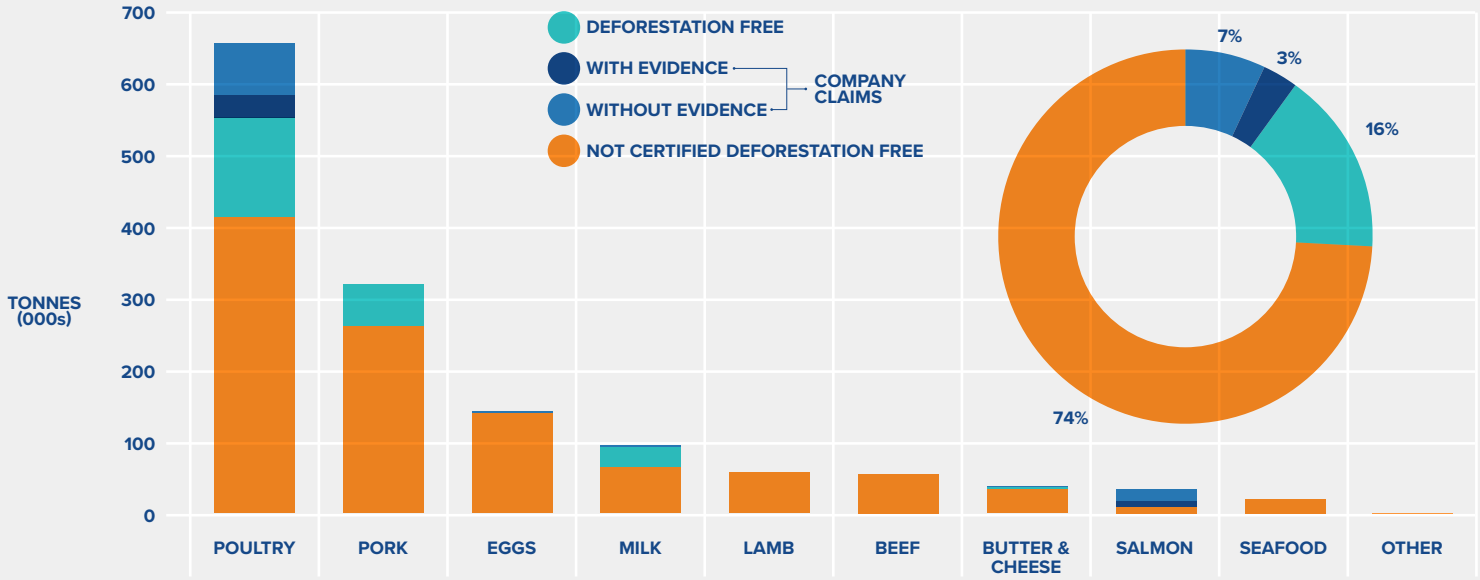
• Examples of good practice in delivering deforestation free soymeal are present in most livestock groups. These range from suppliers that have taken steps to map their independent farmer network feed supply chain to those that purchase physically certified soymeal directly for their use.

• Some livestock producers have removed soy from their feed ration - particularly in dairy, beef, and lamb. These removals are therefore not able to be shown in a soy footprint as no soymeal is reported.

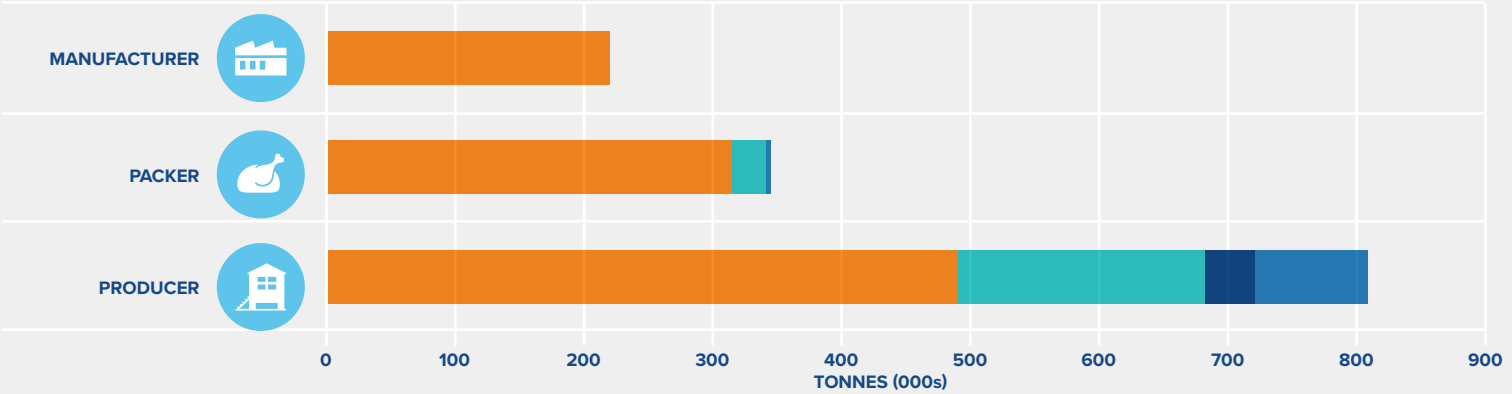
• The majority of companies surveyed did not have sufficient evidence available to ensure that the soymeal used in animal feed came from deforestation free farms.

• Variable performance is observable in different livestock supply chains. The single biggest sector, and contributor to the certified deforestation free claims in the soymeal footprint, is poultry. This is largely due to the integrated nature of this supply chain whereby the producers surveyed often had production and supply operations as well as retail customers with deforestation free soymeal requirements.

2018 UK soymeal footprint split by protein



2018 UK soymeal footprint split by retail supplier type



Certification Systems

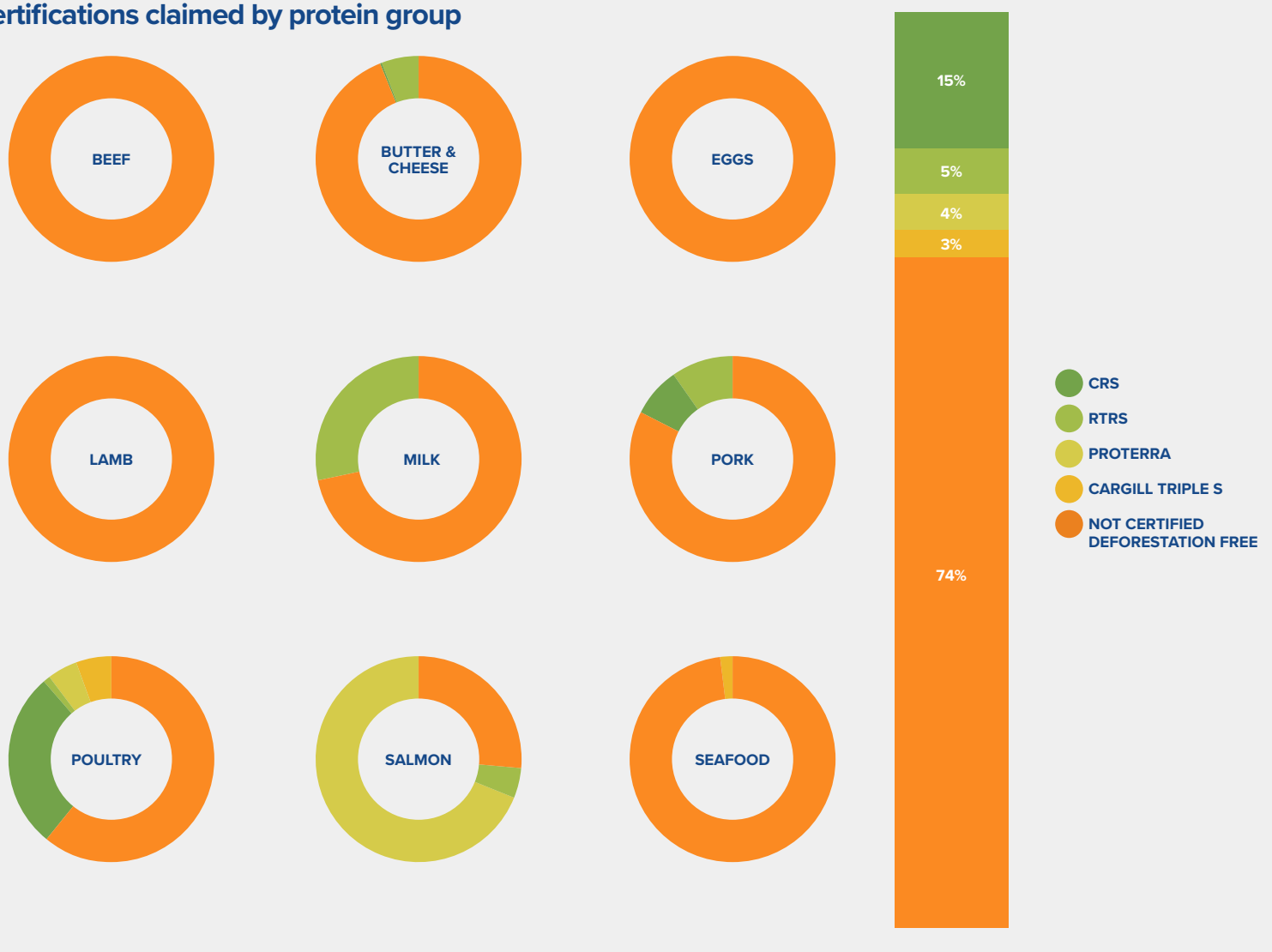
• CRS, RTRS, and ProTerra are the most commonly used certification schemes by the supply chains surveyed. These systems are largely used by poultry and salmon producers.

• The fish feed industry is largely consolidated with just a few major traders present. Almost all of the traders for this sector have adopted requirements for ProTerra only supply. Evidence of these policies in action was obtained for some of the traders.

• Not Certified Deforestation Free includes FEFAC, organic, and other feed certifications that do not comparably define or prohibit deforestation in line with the CGF definition. Some of this soy may be considered deforestation free based on its production origin (e.g. North America).

• Sourcing from North America, Europe, and Asia is considered to have lower deforestation and land conversion risk. However, the soy sourced from these regions is often uncertified to a deforestation free standard.

Certifications claimed by protein group



Findings

Key Findings

1 Retailers are moving the industry to deforestation free soy
Very few livestock producers, or downstream actors in their supply chain, currently have deforestation free soy requirements covering their entire supply chain.

2 Chain of custody of certified materials breaks down after the importer
Where physically integrated supply chains are not present, the visibility of the use of certified materials deteriorates at the point of the feed manufacturer. Suppliers often stated that the level of information related to the origin of the feed was not made available, and when it was little evidence was able to demonstrate the certification status of the soymeal. As this was the first year that many of these companies were requested to supply information, this finding is not unexpected and efforts to improve the transparency of supply chains are anticipated in the future.

3 Quantification challenge is a minor part of the puzzle
While poultry production in the UK is largely an integrated system whereby producers will buy and mix their own feed rations, several other livestock production systems – notably beef, lamb, and dairy - are highly dependent on the use of hundreds or thousands of independent producers. For these more diversified production systems it is often difficult to quantify the precise quantity of soymeal used in feed as both the soy content and ultimate feed regime will differ. However, there are now several studies that have been undertaken of the use of soy at the national level for various livestock groups that can now be drawn upon where no other information is available to enable a reasonable estimate of its use. The difference between primary data and the use of these factors was generally less than 30%.

4 No unified definition of 'deforestation free'
There remain challenges in producers, traders, and standards agreeing on the meaning of 'deforestation free' and how it applies to animal feed. The prevalence of multiple standards hasn't enabled a clear understanding of what requirements are able to deliver on this goal. Whilst retailer policies have begun to incorporate explicit recognition of certain standards they consider deforestation free, the purchase and use of these standards can be misunderstood by producers. For example, a company seeking to buy a trader's certified soymeal may consider their general purchase of soy from that trader as satisfying the retailer policy requirement without recognising they may need to explicitly request that the soymeal be delivered according to that trader's deforestation free standard.

5 Need to scale good practices
Virtually all livestock groups have examples of good practice in delivering deforestation free soymeal within their operations. Despite the complex nature of the feed system, there are no inherent 'protein' or 'sector' challenges that prevent delivering this goal.

Retailers

1 Deforestation free soymeal retail policies are driving demand
Those retailers that have policies in place were the most likely to have certified deforestation free soymeal in their supply chain

2 Harmonised definitions can accelerate take up
The definitions of 'deforestation' and 'ingredients' are not the same between the various retailers included in this assessment. For example, one retailer may consider an ingredient in scope when it is more than 50% of the product, whereas another may not have any threshold. The absence of a common definitions has led to supplier confusion and different reporting requirements, resulting in increased time and resource being needed to implement, track, and report on progress.

3 Clear sustainable soy vision is needed
Of the few retailers that had launched deforestation free soymeal policies before this assessment, the long term view of what sustainable soy supply chains look like is not always clear. The primary defining attribute is incorporating the physical flow of deforestation free soy into these supply chains.

4 Supply chain configurations will affect engagement strategies
Whilst some retailers have vertically integrated supply chains that rely on just a few livestock producers, others have multiple points where new suppliers or producers may enter. Depending on the structure of a retail supply chain, the use of a livestock producer group or wider industry engagement may be more appropriate for advancing solutions to the challenges identified in this report.

5 Flexible approaches based on the type of supplier are helpful
Manufacturers made up the majority of the companies assessed during this project, yet they contributed less than 20% of the overall soymeal contained with these retail supply chains. As these companies are somewhat removed from the feeding and rearing of livestock, policies may wish to provide separate expectations or requirements that are reflective of the capabilities of these types of companies to respond and comply.

Industry

1 Production systems are beginning to rise to the challenge
On the whole, at least one producer within each livestock group was able to demonstrate progress in addressing deforestation in soymeal provision. In some cases this meant the development of a physical supply chain, whilst in others it concerned feed innovation. The growth in cross industry initiatives and collaborations – such as the UK Roundtable on Sustainable Soya - are also starting to have an impact on the level of knowledge and opportunities for transitioning to more sustainable systems.

2 Moving away from 'any origin' purchasing will help develop physical supply chains
If 'any origin' soy is used, the origin should be documented and communicated clearly down the value chain.

3 Integrated or independent producers require different approaches
Independent producer systems – such as beef, lamb, pork, and dairy – may require alternative engagement approaches that go beyond direct supply chain communication of requirements. As shown by the Dutch dairy sector commitment to sustainable soymeal in feed, sectoral commitments can drive large scale adoption in independent production systems.

4 Understanding of certification methods and requirements should be improved
Many companies are unaware of how deforestation free soymeal can be specified or purchased within their supply base. This included both developing physical supply chains as well as the purchase of credits or certificates equivalent to their use. Engagement and support of the process, steps, and evidence requirements of these systems will improve the ability of producers to more rapidly adopt deforestation free soymeal into their feed.

5 Soy trader and feed company policies are not always clear
In some instances the commitments, communications, or policies of traders or feed companies were inconsistent with what other parts of their organisation were able to provide. This was particularly acute in subsidiaries of companies whereby the subsidiary may have a 100% deforestation free soymeal commitment whereas the parent company did not. These inconsistencies led to confusion in the supply chain regarding the degree to which their supply met retailer requirements.

Recommendations

Leveraging your area of influence for change

FEED INDUSTRY

• Claims and evidence standardisation after the point of importation.

• Data systems and reporting improvement for capturing origin information over set time periods.

• Transparency of actions being taken to promote the physical flow of deforestation free soymeal into the UK.

SUPPLY CHAIN

• Engagement of feed suppliers and traders on developing demand for the physical flow of deforestation free soymeal into the UK production system.

• Improving reporting systems for annual disclosures of progress.

• Incorporating deforestation free soymeal into feed specifications or supplier requirements.

• Enhancing knowledge of certification systems and approaches.

RETAILERS

• Articulation of physical soymeal supply chain expectations and requirements.

• Engage and support suppliers, producers, and the wider industry to understand your policies and aspirations.

• Support full supply chain consistency in collecting and reporting soymeal information

POLICY MAKERS

• Support the development and improvement of certification and supply chain standards.

• Promote data transparency at the industry level by making data available in a usable format for assessing progress.

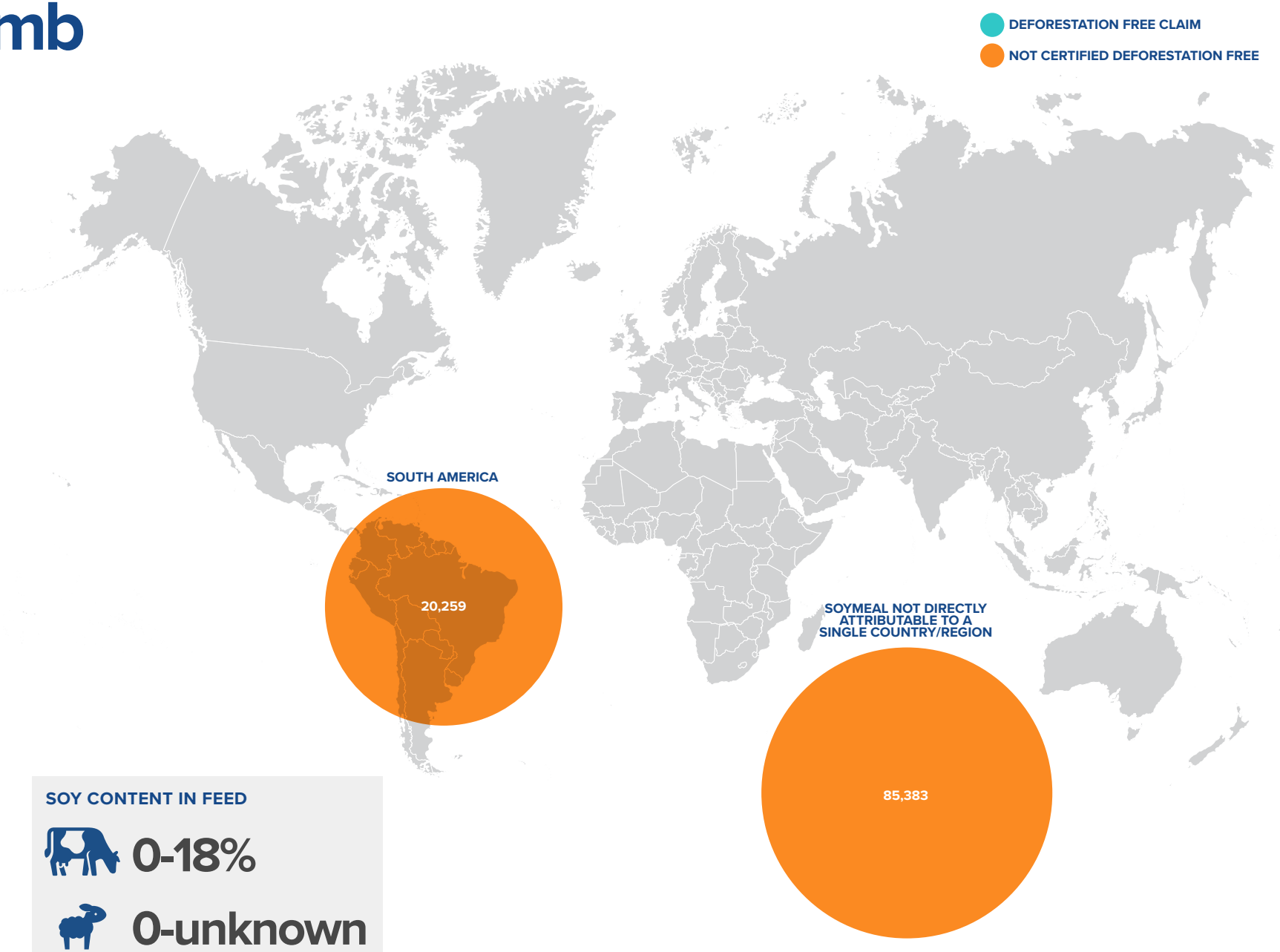
• Explore trade level solutions.

Appendix

Beef & Lamb

Most of the British cattle industry is a mixture of pasture and grain fed cows in a largely independent producer sector. Farmers are often rearing a mixed herd composing dairy and bull varieties that have variable diets. Some farmers do not use any soy within their feed ration, whilst others have been surveyed to use up to 18% soymeal in their feed mix. For the retail supply chains assessed, the majority of beef in stores were sourced from British or Irish production systems. Some of these supply chains have removed soymeal from the diet of their herds.

Lamb can be seasonally produced in the UK or New Zealand. Little information has been provided by British lamb suppliers on their use of soymeal, but it has been estimated as having a high soy content. New Zealand lamb, however, is produced almost exclusively within a grazing system. The figures provided in this report have assumed that lamb from New Zealand does not have a soymeal footprint due to the known production methods used in the industry and the absence of information. This is a knowledge area that should be improved by supply chain actors; where soymeal was estimated to be present, no information was available regarding its origin or certification status.



SOY CONTENT IN FEED

0-18%

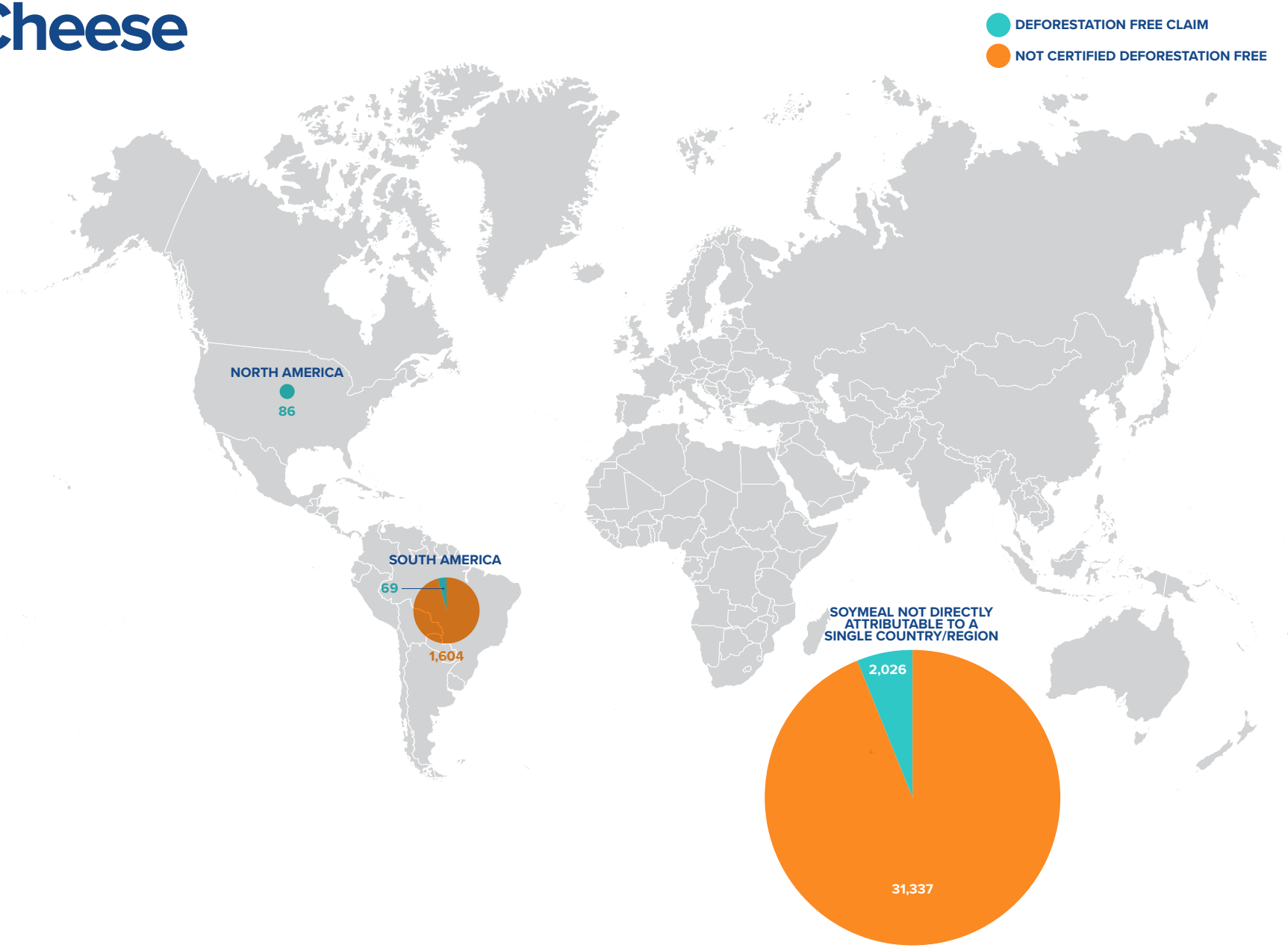
0-unknown

Butter & Cheese

Limited information was able to be provided from suppliers of butter and cheese. The companies that are responsible for reporting this information may make dairy products from a variety of sources that may not always be able to link back to the independent producer system they originate from.

SOY CONTENT IN FEED

10-23%

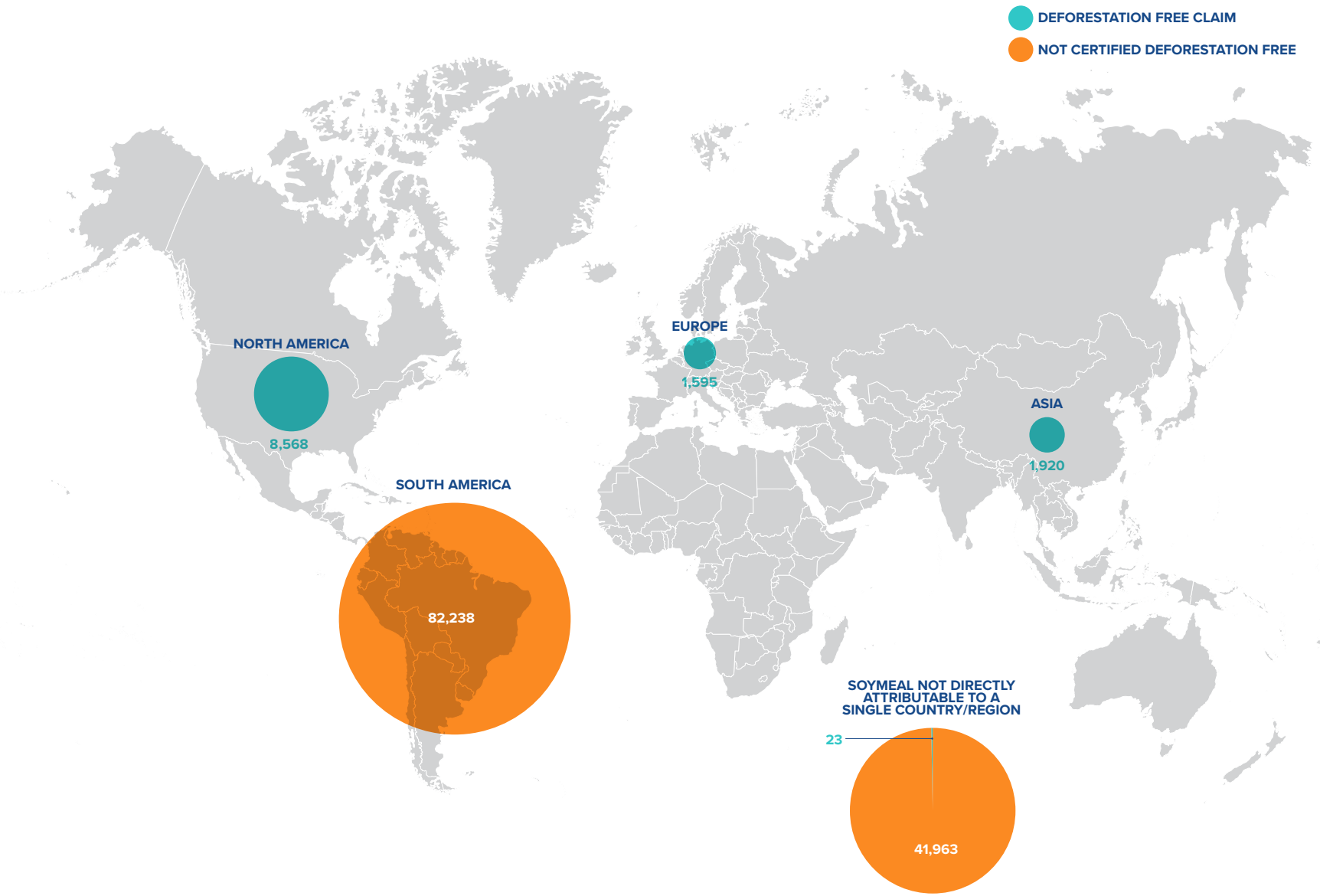


Eggs

Egg producers have good access to the soymeal content information associated with their feed. As a direct cost for centralised production systems, these inputs are monitored well. Where producers haven't been able to provide this information, an average weight of 58g per egg was used to estimate the soymeal using a conversion factor that was representative of the production systems they originated from.

SOY CONTENT IN FEED

10-21%

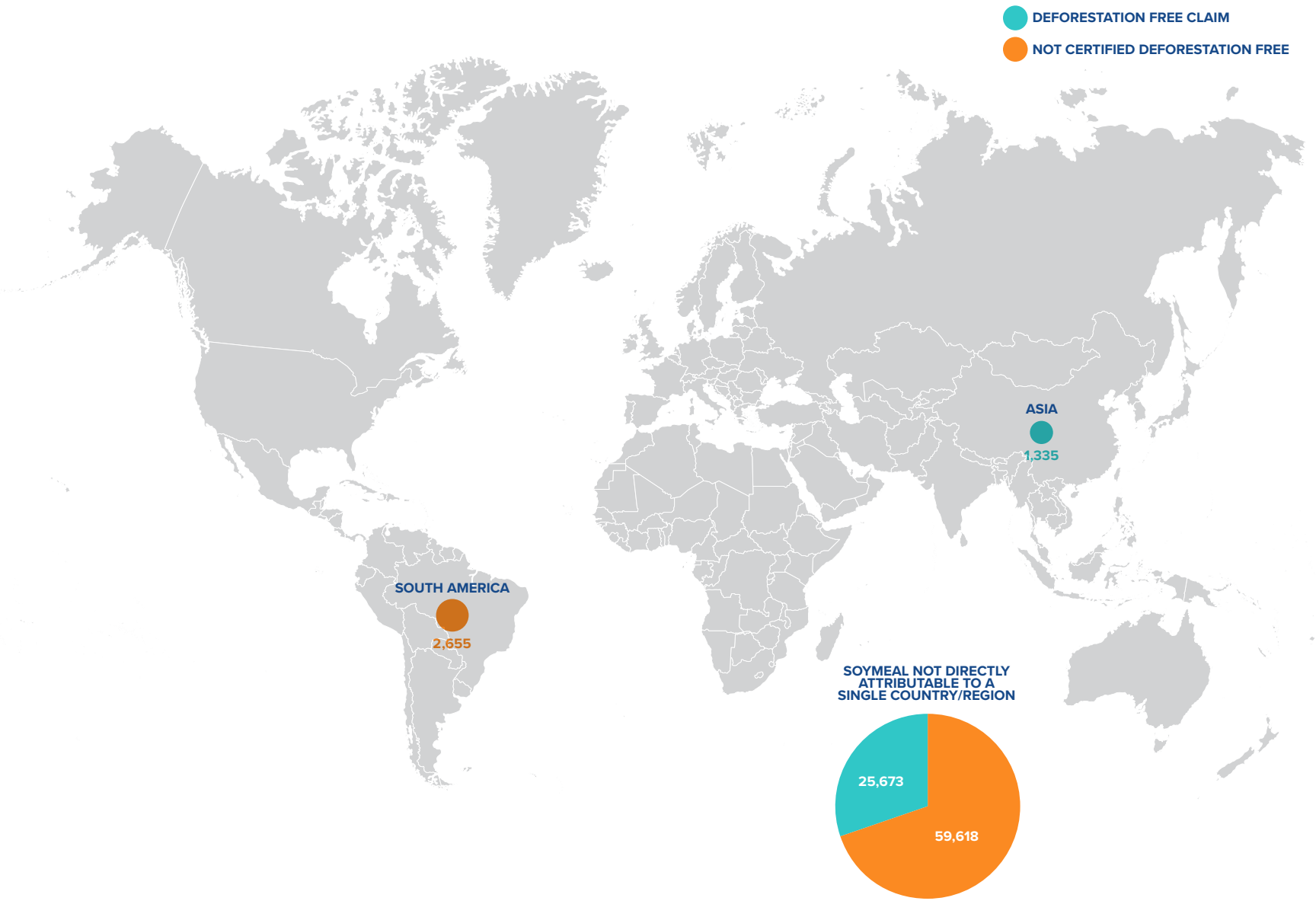


Milk

A few major dairy producers contract directly with farmers throughout the UK for the majority of fresh milk and dairy supply. Non-UK dairy is a small part of the overall supply into UK retail markets. The sector is largely consolidated with just a few major producers, some of which have company policies to purchase deforestation free soymeal credits and/or certificates to address the soymeal impacts of feed. Where companies use these systems they often have their own feed models to estimate the feed ration and use within their supply chain. Some supply chains have removed soymeal from their dairy production.

SOY CONTENT IN FEED

0-23%

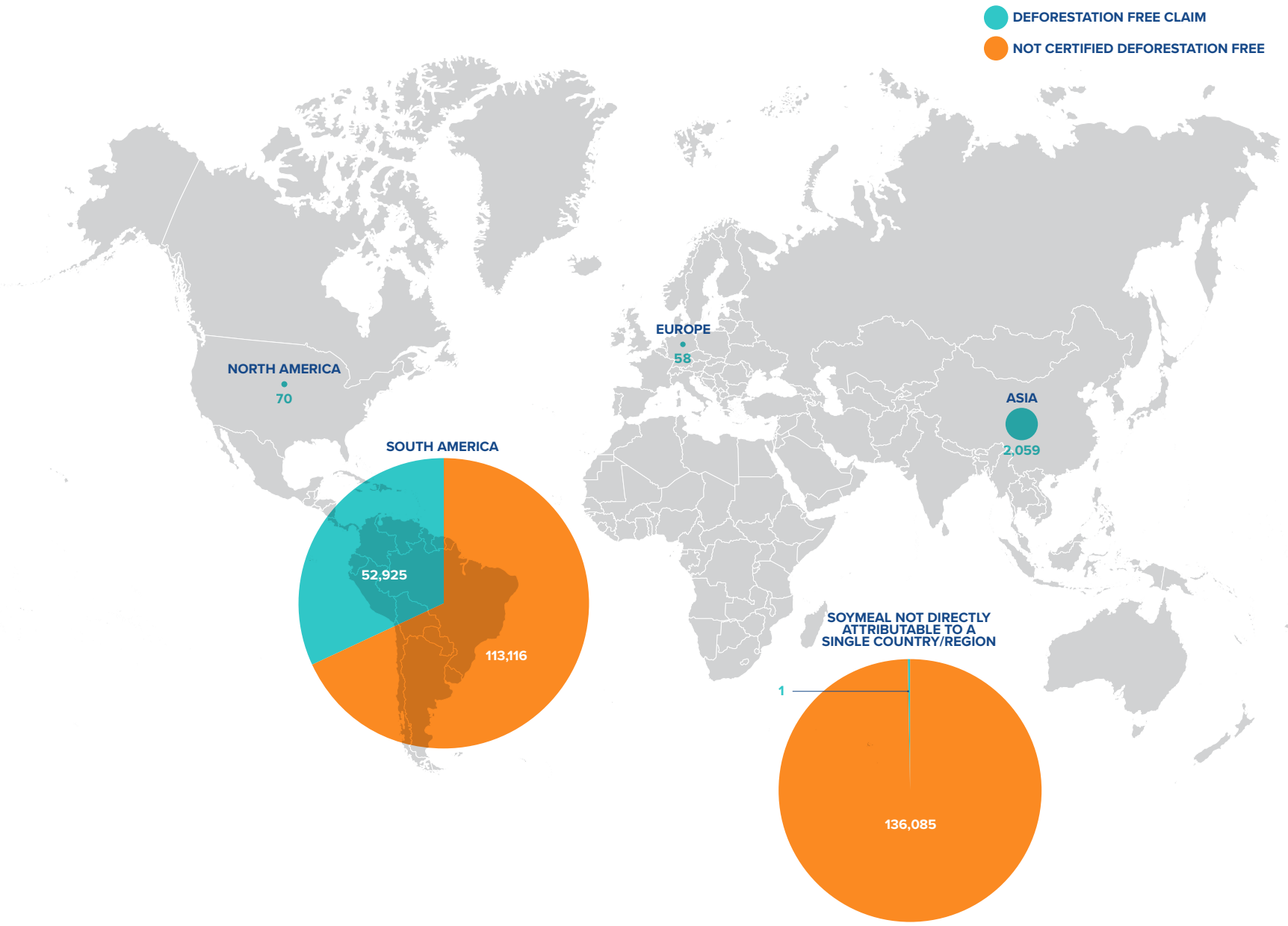


Pork

Rearing swine is the second biggest contributor to the UK retail soymeal footprint. The British pork industry is composed largely of independent producers that control their own feed supply. Suppliers reported that they are investing time in feed innovation and engaging their farmers on feed practices. Depending on the supplier, fairly wide variations in soy rations within diets were reported, even within the same company, due to indoor and outdoor rearing, variety, and the lifespan of the pig.

SOY CONTENT IN FEED

5-18%

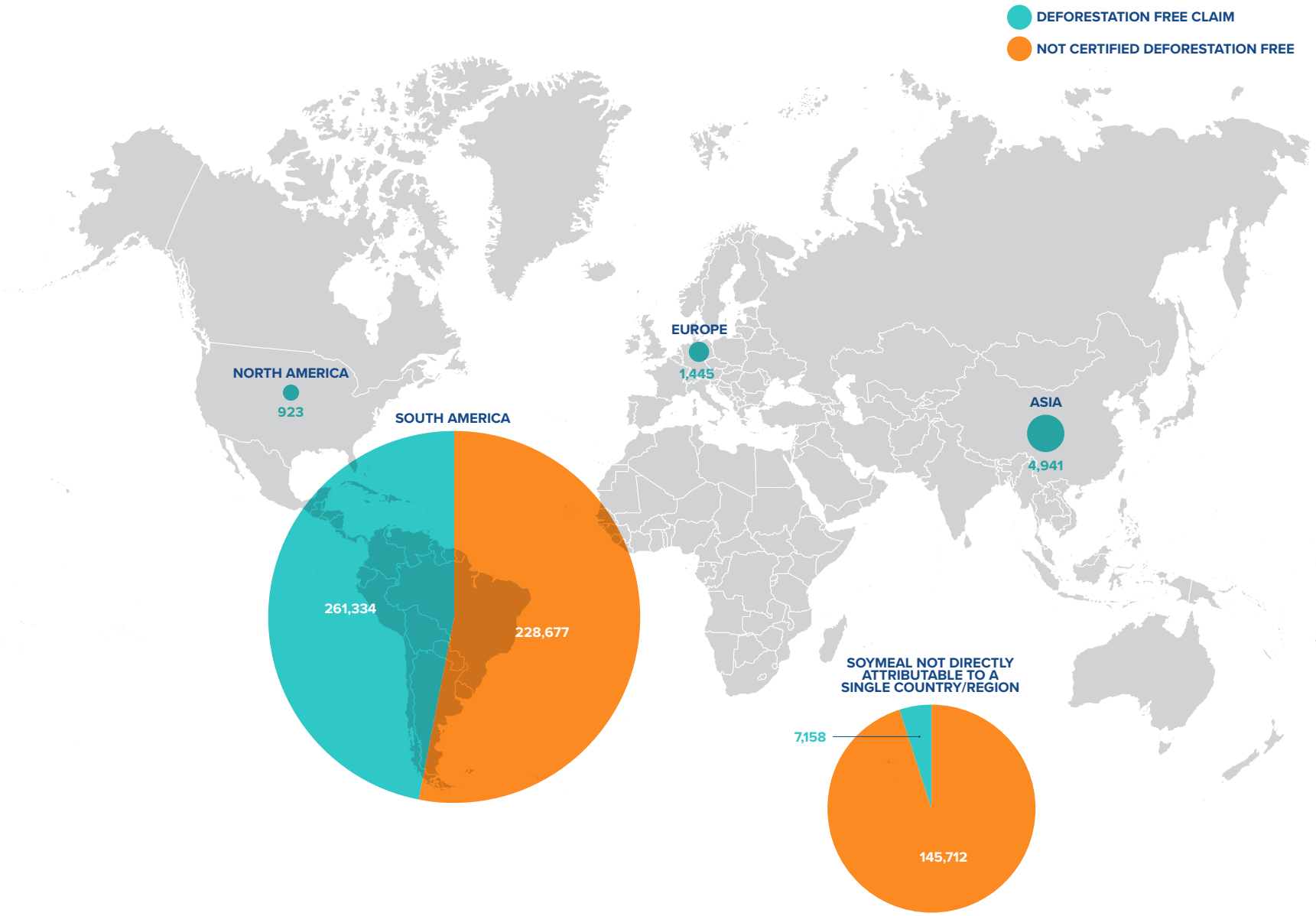


Poultry

Poultry is the single biggest protein in the UK retail soymeal footprint. As a major consumer of soymeal, it was one of the first proteins to be included within some retail policies for removing its potential contribution to deforestation in South America. The variations within poultry diets can be heavily affected by the production system it is produced in, with organic and free range birds often having a bigger soymeal requirement due to their longer lifespan compared to more intensive production systems.

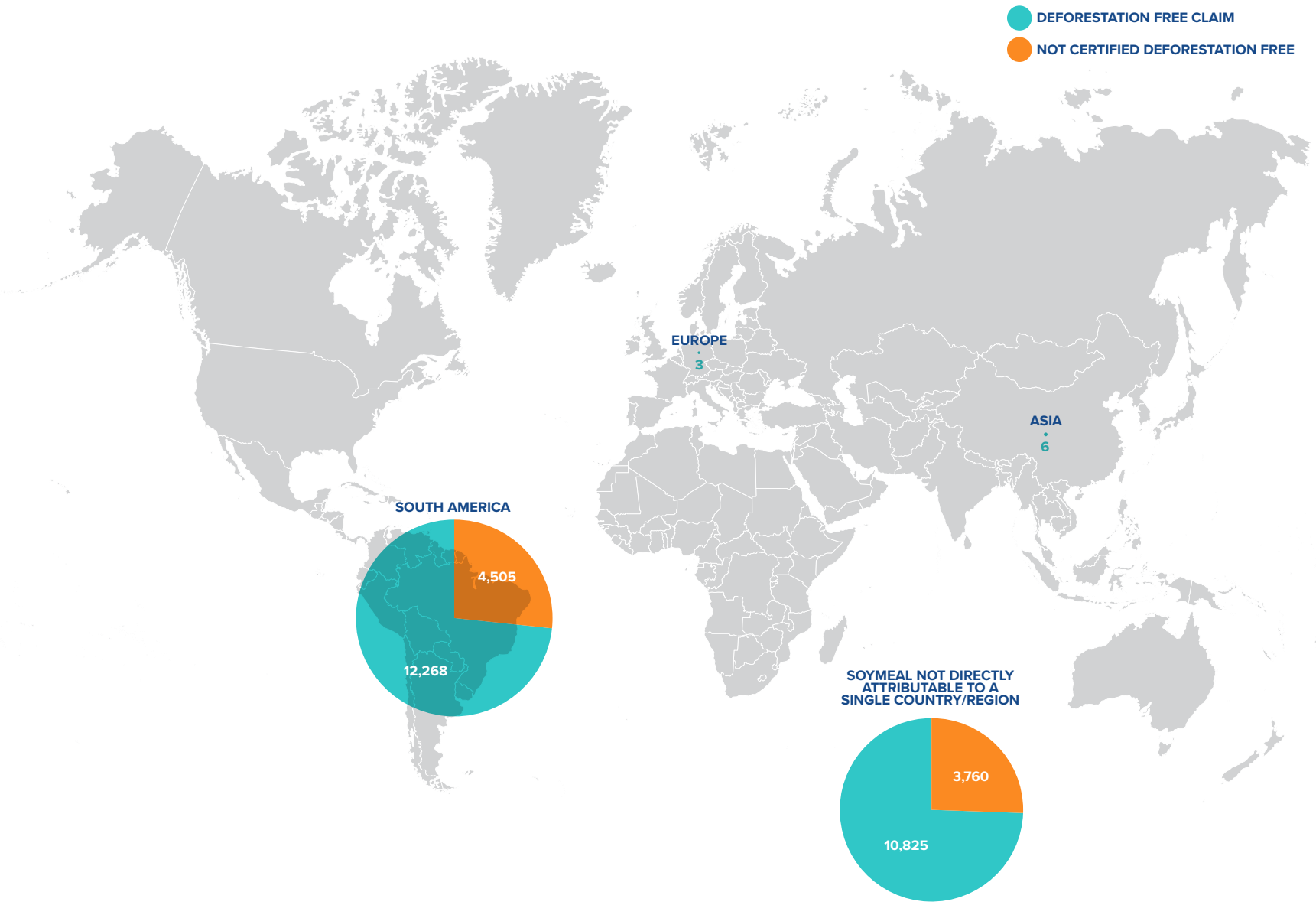
SOY CONTENT IN FEED

15-26%



Salmon

The UK salmon production industry is highly consolidated with just a few key feed suppliers. These feed manufacturers are largely committed to providing certified soymeal within their feed mixes, thus contributing to the relatively high proportion of feed that is certified compared to other livestock groups. Information related to the transparency of this system is also fairly well established with many suppliers able to identify the sub-national region of soya production. However, as with other proteins, little evidence was able to be provided with the salmon producer's name linked directly to the soymeal supply. As such, this livestock group has a large proportion of company claims associated with its supply.



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