Calculation guidelines for the measurement of embedded soy usage in consumer goods businesses

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Contents

1 Introduction and background

One of the new frontiers of sustainability reporting is soy foot printing. Soy can be seen from a number of perspectives; as an efficient source of protein, a key component of our food chain, a reliable cash crop or a destroyer of ecosystems.

For many of the retailers and manufacturers within the Consumer Good Forum (CGF), soy is a commodity that needs to be clearly understood within the next five years so they can take action to meet the CGF's commitment of zero net deforestation by 2020. The commitment doesn't just cover directly purchased commodities and includes those used in the supply chain such as soy used to feed meat and dairy animals and soy by-products that are used in the manufacture of products as diverse as chocolate, personal care creams and household cleaners.

One of the first steps in making a business' soy usage more sustainable and eliminating deforestation is to understand where that soy is within the supply chain and which product lines contribute the most to that business' 'soy footprint'. This allows the business to target the most material and highest risk suppliers and move them towards a more sustainable source or substitute the soy entirely.

1.1 Role of this document

This is a guidance manual to help companies apply the principles of the CGF Soy Measurement Ladder published in early 2015 (http://www.theconsumergoodsforum.com/strategic-focus/sustainability/our-sustainability-pillar). It is primarily written for in-house teams who wish to explore the options for calculating soy consumption and help them decide which is most appropriate for their needs. Please note that this document should be used as guidance only and it is not intended for use as a formal standard – it is up to each business to determine the most appropriate balance of accuracy and effort.

The guidance has been developed working with members of the CGF and KPMG's soy teams. It draws upon existing approaches to soy measurement and other commonly used measurement guides such as the Greenhouse Gas (GHG) reporting protocol.

Please note that this document is a working document shared by CGF, KPMG and the soy working group to allow retailers and manufacturers to improve the way they are measuring their soy footprint. Each user needs to determine the best approach for themselves. We would welcome feedback on this document and any suggestions, case studies and improvements. This will help the whole industry bring more consistency to its approach.

1.2 Aim and objectives of the guidance

This guidance aims to support the CGF's members in calculating a soy footprint with appropriate levels of accuracy within the current limitations of data availability and resource constraints. By calculating its soy footprint, a business is then able to make informed decisions about sourcing soy and target its most material impacts and highest risk areas.

The guidance attempts to strike a balance between ease of implementation and accuracy. It includes options for companies to make assumptions and estimations where data is difficult and/or expensive to obtain.

As systems mature, it is expected that companies will move to more accurate methods of calculating their footprint, particularly for the most material uses of soy.

1.3 Practical application considerations

In developing this guidance, a number of organisations were interviewed from the CGF membership to understand their approach to measuring soy usage. Many of them began with narrow boundaries to begin measuring a subset of

their soy footprint. They were then able to expand to a wider boundary of measurement as they grew more sophisticated and experienced in the process. For example:

— some organisations chose to focus on soy consumption in their largest market since it was logical that this market saw the most usage. Once they had developed an approach to capture this information, they then were able to widen the measurement process by either extrapolating these numbers across to other smaller markets or capture primary data for these smaller markets.

— another chose to measure just the soy usage in beef, chicken and pork, their largest meat categories, as a foundation for determining their soy consumption.

Given the complexities involved, it is not expected that a business would be in a position to accurately measure its soy consumption across all operations during the first year or two of measurement. Instead, we expect users of this guidance to put in place a road map that will take a business from having initial estimates of soy usage in its most material categories and countries through to accurately capturing soy data from a wider swathe of operations in a phased approach. Consequently, the methodology and guidance contained within this document is one that has been designed to align to a business as it develops its approach to soy measurement.

1.4   Additional reference documentation

Other documents that may be useful for use alongside this guidance include:

— **Consumer Goods Forum Sustainable Sourcing Guidelines:**
http://www.theconsumergoodsforum.com/download-the-sustainable-soy-sourcing-guidelines

— **Consumer Goods Forum Sustainability Activation Toolkit**
http://www.theconsumergoodsforum.com/download-sustainability-activation-toolkit

— **WWF The Growth of Soy; Impacts and Solutions:**
http://wwf.panda.org/what_we_do/footprint/agriculture/soy/soyreport/

— **KPMG's A Roadmap to Responsible Soy:**
https://www.kpmg.com/global/en/issuesandinsights/articlespublications/sustainable-insight/pages/roadmap-responsible-soy.aspx

— **Consumer Goods Forum Soy Measurement Ladder:** http://www.theconsumergoodsforum.com/strategic-focus/sustainability/our-sustainability-pillar

1.5 Overview of the guidelines approach

The approach is broken in to the following **four steps:**

1. Period and boundaries	— Determining soy reporting period and boundaries, including which Tiers (from the Soy Measurement Ladder) are to be measured (see section 4 of this document)
2. Governance	— Establish governance and formalised reporting processes (see section 3 of this document)
3. Calculate soy usage	— Collect and calculate the data for each chosen Tier (see section 5 of this document)
4. Reporting and next steps	— Determine if and how to report your soy footprint — Decide if internal or external assurance of the data or supply chain compliance is required and — Determine if and how the business wants to reduce its impact on deforestation (see section 6 of this document)

This guidance provides different approach options for each of the steps. Given this level of flexibility, this should allow a business to begin measuring and developing their approach to reporting on their soy and sustainable soy consumption.

1.6 Soy Measurement Ladder – An overview

The Soy Measurement Ladder is based on five tiers, each focussing on a key market area of the supply chain where soy is likely to be present.

To measure soy usage for a business, each tier on the Soy Measurement Ladder represents a group of products that either contain soy or have soy in the supply chain. The position on the ladder is determined by the point in the supply chain the soy usage occurs. To a limited extent the tiers also highlight the level of difficulty to measure and report on the consumption of soy in each product group. However this will vary between each business.

It is anticipated that businesses will set targets for measuring soy usage at various Tiers. As that business improves its approach to measuring soy, it is envisaged it will move to capturing a wider range of its soy footprint and more tiers on the Soy Measurement Ladder. For example, Tiers 1 to 3 are measured within 12 months, tiers 4a and 4b will be measured after 2 years and tier 5 will be measured after 3 years.

Further detail regarding the Soy Measurement Ladder and each tier can be found within sections 4 and 5 of this guidance document.

2 Why measure soy footprints?

Before discussing the approaches used to measure soy, it is key to understand the importance of measuring soy consumption. This section describes the link between soy production, ecosystems and deforestation, the reasoning for trying to capture soy usage across a business' supply chain, and the various points at which soy can enter a supply chain.

2.1 Soy and the ecosystem

The growth in the use of soy is linked to deforestation and degradation of valuable ecosystems such as the Amazon and Cerrado in South America as well as other valuable ecosystems around the world. Measuring, or at least estimating, a business' usage of soy within its supply chain is a first step in understanding whether that usage might be linked to deforestation. It can then seek to eliminate that risk by identifying the source of any soy used and how sustainable that soy production is.

Measurement of a soy footprint has the potential to enable a business to:

— Understand which product lines use the most soy (i.e. have the most material usage);
— Gauge the scale of the impact of soy usage within a supply chain;
— Establish a baseline against which performance can be measured;
— Start to trace where the soy comes from;
— Understand the risk of deforestation of each individual use of soy within the supply chain;
— Engage with the most largest and/or highest risk suppliers in terms of deforestation risks and, through associations such as the CGF, help encourage change; and
— Demonstrate progress to stakeholders.

2.2 What is soy used for?

Soy is, surprisingly for some, a key component in many of the foods eaten today. In particular, its high protein content compared to other possible feed ingredients means that it is used as feed for the rearing of cows, pigs, chickens, fish and other animals across the world. Soy derivatives are also used in many other products such as margarines, personal care / cosmetics products and chocolate.

With the significant growth in demand for meat and dairy products globally, the demand for soy has increased many times over. This has put huge pressure on ecosystems such as the Amazon and Cerrado in South America where land is sought for the growing of more soy. Figure 1 below outlines the varying products derived from soy. Figure 2 describes the average soy content of a selection of products.
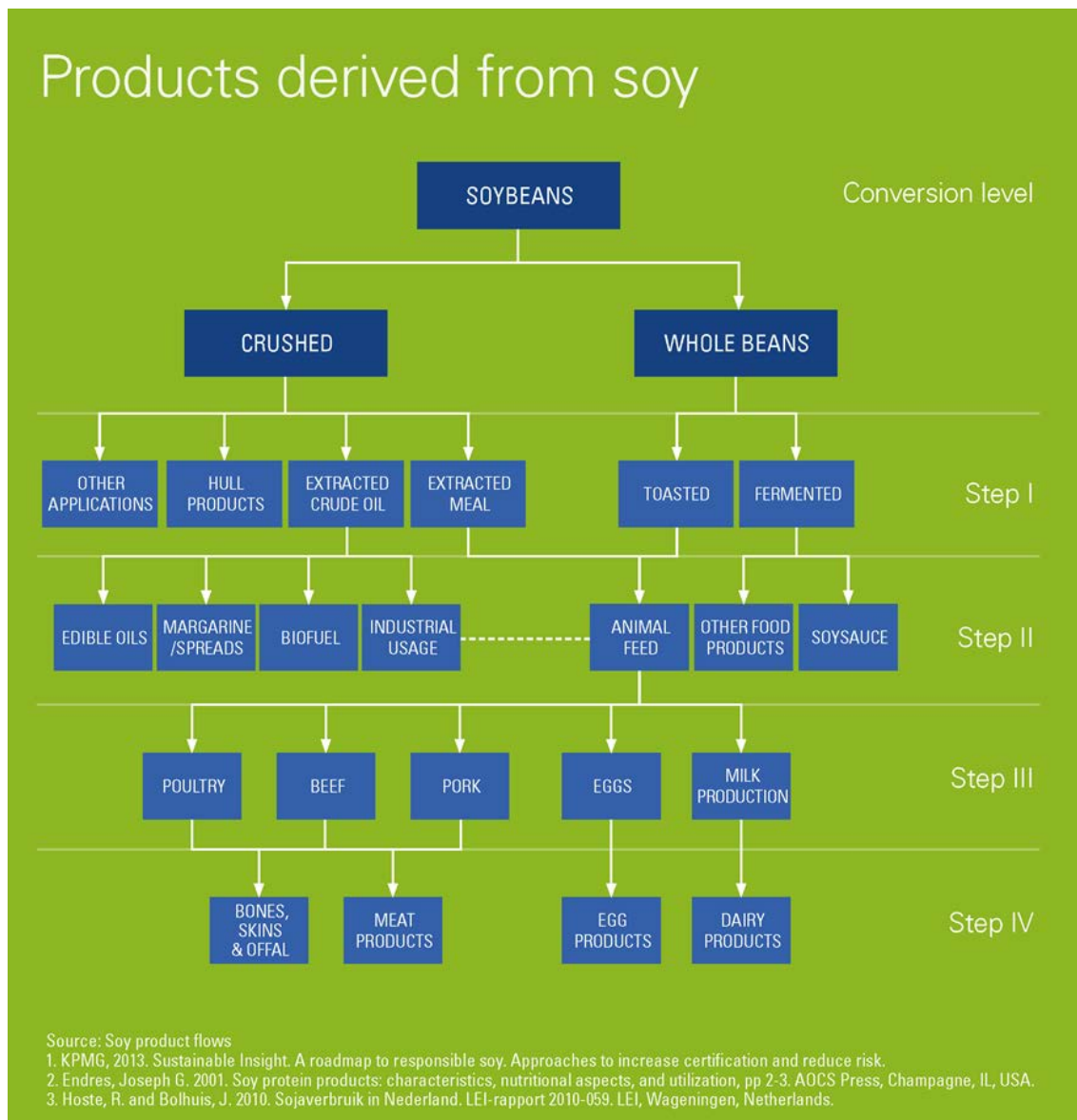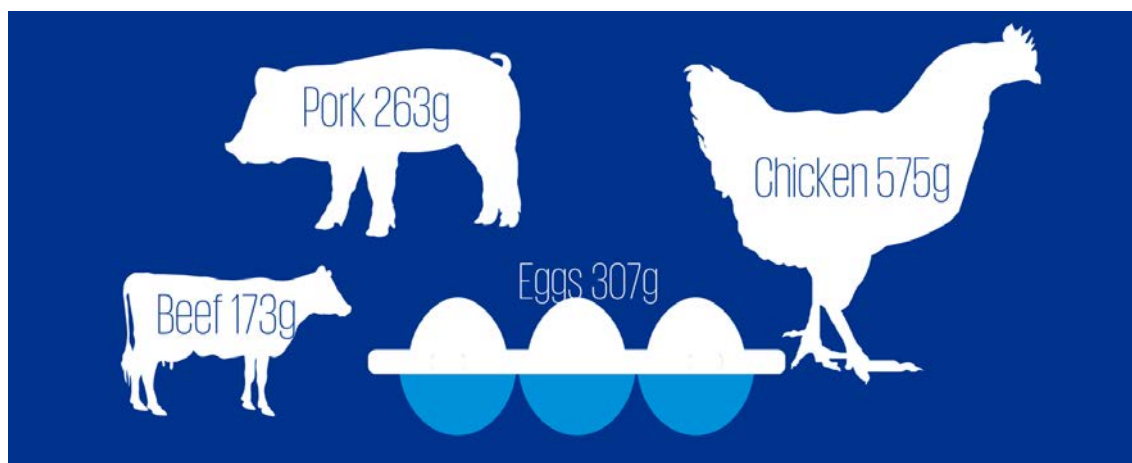
Figure 1 Products Derived from Soy

Figure 2 Average Soy Content of Products

2.3 Does all soy usage present an equal risk?

For CGF, generally it is assumed that soy coming from South America presents a higher risk of causing deforestation, particularly from certain regions. Any soy coming from North America, Asia and Europe is considered to present a much lower risk of deforestation. A further extrapolation can be made that says that products/sales made in North America are most likely to use North American soy but products/sales made in the rest of the world are likely to have a proportion of soy in them from South America and so should be examined more closely. As discussed in section 4.2.1, there is some debate around this point as soy grown in other regions (i.e. North America) also has the potential to contribute to degradation of high value ecosystems. The decision of which regions to include when calculating soy usage falls to the businesses themselves. Further detail on this can be found within section 4 of this document.

2.4 Challenges of measuring soy usage

The embedded nature of soy in supply chains makes it difficult to determine how much soy has actually been used in a specific product. As such, the collecting of soy data can be challenging. These include:

— **Control and visibility:** Few retailers and manufacturers buy soy directly as this often occurs further down the supply chain;

— **Location specificity:** Not all soy is grown on deforested land and there is discrepancy over the definition of 'deforestation-free' sources of soy;

— **Varying feed mixes:** the amount of soy used within feed mixes varies depending on species, life stage and the amount of amount of natural foraging animals can do;

— **Decentralised supply chain**: feed production chains and the processing of animal products is a decentralised process requiring engagement with many suppliers;

— **Embedded usage:** the use of meat, eggs and dairy products as ingredients in the end products (e.g. ready meals, cakes, chocolate) adds a further layer of complexity; and

— **Double counting**: there is potential for double counting sources of soy when determining the soy footprint of a business. Further detail on this particular challenge is provided below.

In section 4, details and suggested solutions are provided on some of the specific challenges commonly experienced by all businesses when trying to measure soy usage at each of the soy consumption tiers.

2.4.1 Challenges regarding double counting

Businesses should be aware of the risk of double counting and design their calculation approaches to manage this risk. Examples of where there is a risk of double counting include:

— **Manufacturers and retailers:** When measuring the total footprint of the CGF, there is potential that a retailer will report soy within their supply chains of a product that has already been accounted for by a manufacturer. This is the primary reason why, at this stage, most businesses are only looking at the soy footprint of their own brand products. Within the CGF, this largely eliminates the risk of double counting of manufacturer branded products sold by retailers but, over time, as this methodology percolates into the supply chain, there is still a risk that needs to be managed when the manufacturers of retailer own brand products are included.

— **Meat:** Where a retailer or manufacturer divides up an animal carcass for processing at different sites or for different products, soy may be incorrectly calculated twice: once for the whole carcass and twice in the meat in the products sold.

— **Processed foods:** There is potential that meat, egg and dairy products supplied to a business for producing processed foods (i.e. sausages or cakes) may be counted both as an individual item and as an ingredient within a product. This could also occur where a retailer manufactures products within the store using ingredients that have already been accounted for within the soy footprint (e.g. a store uses eggs and dairy ingredients to bake cakes and includes soy contained within the individual eggs and dairy as well as the cake within the soy footprint).

— **Direct soy used in feed:** Where a business uses soy directly for animal feed, and then manufactures its own meat/processed food products from those animals, there is a risk of double counting soy that has been used for both the animal feed and the products produced.

— **Waste/by-products:** During the manufacture of soy products, there is potential for waste/by-products to be reused in processes that may also contribute to the soy footprint. For example, during the process of soy milk manufacture, an insoluble fibre of the raw soy bean is removed, processed, and used for animal feed. Where this feed is used for animals from which further products are derived, this part of the raw soy bean may be used twice. Products within Tier 5 that may contain soy (i.e. leather, gelatine, etc.) are also considered by-products by some industries and as such, there is a risk that these products are double counted (i.e. they would be counted as part of the original product and as a separate 'by-product').

At the time of writing of this document, the scale of the risk of double counting here is not known and further work is needed to take account of it. However, each business should be aware of this risk and take it into account in further refinements to the work. A common sense approach should prevail, particularly during the early stages of soy measurement.

2.4.2   Challenges regarding shrinkage

Along the supply chain, from manufacture until the point of sale, there is potential that products and/or ingredients containing soy may be wasted or lost, resulting in 'shrinkage' of the soy footprint calculated. Such products and/or ingredients should be considered when calculating soy consumption, as they still contribute to the overall soy footprint despite the fact that they are 'lost' during the process and do not reach their intended use.

Where a business uses sales data to determine its soy footprint, any shrinkage containing soy that does occur in the supply chain should be added onto the total soy consumption calculated from sales data. Again, during the early stages of the measurement process, a common sense approach should prevail.   Calculations for shrinkage can be added later one the most material sources of soy are understood better. Further detail regarding this challenge is discussed in section 5.

2.5   Determining if soy is safe from deforestation risk – Certified soy

Once a business has established how much soy it uses, and it what products, it may wish to begin exploring options to source sustainable soy where possible. Sustainable soy is soy that has been determined as having a low risk of contributing to deforestation through its production (certified soy). One issue currently is that responsible production in soy lags far behind other commodities such as palm oil, cocoa and coffee. Currently a very small percentage of the total global soy production is certified but change is already being seen in the market and increases in demand will drive production to change.   Further guidance on sourcing of sustainable/responsible soy is provided in the box below. A business could refer to these sources to begin the journey to responsible soy sourcing once it has measured its soy consumption and the most material soy consumption tiers.

Guidance on sourcing sustainable soy

Please refer to the "Consumer Goods Forum Sustainable Soy Sourcing Guidelines" for more information on the three mechanisms that are sufficient to verify low risk of soy contributing to deforestation as defined by The Forum's sourcing guidelines and meet the goal of helping to achieve zero net deforestation set forth in the resolution. These are:

1. International Sustainability & Carbon Certification (ISCC)

2. RTRS (Round Table for Responsible Soy)

3. PROTERRA (Pro Terra Standard)

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3 Establishing an effective soy governance framework

The way in which the soy measurement process is embedded within a business' overall governance framework is key for establishing cost effective and accurate measurement processes and ultimately moving towards more sustainable soy. Well-designed governance is also at the heart of ensuring compliance to any emerging standards and stakeholder requirements.

Any governance processes established for soy reporting should integrate with, and preferably use, existing processes such as supply chain data collection, sustainability reporting, measurement of palm oil content or contractual reporting.

3.1 Features of good soy governance

Any business wanting to measure and manage soy usage should include the following governance features:

— **Board level oversight:** Typically, one or more board members should be accountable for the board overseeing sustainability policies and programs, review development and monitor progress towards any targets on a regular (i.e. annual) basis.

— **Group level accountability:** A business should include individuals at the Group level that are responsible for the development and coordination of soy policies, implementing programs and internal and external reporting. They would report directly to the Board and liaise with nominated individuals across the business regarding soy. The Board would provide oversight to this group, but the structures, reporting lines and objectives would fall to this team.

— **Nominated individuals:** Having a network of nominated individuals in place across the business (i.e. within each office/business unit) accountable for soy usage helps to ensure that complete and accurate data is gathered for soy. Such individuals would also be able to influence and help develop measuring systems used within the business and support those implementing policies/programs at Group level. They would have appropriate authority and responsibility in pursuit of the overall sustainability agenda.

— **Documented data gathering and calculation processes:** A business should ensure the process and systems it uses to gather and measure soy data are formally documented. This helps to improve data accuracy and consistency in data boundaries. Features of the documented process should include:

  – roles and responsibilities of each person involved in the process including segregation of duties;
  – sign off and review processes;
  – requirements for data audit trails and data retention;
  – detailed instructions on data gathering and calculation methods and information on where calculation/aggregation documents are located; and
  – where discrepancies or challenges with the data have been identified and resolved, this should be clearly documented.

— **Data collection and calculation tools/systems:** Where possible, a software tool that collects data and performs calculations automatically should be used to reduce reliance on manual work and the associated risk of error that can arise where non-automated processes are used. Companies such as KPMG have developed tools that do this already and these are being evolved as the market and method develops.

— **Audit trail / traceability:** It is very likely that different suppliers will have different 'soy intensities' for the production of the same commodity. For example, different ratios of soy in feed to product a given amount of meat. It is important that record keeping is accurate enough to be able to trace the total figures to breakdowns of the individual records. This is usually done through having a clear audit trail, linked data records/spreadsheets and good documentation.

— **Internal audit processes:** Validation of soy data through internal audit processes provides assurance on the information measured and that the correct areas of the business are targeted to help movement along the Soy Measurement Ladder. This would include ensuring a clear audit trail of data is in place.

— **Adaptability:** The business should develop a framework for soy reporting that is able to adapt to changes in the external environment, including updates to legislation and guidance.

— **Reporting:** Implementing good governance structures a business can then be in a position to confidently report their soy data. Depending on the ambition of the business and stakeholder opinion, this could be done internally or externally to provide visibility on a business' operations.

Implementing effective and adequate governance structures from the top down enables a business to more accurately and consistently measure its soy consumption and to continue to make sensible decisions on how to manage its consumption of soy (including the sourcing of sustainable options).

A suggestion on handling credits under systems such as RTRS:

From Laura Jungmann, Specialist Product Sustainability, Ahold

If your supplier has not yet purchased credits, but has committed to do so, you could ask them to register the credits under your RTRS account. This helps manage the risk that suppliers use the same credits for different amounts of soy. The option to transfer credits to another account is relatively new but is worth exploring as one of the possible ways of improving record keeping.

RTRS provide the following instructions for this feature:
— The supplier will buy the credits from a certified producer on the RTRS platform. The credits are transferred from the producer account to the supplier's account.
— The producer will send an invoice according to the supplier's indication, and the producer will receive the payment.
— The supplier will receive the credits from the producer before making the payment, so the supplier will be in the position of **transferring the credits to the retailer's account**.
— The supplier will then transfer the credits to the retailer's account

In order to do this, the following information needs to be supplied to RTRS:

Platform information:
— Name of the company as it should appear in the platform
— Name of the person in charge of buying the credits
— Phone number and contact email

Invoicing information:
— Name of the company as it should appear in the invoice
— Address and other information that should be included

# 4 Determining measurement periods and boundaries

A business should first consider two key elements when measuring soy footprints.

These are:

1. the period over which soy usage is measured (i.e. the length of time and consideration of the start/end points);
2. the boundaries that determine the sources of soy to be included (i.e. regional, brand, product and ingredient boundaries).

Within the CGF Soy Measurement Ladder document, the concept of the region, brand, product and ingredients layers is introduced to address the boundaries question. This helps focus attention on the right data within the right boundaries (See Figure 3).

Figure 3 Schematic Representation of Soy Measurement Boundaries
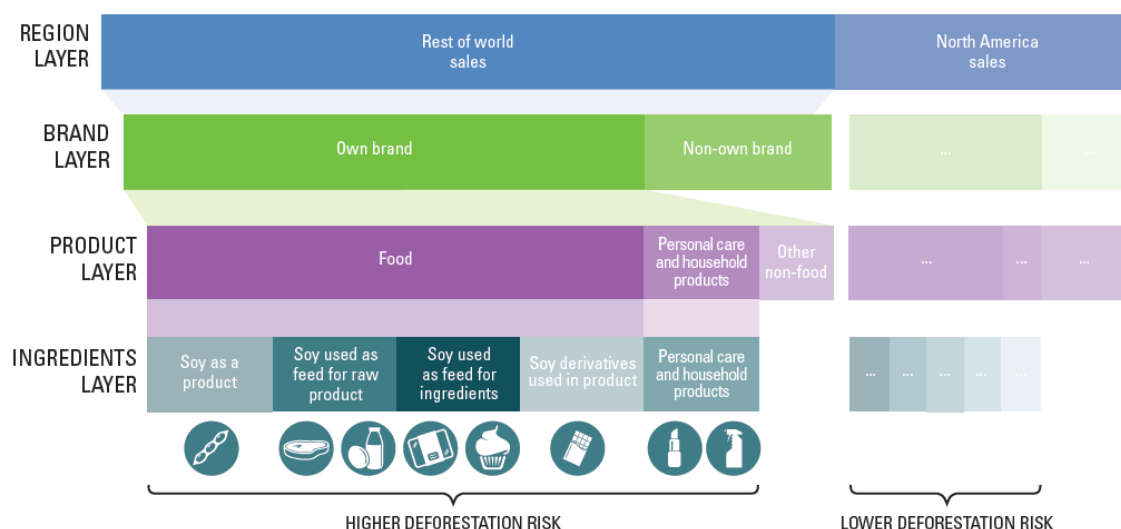
4.1 Measurement periods

One of the first steps when starting to measure the business' soy footprint is to determine the measurement period for the data (i.e. the time period that will be measured). Typically a business will measure its soy footprint over 12 month periods and align this with its annual reporting and/or sustainability reporting years.

The only other viable alternative might be to align measurement periods with harvests in the primary markets and this does not seem practical.

Aligning data measurement periods to annual/sustainability reporting years allows for:

— intensity metrics using data from aligned periods (e.g. tonnes of soy per $m of revenue); and

— combined assurance or supply chain audits alongside the testing of other measures.

4.2   Setting boundaries: Region layer

4.2.1   Key decision to be made

As discussed earlier, soy grown in different regions presents different levels of risk of deforestation. A business needs to understand where its soy usage is within the supply chain but also where that soy comes from.

To manage limited budgets and staff resources, some businesses are choosing to focus on calculating the soy footprint for products that are likely to contain/use soy that has come from South America as that region present a higher risk of deforestation (although there is debate that soy grown in regions other than South America may also be leading to the loss of high value ecosystems). To do this, some make the assumption that products sold in North America generally are made using products produced using North American soy but products made/sold in the rest of the world may use soy from regions with higher risks of deforestation.   This steers focus to sales/products made outside of North America.

This guidance document assumes that soy contributing to deforestation is typically sourced from South America. However, this is an approximation and the overall decision on which regions to include falls to the individual business. Therefore, when a business measures soy across a supply chain, a decision must be made as to whether soy sourced from North America is included or not.   In general, good practice is to seek to measure soy in all markets but focus on understanding the supply chain for products made/sold outside of North America, at least a first.

4.2.2   Guidance

There are two broad approaches that a business could take when determining which regions it could measure. These are explained in Table 1.

Table 1 Approach to region selection when measuring soy

Options	Guidance when choosing a region to focus on
Non-North American soy only	Experience shows that some businesses start by measuring non North American soy but plan on including North American supply over time.
	North America is a net exporter or soy, so it is unlikely that any soy usage presents a high risk of deforestation. Therefore, the simplest way to focus on soy usage from outside North America is to exclude North American sales/revenue.
	Caution should be taken as it is likely that some products (particularly beef) entering the North American market could contain ingredients produced outside of North America.
	Further guidance on how to account for North American soy that is exported for use in other markets is being developed. This will be included in the next iteration of this guide but, for now, some companies are assuming that all soy usage particularly that is earned from sales outside of North America presents an increased risk of being linked to deforestation.
	As discussed before, this is a significant simplification and a business should decide if this is appropriate for its needs now. It is unlikely this will be suitable in 3 to 5 years when stakeholder expectations have increased.
Total soy use (all regions)	In many supply chains it may be difficult to determine exactly where soy comes from until the supply chain is much better understood. Estimating total use of soy across all regions will ensure all South American soy is captured.

4.3   Setting boundaries: Brand layer

4.3.1   Key decision to be made

Unlike embodied carbon, water and, in some cases, palm oil, retailers are currently only focussing on the supply chain they have most control over; that of their own brands. Note that 'control' in this context refers to product lines where the business has the ability to specify the ingredients and sources of them (i.e. their own brand products). A business must decide which products it will include in their soy footprint and the degree to which it has significant control over these will be a determining factor.

For manufacturers, the brand layer often covers all products that are manufactured by the business although considerations should be made where the business earns revenue from resales.

4.3.2   Guidance

A manufacturer of consumer goods may have more control over the supply chain and ingredients for its products and so could measure the embedded soy in all of its products sold.

For a retailer, the focus would typically be on their 'own brand' products rather than the branded products it sells. In the context of the CGF, where many retailers sell products produced by manufacturers in the CGF, this also cuts down on double counting.

However it is suggested that, over time, the methodology should evolve to align with approaches such as the GHG protocol where retailers report the embodied aspects of all products they sell. Measurement of other sustainability issues embedded in the supply chain, including carbon, waste, water, conflict minerals etc. are increasingly looking at *all* products handled by the business, not just own brand. Retailers have already been targeted by NGOs for stocking controversial products made by others.

4.4   Setting boundaries: Product and ingredients layers

4.4.1   Key decision to be made

Any business deciding on its measurement boundaries must decide what products it must and can measure. The tiers described within the Soy Measurement Ladder (see Table 2) demonstrate the different product groups that soy can be embedded within. It is applicable to both retailers and manufacturers although any business may find that it does not have any soy usage at certain layers.

When deciding tiers to measure, a business may consider performing an initial exercise to identify its most material soy tiers. This would involve coming up with very quick extrapolations of tonnages of product sold or sales volumes to get a sense of relative scale. For example, if 80% of a retailer's revenue comes from selling fresh meat and eggs rather than ready meals and cakes then it is likely the meat and eggs represent the highest use of soy.

The business could then initially focus on the tiers that are the most used (i.e. tiers with the highest revenue/sales volumes) to ensure that measurement and reporting efforts are on those impact areas. Further refinements and inclusion of more tiers can occur during later years.

4.4.2   Guidance

Determining where the business is using soy

Similar products where soy usage appears at the same point in the supply chain have been grouped together into the 'Soy Measurement Ladder (see Table 2).

In many cases, it will be 'easier' to report on Tiers 1, 2 and 3 than Tiers 4 and 5 because data on the quantity of soy, meat and eggs/dairy is more accessible (in tier 4 it's necessary to understand the quantity of meat, eggs and dairy as an ingredient in each product) and the soy usage is closer to the production of the final product. As a business gains

an increasing capacity to measure soy it moves towards capturing a wider swathe of their soy footprint and therefore more tiers on the Soy Measurement Ladder.

Further explanation regarding the measurement of each tier can be found within section 5 of this document.

Terminology clarified: "direct and indirect soy"

*Direct soy is soy used directly to make products such as soybean meal contained in some pet-foods. Indirect soy use relates to soy that is 'embedded' in the product through an indirect use – this includes soy used to feed animals bred for consumption or to produce dairy and eggs as well as soy derivatives that are used such as lecithin in chocolate.

Table 2 Soy Measurement Ladder

Tier		Description
Tier 5 Sundry indirect (embedded) soy and soy derivatives		This is all other soy or its derivatives that may be in the supply chain including lecithin in chocolate, soy oil in margarine as well as soy by-products in personal care and household products. This tier also includes soy used to rear cows for leather, gelatine etc. although this is often seen as a by-product. Note that these still form part of the ingredient list for the product – directly purchased derivatives by manufacturers still fall into Tier 1.
Tier 4b Eggs and dairy in processed food products		The soy used in feed animals where the eggs and/or dairy ends up in food products such as cakes, smoothies, ice cream etc where each individual component is less than 95% of the total product.
Tier 4a Meats in processed food products		The soy used in feeds for animals where the meat ends up in food products such as ready meals, sausages etc where that particular meat is less than 95% of the finished product.
Tier 3 Eggs and dairy		The soy used in feeds for egg laying chickens/ducks, dairy cows, dairy goats etc. Includes products such as yoghurt, milkshakes etc. where more than 95% of the product is eggs or dairy.
Tier 2 Raw meat feed		The soy used in feeds for meats such as beef, pork, chicken, duck, fish etc.
Tier 1 Directly purchased soy and its derivatives		Directly purchased and controlled soy. This includes soy bought by a commodities desk, used in manufacturing or within pure soy sold on the shelves (such as edamame beans and soy milk). It also includes any directly purchased soy derivatives such as lecithin, soybean oil and methyl soyate. For the purposes of simplicity, a deminimis rule applies where any product with more than 95% soy within it (e.g. flavoured soy milk), can be reported in Tier 1, where separating out the data is impractical. It is expected that many manufacturers of pet foods and other products will be buying some amount of soy directly.

4.5   Product purchased or product sold?

One of the first challenges to be aware of is the difference in approaches taken to calculating soy usage at each tier depending on whether the business is working with data on products purchased or sold.

This decision is fundamental for manufacturers as it determines if the tiers of the soy measurement ladder apply to products purchased for use or products manufactured for sale. The intention is that the ladder applies to products purchased for use in manufacture. It is also suggested that this approach is simplest and allows greater control of the supply chain. Manufactures should calculate the soy footprint of their operations based on the amount of soy, and products using soy in the supply chain, based on what they purchase. In general, procurement records are easy to work with because for most companies there are fewer procurement records than there are sales records due to the nature of a few raw ingredients being made to make many end products. Using procurement data also eliminates the need to factor in any waste in the production process.

Retailers face a bigger challenge. Most do not typically 'transform' the products they purchase through their operations as most manufacture is outsources to a third party, although this is changing for some of the largest as they take more control of their supply chain. However, the research conducted in creating this document suggests that retailers find working with sales data to calculate the soy footprint more reliable but that in some cases it may be simpler to use procurement data. Retailers should remain aware of the risks of mixing data sources where issues such as wastage, shrinkage and the introduction of third party purchased ingredients into a manufacturing process that primarily uses retailer purchased ingredients (such as the meat from carcasses bought by the retailer). Best practice suggests retailers should try to be consistent with the data sources chosen unless the data sources introduce significant inaccuracies or inefficiencies. This methodology should be declared in any reporting made.

4.6   Practical application case study

Determining what to report

DANONE, the global dairy business is one of the world's leaders in determining its soy footprint and has begun to determine its own soy footprint through implementation of a strategy focusing on soy consumed within the supply chain as part of animal feed (i.e. Tier 3 of the Soy Measurement Ladder). Below is an excerpt from DANONE's Group Soy Policy (2014) describing its boundaries of soy consumption:

"DANONE has engaged in a strategy to "eliminate deforestation impacts from its supply-chain". This ambition also covers soy products which could have a potential negative impact....Although DANONE does not purchase directly the vast majority of soy volumes entering its supply-chain (99% of volumes are used through animal feeding), these indirect volumes are estimated at around 900kt less than 0.3% of world production. DANONE direct purchases are derivatives like lecithin, oil, proteins and fibres for a total volume of 6kt. Soy meal (a by-product of soy production) can be used in the daily feed ration of dairy cows, estimated today at a global average of less than 5% of feed ration for DANONE dairy cows and potentially could trace from countries like Brazil and Argentina out of an estimated 22 million tons of grass and grain feeding 1.6 million cows, DANONE is currently involved in direct feed purchase only with a limited number of farms."

Source: http://www.danone.com/en/publications/#.VHc_2pig6po

# 5 Step by step calculation of soy usage by tier

5.1 Introduction

This section provides further detail on each tier of the Soy Measurement Ladder introduced in section 4. It provides guidance for calculating the soy footprint data in addition to suggesting sources of the data. These are listed by decreasing accuracy/complexity.

Ideally, businesses should choose the higher accuracy options where possible and practicable. It is down to each business to determine the level of detail it is able to go to on each tier and for each product category. The most significant contributors to the total soy footprint would ideally have greater accuracy.

It is also possible that data sources used by businesses will vary between products of a particular tier, and that a mixture of data sources may need to be used in order to gain data for a complete tier.

Note: The methodology below should be treated as a guide only. It remains up to individual business to determine the level of detail and accuracy it wishes to employ when measuring soy usage within its respective supply chains. The approach and calculations used to estimate soy usage should be adapted by the business to best suit its operations whilst still trying to maintain transparent boundaries and calculation approaches that allow stakeholders to compare the results between companies. The guidance options listed here are not exhaustive and some businesses may find alternative options are more appropriate. Whatever method is chosen, good practice governance requires the creation of detailed methodology document.

5.2 Tier 1 – Straight Soy
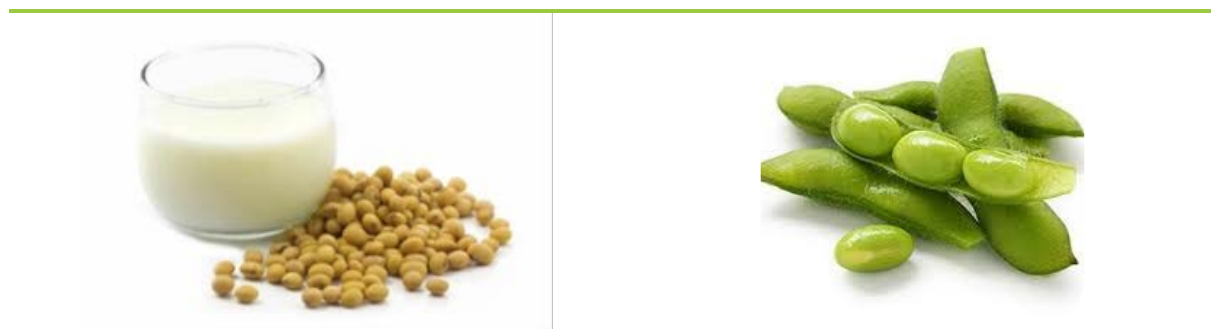
Definition:

"Directly purchased and controlled soy, such as that bought by a commodities desk, used in manufacturing or within raw soy sold on the shelves. This includes products such as soy milk and edamame beans."

Relevance:

Manufacturers		Actual soy or products containing more than 95% soy bought by procurement and used in end products.
Retailers		Actual soy products or products containing more than 95% soy sold in stores.

Measurement considerations

This Tier is typically the most straightforward to calculate due to the soy being a directly purchased item. Data on the quantity of soy used should be accessible from internal procurement or similar systems. Important considerations for a business collecting data are:

— For the purposes of practicality, any product with more than 95% soy within it (e.g. flavoured soy milk) can be reported in tier 1.

— Where soy beans are sold by retailers as part of a salad or similar then it is suggested that this is an ingredient to another product (i.e. the salad) and therefore this falls into Tier 5. This is also appropriate as it's likely to be a very small contributor to the overall soy footprint of a business and fall within product ranges that are not typically associated with soy.

Guidance for data collection

As this soy is directly purchased, it should be simple to obtain the total weight of direct soy purchased in tonnes across the business within the applicable time period and boundaries.

Suggested data sources

Step 1: Sources for weight of straight soy purchased

1. Typically this information can be sourced directly from suppliers or internal teams (i.e. procurement team, sales team, finance team). Data on the weight of soy used is likely to be available in the following forms, listed in order of expected accuracy:

   a) Total weight of actual soy purchased directly from suppliers;

   b) Total weight of actual soy per product (as per the recipe) and the total number of products sold. Multiplying one by the other should give the total soy usage;

   c) Average weight of actual soy used per product sold and the total number of products sold allows an extrapolation to be made.

   d) Total value in $ (or equivalent) of products sold containing >95% actual soy multiplied by the average weight of soy per $ (or equivalent) of each product, estimated based on a sample of products (i.e. where the soy content of a limited sample of products is known, calculate an average soy content (i.e. g) per $ (or equivalent) and apply this average to the total value of sales for all products that contain >95% actual soy).

NB: For methods B, C and D, where the number of products sold is used, if possible an additional amount should be added to account for any shrinkage or wastage (product loss during the process of production to sales – please refer to section 2.4.2 for more detail) . A % figure for the amount of soy wasted could be sourced from similar channels as above.

5.3   Tier 2 – Feed used in meat products sold

Definition:

"The soy used in feeds for meats such as beef, pork, chicken, duck and farmed fish".

Relevance:

Manufacturers		Soy used in feed for animals for meat bought for manufacture.
Retailers		Soy used in feed for animals for meat products sold in stores as >95% meat content. e.g. steaks, chicken breast, high end sausages, jerky etc.

Measurement challenges:

There are a number of factors that any business needs to be aware of when considering this tier:

— Most retailers and many manufacturers buy meat from slaughterhouses and there is typically little available data on the amount of soy that goes in to the animal feed at the farms that supply them. At early stages of measurement, businesses may need to use an average or generic conversion factor and then move on to sampling/surveying suppliers.

— Collecting actual data on soy content on feed often involves asking the meat suppliers to contact the farmers who then have to contact the feed producers. This takes time.

— Different meat producers will have different feed mixes used at the different life stages of the animal's life. This means that, in most cases, sales weights need to be split by supplier or averages need to be used.

— There is some debate whether to use the weight of the animal, the weight of the carcass or the meat removed from the animal. Typically businesses that have begun to measure their soy footprint have used the third option and the methodology detailed below reflects this option. In the development of this guidance it was noted that this was a potential issue and that the supply chain and operations of each business will be different (some may purchase the whole animal carcass and some just the meat) and that the methodology detailed below may not account for these differences. More research and testing will be needed going forward to ensure the methodology to measure soy from animal feed is refined to account for these differences. These changes will be reflected in further updates to this document and businesses need to ensure this issue is considered when developing their own methodology.

Guidance for data collection

The approach that could be taken to collecting data relating to embedded soy usage in this Tier has been outlined below and possible data sources are also listed.

Step 1: Obtain the total weight of meat purchased or sold in kg for each species.

Step 2: For each species, obtain the total weight of soy fed to each animal during its life per kg of meat yield from that animal.

Step 3: Calculate the total weight of soy used in raw meat sold in tonnes (i.e. Step 1 x Step 2 / 1000).

Suggested data sources

Step 1: Sources for weight of meat purchased or sold:

Typically this information can be sourced from an internal team (i.e. procurement team, sales team, finance team). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

  a) Total weight of meat purchased from suppliers;

  b) Weight and number of each individual product sold (including the amount procured but not sold (i.e. wasted);

  c) Average product weight and number of units sold; or

  d) Total value of products sold multiplied by the average weight per $ (or equivalent) of each product, estimated based on a sample of products.

Step 2: Sources for total soy used in feed for each species:

Once the weight of meat is known, it is important to understand how much soy was fed to the animal that meat came from during its lifetime. This can involving reaching two more steps back into the supply chain or using industry factors to enable estimates. Businesses can:

  1. Develop a questionnaire (or use a standard template) to gather data from suppliers relating to feed composition and consumption of their livestock: Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

  Option 1: kg of soy used in the lifespan of the animal per kg of meat (this is the total weight of soy fed to each animal during its life per kg of meat)

  OR

  Option 2:

    a) Proportion of soy in feed (% kg)

    b) Total feed consumed per animal during its lifetime (kg)

    c) Meat yield from animal (kg)

> Where data is unavailable or commercially sensitive (such as meat yield) then some assumptions or standard factors may need to be used (see option 2 and 3 below).
>
> 2. Use 'Black box industry' data created by meat suppliers submitting information (once) to a central repository, accessible only by industry players; such a repository is potentially being developed in 2016.
>
> 3. Use average conversion factors for the ratio of kg of soy consumed from feed for each animal (see Figure 2.
>
> ---
>
> *Note that where the number of products sold is used an additional amount should be added to account for any shrinkage or wastage (product loss during the process of production to sales – please refer to section 2.4.2 for more detail). A % figure for the amount of soy wasted could be sourced from similar channels as above.

Example

StoreCo is a retailer and sells fresh chicken and pork products in its stores.

Step 1

Mark, a member of the Procurement team, contacts the Finance team for a download of the sales data by SKU for all fresh and cooked pork and chicken products sold.   These represent more than 90% of his tier 2 sales. He can then calculates the total weight of each meat sold by multiplying the number of sales by the unit weight of each product.

Step 2

Mark then develops a questionnaire to send to StoreCo's chicken and pork suppliers, in order to obtain the amount of soy consumed per kg of each animal. Four of the five suppliers return the following data:

❶ The proportion of soy in feed for the pork and chicken per kg of feed (%)

❷ The total feed consumed per animal in kg over its life

❸ The weight of meat from each animal in kg

Based on the above, Mark calculates the amount of soy consumed per kg of each animal:

— For each supplier, for each species, total soy consumed per kg of each species = (❶x❷)/❸.

Mark then calculates an average 'soy intensity' for each kg of meat for each species. By multiplying the total quantity sold for each species by the average soy consumed by that species during its life, Mark is able to calculate a total soy footprint.

Mark may choose to report his boundaries in line with the calculation above, expand his boundaries when resource allows or extrapolate out to 100% of sales (although this is likely to overstate numbers).

Additional considerations

Mark wants to ensure the soy footprint he has calculated is as accurate as possible. He contacts the Waste Manager to understand the proportion of wasted meat products. The Waste Manager informs Mark that 3% of all raw meat products are wasted. Mark applies this percentage to the total soy footprint to take account of wastage, and increases the total soy footprint by 3%. If Mark had obtained the total amount of meats procured then the wastage figure would already have been accounted for.

5.4   Tier 3 – Eggs and dairy

Definition:

"The soy used in feeds for egg laying chickens/ducks, dairy cows, dairy goats etc. Includes products such as yoghurt, milkshakes etc. where more than 95% of the product is eggs and/or dairy".

Relevance:

Manufacturers		Soy used in feed for animals producing eggs and/or dairy products, and products containing more than 95% eggs and/or dairy, used in manufacturing products.
Retailers		Soy used in feed for animals producing eggs and dairy products, and products containing more than 95% eggs and/or dairy, sold in store.

Measurement challenges:

There are a number of factors that any business needs to be aware of when considering this tier:

— Most retailers and many manufacturers buy eggs and dairy from farms and there is typically little data on the amount of soy that goes in to the animal feed at the farms that supply them.
— Different egg and dairy producers will have different feed mixes and amounts of natural forage.
— For certain products, such as cheese, the amount of milk used per kg varies significantly depending on its type. Therefore you may find it more appropriate in some circumstances to request the quantities of milk used, or even the amount of feed used.

Guidance for data collection

The approach that could be taken to collecting data relating to soy in this Tier has been outlined below and possible data sources are also listed.

Step 1: Obtain the total quantity of each product purchased (in a suitable unit e.g. number of eggs, litres of milk, litres of yoghurt etc.) that fall under Tier 3.

Step 2: For each product category (e.g. eggs), obtain the total weight of soy fed to each animal per unit of each product category (e.g. amount of soy used to feed a cow for 1 litre of milk or amount of soy used to feed a chicken per egg) from suppliers.

Step 3: Calculate the total weight of soy used in feeds for egg laying chickens/ducks, dairy cows, dairy goats etc. for products sold in tonnes (i.e. Step 1 x Step 2 / 1000).

Suggested data sources

Step 1: Sources for total quantity (in a chosen unit) of each product purchased or sold:

Typically this information can be sourced from an internal team (i.e. procurement team, sales team, finance team). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

a) Total quantity of eggs, dairy and yoghurt purchased from suppliers or sold (in a chosen unit) (e.g. total number of eggs, litres of milk, kg of cheese etc.);

b) Weight and number of each individual product sold (including the number of products not sold (i.e. wasted);

c) Average quantity of eggs, dairy or yoghurt sold; or

d) Total value of products sold multiplied by the average quantity per \$ (or equivalent) of each product, estimated based on a sample of products.

Step 2: Sources for total weight of soy fed to each animal per unit of each product category:

Once the amount of product is known, it is important to understand how much soy was fed to the animal that the product came from during its lifetime. This can involving reaching two more steps back into the supply chain or using industry factors to enable estimates. Businesses can:

1. Develop a questionnaire (or use a standard template) to gather data from suppliers relating to feed composition and consumption of their livestock: Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

   Option 1: kg of soy used in the lifespan of the animal per unit of product (egg, litre of milk etc.)

   OR

   Option 2:

   a) Proportion of soy in feed (% kg)

   b) Total feed consumed per animal during its life (kg)

   c) Product yield from each animal (number of eggs per year or similar)

   If data is available for only some products within the tier, an extrapolation can then be used across any remaining similar products in the tier (i.e. data for one type of cheese can be extrapolated to cover other types of cheese). Where data is unavailable or commercially sensitive (such as product yield) then some assumptions or standard factors may need to be used (see option 2 and 3 below).

2. Use 'Black box industry' data created by egg and dairy suppliers submitting information (once) to a central repository, accessible only by industry players; such a repository is potentially being developed in 2016.

3. Use average conversion factors provided for the amount of soy consumed from feed for each animal, per kg of egg or milk etc. As yet, these are still to be published by research institutions.

Example

Supermarket Ltd is a retailer who sells eggs within their stores.

Step 1

Stephanie, a member of the Procurement team, contacts the Finance team for a download of the sales data by SKU for all eggs procured (in number of eggs). The Finance team tell her that 10 million eggs are procured in the year.

Step 2

Stephanie asks the two suppliers of eggs for information on:

❶ how much feed they give the chickens per year and;

❷ the % of soy that goes in to the chicken feed.

Supplier 1 who supplies 6 million eggs per year to Supermarket Ltd comes back with the data and Stephanie uses this to calculate the total weight of soy used for feed per egg. (❶x❷)/6,000,000

Supplier 2 did not come back with any data.

Step 3

To calculate the total soy footprint for eggs procured, Stephanie has to extrapolate an average soy input per egg from the available information then multiplies that by the total number of eggs purchased.   This is
(❶x❷)/6,000,000 * 10,000,000 / 6,000,000

> **User tip from Laura Jungmann, Specialist Product Sustainability, Ahold**
>
> *From what we've seen in practical use, the conversion factor for eggs is usually based on grams of soy per egg, which is why we asked our suppliers to identify the number of eggs sold to Albert Heijn annually, as opposed to the KG of eggs sold. There is some variation in the weight of each egg, which can of course sway the calculation of soy, but using the numbers of eggs is often more common in the suppliers than in KGs of eggs.*

5.5 Tier 4a – Meats in processed food products

Definition:

"The soy used in feeds for animals where the meat arrives as an ingredient within food products such as ready meals, sausages etc. where that particular meat is less than 95% of the product"

Relevance:

Manufacturers		Ingredients purchased for use in end products that contain meat and/or fish where one species does not make up more than 95% of the ingredient.
		CAUTION: Is it easy to confuse tier 2/3 and tier 4 for manufacturers depending on whether procurement or sales data is used. It is strongly recommended that manufactures consider using boundaries set at the point of procurement (e.g. meat bought for use in finished products such as ready meals counts as tier 2, not tier 4a)
Retailers		Products sold in store (normally own brand) containing meat where one species does not make up more than 95% of the product.

Measurement challenges:

There are a number of factors that any business needs to be aware of when considering this tier:

— This tier has all of the challenges of tier 2 in that the embedded soy in meat relies upon a knowledge of the supply chain for that meat.

— Additionally, businesses must understand how much meat goes into each of these products alongside the other ingredients. This is not always stated on the product recipes/ingredients that are immediately available to the supermarket.

— It is possible that products have ingredients that bring it into Tier 4a but also, if they contain eggs or dairy, they will fall into Tier 4b. Depending on the approach taken, it may be simplest to treat these separately or together.

Guidance for data collection

The approach that could be taken to collecting data relating to soy in this Tier has been outlined below and possible data sources are also listed.

Step 1: Identify which items fall within this category and obtain the total number of units sold per product as well as the weight of the products.

Step 2: Obtain the total weight of meat per species within each product purchased/sold[1] in kg. This may need to be on a sample basis such as the top sellers in each category.

Step 3: Calculate the total weight of meat per species sold in total present in kg (i.e. Step 1 x Step 2 = Step 3).

Step 4: For each species, obtain the total weight of soy fed to each animal during its life per kg of meat within the product. It may be possible to use data obtained from tier 2 calculations or survey suppliers.

Step 5: Calculate the total weight of soy used in meat within the products sold in tonnes (i.e. Step 3 x Step 4 / 1000).

Note that an additional amount should be added to account for any shrinkage or wastage where the number of products sold is used. A % figure for the amount of soy wasted could be applied, for example.

Suggested data sources

Step 1: Sources for total number of products purchased/sold:

Typically this information can be sourced from an internal team (i.e. sales, procurement or finance teams). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

   a) Number of each individual product purchased / sold (potentially factoring in wastage);

   b) Average number of units purchased / sold; or

   c) Total value of products purchased / sold in $ (or equivalent) and number of product types.

Step 2: Sources for total weight of meat purchased/sold within products:

Typically this information can be sourced from an internal team (i.e. procurement team). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

   a) Total weight of meat (by species) used within products from each supplier of product;

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[1] For tier 4a and 4b, it is recommended that manufacturers use boundaries that focus on products purchased for use and resale that contain meat/eggs/dairy as one of their ingredients rather than consider products sold (see section 4.5).

b) Percentage of the total product weight that constitutes meat, either as a total or individual percentages for each product purchased/sold;

c) Weight and composition of each individual product purchased/sold;

d) Average product weight and composition of units purchased/sold; or

e) Total value of products sold multiplied by the average weight per $ (or equivalent) of each product, estimated based on a sample of products.

Step 3: Sources for total soy used in feed for each species:

1. Supplier sourced. Suppliers may be able to provide the necessary information, this should be done above the other options (please see the Tier 2 Data Sources box for further details on obtaining data from suppliers).

2. Data obtained when developing Tier 2 measurements.

3. Use 'Black box industry' data created by meat suppliers submitting information (once) to a central repository, accessible only by industry players; such a repository is potentially being developed in 2016.

4. Use average conversion factors for the ratio of kg of soy consumed from feed for each animal (see Figure 2)

Example

Market Store is a retailer who sell a range of ready meals containing chicken and beef.

Step 1

Eric, a member of the Finance team, contacts the Procurement team for information relating to the meat content of each ready meal. The Procurement team provide Eric with a percentage composition and total weight of each ready meal in kg.

Step 2

Eric then downloads the sales data by SKU for each ready meal containing chicken and beef within Market Store retail units.

Step 3

Eric takes the top 5 best sellers in each of his ready meal ranges (these represent around 80% of all of his sales within each range). He looks up the recipe on the packet to get the percentage meat content and type, as well as the total weight of each ready meal in kg.   He then calculates the total weight of each species of meat within each of the ready meal ranges (i.e. % meat content * weight of each item * sales volume).

Step 4

Using the data from step 3, for the products sampled, Eric is able to calculate the amount of meat of each species used for every £ earned within each ready meal range. He can then extrapolate this out to the total earnings from each range giving a total weight of meat from each species sold within each range.   He can then sum all of this data together to get the total amount of meat used in each ready meal.

Step 5

Eric is unable to contact the suppliers of the ready meals directly to understand the soy content of feed user for rearing livestock. Instead, he consults a set of standard conversion factors for each type of meat used within the ready meal sold by Market Store.   He plans, in future, to speak to each of the suppliers of his top 5 ready meals in each range.

Step 6

Eric then calculates the total soy footprint of the ready meals by multiplying the standard conversion factors acquired in Step 4 by the total weight meat of within the ready meals.

Additional considerations

Eric speaks to the Waste Manager to understand the proportion of processed meals that are wasted by Market Store retail units. The Waste Manager explains that on average, 4% of processed meals are wasted of the total. Therefore, Eric increases the total soy footprint by 4%.

5.6   Tier 4b – Eggs and dairy in processed food products

Definition:

"The soy used in feed animals where the eggs and/or dairy ends up in food products such as cakes, smoothies, ice cream etc. where each individual component is less than 95% of the total product[2]"

Relevance:

Manufacturers		Ingredients purchased for use in end products that contain eggs and/or dairy where one egg or dairy ingredient does not make up more than 95% of the product.
		CAUTION: Is it easy to confuse tier 2/3 and tier 4 for manufacturers depending on whether procurement or sales data is used. It is strongly recommended that manufactures consider using boundaries set at the point of procurement (e.g. eggs bought for use in finished products such as cakes counts as tier 3, not tier 4b)
Retailers		Products sold in store (normally own brand) containing eggs and/or dairy where one egg or dairy ingredient does not make up more than 95% of the product.

Measurement challenges:

There are a number of factors that any business needs to be aware of when considering this tier:

— This tier has all of the challenges of tier 3 in that the embedded soy in eggs and dairy relies upon a knowledge of the supply chain for those products.

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[2] E.g. A product could theoretically be 46% egg and 46% milk and still fall into Tier 4b because those individual ingredients have very different soy usage in their supply chains. If a product was 50% meat and 50% cheese then the product could fall into tier 4a and 4b.

— Additionally, businesses must understand how much eggs/dairy goes into each of these products alongside the other ingredients. This is not always stated on the product recipes/ingredients that are immediately available to the supermarket.

— It is possible that products have ingredients that bring it into Tier 4b but also, if they contain meat, they will fall into Tier 4a. Depending on the approach taken, it may be simplest to treat these separately or together.

Guidance for data collection

The approach that could be taken to collecting data relating to soy in this Tier has been outlined below and possible data sources are also listed.

Step 1: Identify which items fall within this category and obtain the total number of units sold per product as well as the weight of the products.

Step 2: Obtain the total quantity of each egg/dairy product present within each unit purchased/sold [3] (e.g. number of eggs, litres of milk, litres of yoghurt etc.) This may need to be on a sample basis such as the top sellers in each category.

Step 3: Calculate the total quantity of egg/dairy products sold based on the total Tier 4b units sold (Step 1 x Step 2 = 3).

Step 4: For each egg/dairy product category (e.g. eggs, milk, etc.), obtain the total weight of soy fed to each animal per unit of each product category (e.g. amount of soy used to feed a chicken per egg or amount of soy used to feed a cow for 1 litre of milk). It may be possible to use data obtained from tier 3 calculations or survey suppliers.

Step 5: Calculate the total weight of soy used in feeds for egg laying chickens/ducks, dairy cows, dairy goats etc. for products sold in tonnes (i.e. Step 3 x Step 4 / 1000).

Note that an additional amount should be added to account for any shrinkage or wastage where the number of products sold is used. A % figure for the amount of soy wasted could be applied, for example.

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[3] For tier 4a and 4b, it is recommended that manufacturers use boundaries that focus on products purchased for use and resale that contain meat/eggs/dairy as one of their ingredients rather than consider products sold (see section 4.5)

Suggested data sources

Step 1: Sources for total number of product (in chosen unit) purchased / sold within products containing egg/dairy:

Typically this information can be sourced from an internal team (i.e. sales, procurement or finance teams). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

   a) Number of each individual product purchased / sold (potentially factoring in wastage);

   b) Average number of purchased /units sold; or

   c) Total value of products purchased / sold in $ (or equivalent) and number of product types.

Step 2: Sources for total quantity of product purchased / sold within products:

Typically this information can be sourced from an internal team (i.e. procurement team). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

   a) Total weight of eggs/dairy used within products from each supplier of product;

   b) Percentage of the total product weight that constitutes egg/dairy, either as a total or individual percentages for each product sold/ingredient used;

   c) Weight and composition of each individual item;

   d) Average product weight and composition of units purchased / sold; or

   e) Total value of products purchased/sold multiplied by the average weight per $ (or equivalent) of each product, estimated based on a sample of products.

Step 3: Sources for total soy used in feed for each species:

1. Supplier sourced. Suppliers may be able to provide the necessary information, this should be done above the other options (please see the Tier 2 Data Sources box for further details on obtaining data from suppliers).

2. Use the data sourced for products within Tier 3 and then apply this information to products within Tier 4b.

3. Use 'Black box industry' data created by meat suppliers submitting information (once) to a central repository, accessible only by industry players; such a repository is potentially being developed in 2016.

4. Use average conversion factors for the ratio of kg of soy consumed from feed for each animal (see Figure 2).

Example

Snack Co is a manufacturer who makes a range of flavoured Mexican corn chips alongside many other products. These corn chips use a series of flavoured powders which are produced by a third party. These represent a small proportion of revenue but Laura, the sustainability manager, has already calculated the soy footprint from other products and wants to include this line as well.

Step 1

Laura speaks to the production team to determine how much of the flavouring is used in each product unit based on the recipe. They are also able to tell her which of the flavourings, for which products, contain cheese and eggs based on the allergen listings for each product.

Step 2

Laura speaks to the supplier of flavourings for this product. They are able to tell her the percentage of each flavouring that is egg and the percentage that is cheese.

Step 3

Laura is now able to calculate the total amount of eggs and cheese that is purchased: She takes the weight of each consignment of flavouring delivered (using the supply chain team's data), split it by flavour type and then applies the percentage contents provided by the supplier in step 2.

Step 4

She now needs to multiply this total weight of eggs and dairy by the amount of soy needed to feed animals to produce each unit of product. Her third party supplier is unable to supply this data. There are currently no public factors for making this conversion.

Step 5

Laura determines that the market is not yet mature enough to provide this data and so updates her measurement boundaries to exclude this product line and plans to include it next year when more public data is available. She does recognise the product line is immaterial but requests the third party supplier to help establish conversations with their suppliers to determine where the feed for the egg and dairy suppliers come from so she can test if it is deforestation free.

5.7   Tier 5 – Sundry embedded soy and soy derivatives

Definition:

This is all other soy or its derivatives that may be in the supply chain including lecithin in chocolate, methyl soyate used in some cleaning products, soybean oil in personal care or cosmetic products and hydrolysed soy protein used in some processed foods. This could also include soy used to rear cows for leather, gelatine etc.

Relevance:

Manufacturers		Soy derivatives or soy used in animal by-products purchased for use in production.
Retailers		Soy derivatives or soy used in animal by-products used in products, usually own brand, sold in store.

Measurement challenges:

There are a number of factors that any business needs to be aware of when considering this tier:

— This is typically one of the most difficult and, at this stage, most under-researched areas of calculating soy footprints based on previous discussions with a number of the CGF member companies.

— Similar calculation methods to those in tiers 4a and 4b can be used in tier 5 to calculate the amount of a soy derivative that is within a product. However, conversations are needed with chemists or producers of the derivative to determine the weight of soy required to produce one unit of the derivative.

— It is also important to determine if the derivative is a by-product or a pure product and what happens to the rest of the soy product that is used as this may present a risk of double counting.

— The methods of calculating soy of products within this tier are emerging. Products such as leather and gelatine are potential sources of soy, but unlikely to be material for most consumer goods businesses. It is up to each business to determine if this is so.

— Note that the embedded soy in this tier is not currently calculated by most companies because of the data challenges and because it is usually expected to be immaterial.

Tier 5 can be further split into soy derivatives and animal by-products. The following sections contains specific guidance for each.

5.7.1 Specific guidance for soy derivatives

Guidance for data collection - Soy derivatives

Below options are provided for calculating soy use from soy derivatives used in products.

Step 1: Identify which items fall within this category and obtain the total number of units sold per product.

Step 2: Obtain the weight of soy derivative per product sold.

Step 3: Calculate the total soy derivative for all products sold in tonnes (Step 1 x Step 2 / 1000).

Step 4: Calculate the total soy footprint based on the total soy derivative in tonnes.

Suggested data sources - Soy derivatives

Step 1: Sources for total number of products purchased/sold containing soy derivative:

Typically this information can be sourced from an internal team (i.e. sales, finance or procurement teams). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

a) *For manufacturers, most should be able to gather data on the quantity of each soy derivative purchased for use in manufacturing (therefore being able to skip steps 2 and 3) unless that soy derivative is itself within a product purchased by the manufacturer for use in production, in which case it must follow the rest of steps 1, 2 and 3 to determine the soy footprint.*

b) Number of each individual product purchased / sold (including the number of products not purchased (i.e. wasted));

c) Average number of units purchased / sold; or

d) Total value of products purchased / sold in $ (or equivalent) and number of product types.

Step 2: Sources for total weight of soy derivative per product purchased/sold:

Typically this information can be sourced from an internal team (i.e. procurement team). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

a) Total weight of the soy derivative, either as a total or individual quantities for each product purchased, often available from suppliers;

b) Percentage of the total product weight that contains soy derivative, either as a total or individual percentages for each product sold in addition to weight of each product purchased;

c) Weight and composition of each individual product sold;

d) Average product weight and composition of products purchased; or

e) Total value of products sold multiplied by the average weight per $ (or equivalent) of each product, estimated based on a sample of products.

Step 3: Sources and suggestions for converting soy derivative to soy content.

1. Supplier sourced. Suppliers may be able to provide the necessary information, this should be done above the other options (please see the Tier 2 Data Sources box for further details on obtaining data from suppliers).

2. Some general factors can be used. As examples, we have provided some details below although each business should test this against their own circumstances and specific uses.

Calculations for determining the soy footprint of products containing soy derivative vary according to the specific soy derivative used, as outlined below. It should be noted that this area of calculating soy footprints is under-researched and the guidance listed within this document is based on available publications and knowledge.

a) Soybean lecithin – lecithin contains 35% soy bean oil. Where lecithin is used in a Tier 5 product, 35% of the total weight of lecithin content is equivalent to the soy content (i.e. where 5g of lecithin has been used, this equates to 1.75g soy bean oil)[4].

b) Methyl soyate – the content of soy within methyl soyate depends upon the specific conditions under which the methyl soyate was manufactured; on average, soy content of methyl soyate is approximately 10%. It is expected this information should be easily sourced from suppliers and manufacturers.[5]

c) Soy contained within personal care products - this includes soybean oil (i.e. glycine soya) and other soybean oil derivatives (such as hydrogenated soybean oil, glycerides and soy acid). These elements are used in conjunction with other ingredients when manufacturing personal care products. It is expected that suppliers and manufacturers will be able to source the proportion (and type) of soybean oil derivative used within their products.[6]

d) Hydrolysed soy protein – a derivative of soy protein that has been treated and used as a flavour enhancer in food products. It is expected that manufactures and suppliers would be able to provide information on the quantity of hydrolysed soy protein within products.[7]

5.7.2   Specific guidance for animal by-products

Guidance for data collection (Animal by-products)

Data collation guidance for Soy used to produce animal derived by-products such as gelatine and leather.

Step 1: Identify which items fall within this category and obtain the total number of units sold per product as well as the weight of the products.

Step 2: Obtain the total weight of animal by-product used within each product in kg (i.e. weight of gelatine within product, weight of leather within product).

[4] Source: Consumption of Soybean Lecithin, Schofield, 1981.

[5] Source: Soybean oil methyl esters preparation using NaX zeolites loaded with KOH as a heterogeneous catalyst, Xie et al., 2007; Biodiesel Production via Transesterification of Soybean Oil Using Acid Catalyst in CO2 Expanded Methanol Liquids, Ma et al., 2012

[6] Source: http://cosmeticsinfo.org/ingredient/glycine-soja-soybean-oil-and-related-ingredients

[7] Source: http://www.livestrong.com/article/467219-what-is-hydrolized-soy-protein/

Step 3: Obtain the total weight of animal by-products purchased within products in kg per by-product type. (Step 1 X Step 2).

Step 4: Calculate the total weight of soy used in the feed to produce each by-product by using see Figure 2). State this total in tonnes. (Step 3 X Step 4)/1000.

This is a broad assumption as specific understanding is still being developed. A lot depends on whether the product is a by-product, a co-product, a waste product or the primary product. This will be refined in later versions.

Suggested data sources (Animal by-products)

Step 1: Sources for total number of products purchased/sold containing animal by-products:

Typically this information can be sourced from an internal team (i.e. sales, finance or procurement teams). Potential data is likely to be provided in the following forms, listed in order of expected accuracy:

a) *For manufacturers, most should be able to gather data on the quantity of each animal by-product purchased for use in manufacturing (therefore being able to skip steps 2 and 3) unless that soy derivative is itself within a product purchased by the manufacturer for use in production, in which case it must follow the rest of steps 1, 2 and 3 to determine the soy footprint.*

b) Number of each individual product sold (including the number of products not sold (i.e. wasted));

c) Average number of units sold; or

d) Total value of products sold in $ (or equivalent) and number of product types.

Step 2: Sources for total weight of animal by-products used within products sold:

Typically this information can be sourced from an internal team (i.e. procurement team). Potential data received or requested, listed in order of expected accuracy:

a) Total weight of the animal by-product, either as a total or individual quantities for each product purchased / sold;

b) Percentage of the total product weight that contains animal by-product, either as a total or individual percentages for each product sold in addition to weight of each product purchased / sold;

c) Weight and composition of each individual product purchased / sold;

d) Average weight and composition of products purchased / sold; or

e) Total value of products purchased / sold multiplied by the average weight per $ (or equivalent) of each product, estimated based on a sample of products.

6   Reporting and next steps on soy

6.1   Reporting soy footprints to stakeholders

As part of the annual reporting processes of a business (such as CR Reporting, Annual Reporting or reporting to the CGF), it should consider when and how to implement mechanisms to allow reporting of soy consumption data to both internal and external stakeholders. We have already seen examples of NGO requests by NGOs, such as WWF, and planned requests by Governments such as those in the Netherlands.

Reporting soy footprints to stakeholders should consider including the following information:

— The boundaries and timeframe of the soy footprint;

— Total annual soy consumption;

— Where possible, total annual soy consumption from sustainable sources; and

— Details of any actions, targets and plans for the business to procure soy from sustainable sources.

(Note that where a business is reporting to the CGF, it is likely to be requested using a template document; more information on this process will be communicated in 2016).

6.2   Externally reporting on soy

Whilst most businesses are likely to focus on internally reporting of soy as a first step, businesses may wish to begin externally reporting on their soy consumption and plans to procure from sustainable sources. Increasing transparency with regards to these activities and data helps businesses to engage with wider stakeholder groups and gain increased credibility on the soy and deforestation agenda. Being transparent about a business' current impacts and plans to improve can help to increase credibility and tends to be looked on more favourably than not addressing the issue publically at all.

There are a number of options a business could take to begin to report externally. In the first instance, a business who does not wish to begin disclosing hard data could choose to disclose a narrative of the processes and activities it is taking to begin to measure their impact in the soy market in addition to any ambitions going forward. Businesses are then encouraged to begin disclosing data such as the information listed in section 6.1.

The Soy Measurement Ladder guidance document published by the CGF includes a suggested standard graphic that can be used by internal and external stakeholders to bring consistency to reporting across the industry.

6.3   Beyond initial reporting on soy

Once a business has begun to measure and, in some instances, report on its soy consumption, there are a number of next steps that should be considered in order to realise the CGF's goal on deforestation relating to soy consumption. These factors include the following:

— **Determining whether a business is using sustainable soy.** A business should attempt to identify the most material areas of its soy consumption based on the initial data produced. Within that, it should identify which elements of soy usage may present an increased risk of deforestation which are already sourcing sustainable soy. For more information on the tracing and sourcing of sustainable soy please refer to Section 2.4 which provides a list of further references on this.

— **Procuring certified and/or sustainable soy.** This is still very much a subject of great debate and more information will be made available on this subject going forward in a separate document from the CGF however this would be the next step once a business has measured its use of soy through its supply chain and identified any existing use of sustainable soy.

— **Obtaining internal or external assurance over measured soy consumption data.** In the early stages of developing an approach to measurement, gaining internal assurance can help identify areas to improve

accuracy in an efficient way, learn good practices from elsewhere and raise the profile of the initiative internally. As the approach matures, external assurance can help a business to gain comfort over the data being reported and demonstrate credibility to stakeholders.

6.4   Final word from the CGF

This guidance document and the soy agenda are in an evolutionary state and as such there are still a number of processes and next steps to be agreed and decided going forward for the CGF and its membership. More information on this process and next steps will be provided to members in 2016 through communications published by the CGF.

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General Mills	Nestle	The Procter & Gamble Company
Henkel	PepsiCo	Unilever
Johnson & Johnson	Royal Ahold	Walmart
Kellogg Company		

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