

Who's profiting from Brazilian soy?

An analysis of the Dutch soy supply chain

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About this report

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Summary

The Netherlands is a key European importer of soy to the European Union, both for own use and for re-exports to other European countries. In 2018, around 47 percent of these imports are accounted for by Brazilian soy, while the U.S. supplied a share of around 39 percent. Other origins, for example Argentina, Paraguay, or China, accounted for shares of 5 percent or less. The expanding cultivation of soybeans in Brazil is seen as one of the major drivers of deforestation, directly and indirectly leading to largescale destruction of valuable ecosystems and release of GHG emissions.

On the Dutch market, the use of soymeal as an important source of high-quality protein in livestock feed for meat, dairy and egg production is the major application of soy. In total, around 2 million tonnes of soymeal as well as smaller amounts of soybeans and soybean oil were consumed on the Dutch market in 2018. Soymeal accounted for around 85 percent of the total volume of soy products consumed in the Netherlands. Soybean oil is used in food, feed, industrial processes, and biodiesel. A small share of soybeans is used in animal feed. Products for human consumption derived from uncrushed beans are estimated to account for less than 6 percent of the total soybean consumption.

Of the 2 million tonnes of soymeal used in the Dutch livestock production sector in 2018, an estimated 1 million tonnes were sourced from Brazil. Poultry meat (29 percent), pork (27 percent) and dairy production (23 percent) account for the largest shares of Brazilian soymeal consumption.

This research analyses the role of Brazilian soy in the overall domestic soy use on the Dutch market, and aims to estimate the value and profit generated from it by a selection of key industry stakeholders at different levels of the supply chain – from import and crush to animal feed to livestock product processing and eventually retailing. While the overall lack of transparency in the supply chains means that these calculations must be based on estimates of soy volumes processed and embedded in products, the results for 2017 and 2018 show that some sectors are profiting much more than others.

The analysis of key stakeholders shows that agri-commodity traders account for a relatively small share (3-5 percent) of the total gross profit benefits in the analysed group due to their limited value adding. The soy crushers and refiners show a volatile development (4-6 percent share) as they compete with counterparts in soy producing countries. The egg producers and packers also see relatively small benefits (2-3 percent of the total) as these are comparatively small companies operating in a competitive environment with little value-adding.

Dairy companies appear in the middle of the field (12 percent). Animal feed producers (19 percent in 2017/18) and slaughterhouses (22-24 percent) show higher shares in the pool of gross profit benefits. The outcomes for slaughterhouses are positively impacted by their large size based on the strong export orientation of the sector.

The sector benefitting most from the gross profit pool of the processing of Brazilian soy in the Netherlands are the food retailers (33-35 percent of the total). This sector is dominated by a small group of large players, where two retailers controlled 54 percent of the market in 2018. Their strong negotiation position enables them to achieve comparatively high margins on perishable products such as meat and dairy, which in turn have high shares of embedded soy.

Samenvatting

Nederland is een belangrijke Europese importeur van soja naar de Europese Unie, zowel voor eigen gebruik als voor wederuitvoer naar andere Europese landen. In 2018 was ongeveer 47 procent van deze invoer voor rekening van Braziliaanse soja, terwijl de Verenigde Staten een aandeel van ongeveer 39 procent leverden. Andere origines, zoals Argentinië, Paraguay of China, waren goed voor aandelen van 5 procent of minder. De groeiende teelt van sojabonen in Brazilië wordt gezien als een van de belangrijkste oorzaken van ontbossing, wat direct en indirect leidt tot grootschalige vernietiging van waardevolle ecosystemen en uitstoot van broeikasgassen.

Op de Nederlandse markt is het gebruik van sojaschroot als belangrijke bron van hoogwaardige eiwitten in mengvoeder voor vlees-, zuivel- en eierproductie de belangrijkste toepassing van soja. In totaal zijn in 2018 in Nederland circa 2 miljoen ton sojaschroot en kleinere hoeveelheden sojabonen en sojaolie geconsumeerd. Sojaschroot was goed voor ongeveer 85 procent van het totale volume aan sojaproducten dat in Nederland werd geconsumeerd. Sojaolie wordt gebruikt in voedsel, diervoeder, industriële processen en biodiesel. Een klein deel van de sojabonen wordt gebruikt in diervoeder. Producten voor menselijke consumptie afkomstig van niet-geplette bonen zijn naar schatting goed voor minder dan 6 procent van de totale consumptie van sojabonen.

Van de 2 miljoen ton sojaschroot die in 2018 in de Nederlandse veehouderijsector werd gebruikt, kwam naar schatting 1 miljoen ton uit Brazilië. Pluimveevlees (29 procent), varkensvlees (27 procent) en zuivelproductie (23 procent) nemen het grootste deel van de Braziliaanse consumptie van sojaschroot voor hun rekening.

Dit onderzoek analyseert de rol van Braziliaanse soja in het totale binnenlandse sojagebruik op de Nederlandse markt en heeft tot doel de waarde en winst te schatten die het genereert voor belangrijke spelers in de industrie op verschillende niveaus van de toeleveringsketen - van import en crush tot diervoeder tot dierlijk product en uiteindelijk detailhandel. Hoewel het algehele gebrek aan transparantie in de toeleveringsketens betekent dat deze berekeningen gebaseerd moeten worden op schattingen van sojavolumes die verwerkt en 'ingebod' zijn in producten, tonen de resultaten aan dat sommige sectoren veel meer profiteren dan andere.

Uit de analyse van de leidende bedrijven blijkt dat agro-commodity handelaren vanwege hun beperkte waarde-toevoeging een relatief klein aandeel (3-5 procent) van de totale brutowinsten in de geanalyseerde groep vertegenwoordigen. De soja-crushers en -raffinaderijen vertonen een volatiele ontwikkeling (4-6 procent aandeel) doordat ze concurreren met tegenhangers in sojaproducerende landen. De eierproducenten en -verpakkers zien ook relatief kleine voordelen (2-3 procent van het totaal). Deze relatief kleine bedrijven opereren in een competitieve omgeving met weinig waarde-toevoeging.

Zuivelbedrijven bezetten een midden-positie in de uitkomsten (12 procent). Diervoederproducenten (19 procent in 2017/18) en slachthuizen (22-24 procent) nemen een hoger aandeel in het totaal van brutowinsten voor hun rekening. De resultaten voor slachthuizen worden positief beïnvloed door hun grote omvang op basis van de sterke exportoriëntatie van de sector.

De sector die het meest profiteert van de totale brutowinst op de verwerking van Braziliaanse soja in Nederland zijn de supermarkten (33-35 procent van het totaal). Deze sector wordt gedomineerd door een kleine groep grote spelers, waar in 2018 twee supermarktketens 54 procent van de markt in handen hadden. Door hun sterke onderhandelingspositie behalen ze relatief hoge marges op verse producten als vlees en zuivel, die op hun beurt een hoog aandeel hebben van ingebedde soja.

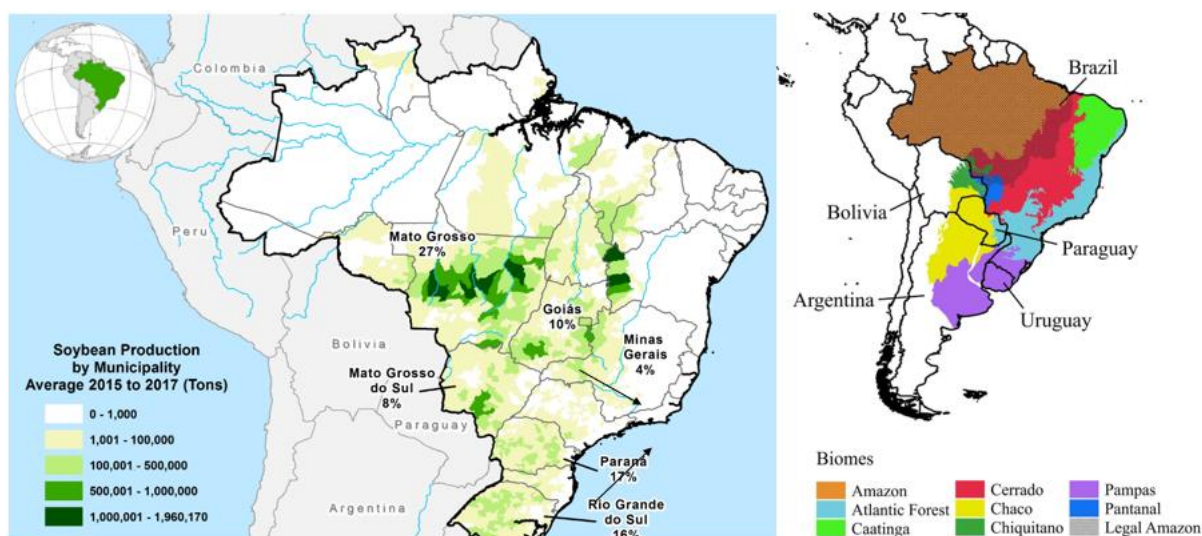
Introduction

Over the course of 30 years, the global soybean cultivation area more than doubled, from 58.4 million hectares in 1989/90 to 122.6 million hectares in 2019/20. During the same period, the Brazilian soybean production surface more than tripled, from 11.5 million hectares to 36.8 million hectares.¹ The rapid expansion of the soybean cultivation area in the last decades is closely connected with its role as an important source of easily digestible, high-quality protein for livestock farming as well as a source of vegetable oil. In 2019/20, soybean meal accounted for around 70 percent of the world's production of oilseed meal for the livestock industry.²

The growth of soybean cultivation area for protein and oil production especially in South America has been directly and indirectly linked to large-scale deforestation, going along with high biodiversity losses, emissions of greenhouse gases and disruptions of water systems. Soybean cultivation and cattle ranching have been and are key drivers of deforestation in tropical forests and savannahs of South America, leading to the conversion of vast areas of natural vegetation in valuable biomes.

The large deforestation footprint of expanding soybean cultivation area in Brazil during the last decades has been most pronounced in the Amazon and Cerrado Biomes. The Amazon Soy Moratorium, which was first agreed in 2006 and later indefinitely extended, helped to significantly reduce soy-driven deforestation in the Amazon biome. Cattle ranching is nowadays the most important driver of deforestation in the Amazon biome, and often also linked to fires.³ Meanwhile, the Brazilian Cerrado biome has seen increased deforestation for soy cultivation in recent years. The Cerrado is a forested savanna with high importance for biodiversity, carbon sequestration and hydrological systems. While the Forest Code requires farmers in the Amazon to conserve up to 80 percent, farmers are only required to set aside 20 to 35 percent of native vegetation in the Cerrado.⁴ Consequently, much of the Cerrado deforestation is legal under Brazilian environmental regulations. Only about 55 percent of native Cerrado vegetation remains at this point.⁵ Other South American biomes with high rates of soy-related deforestation include, but are not limited to the Gran Chaco biome in Argentina, Paraguay, Bolivia and Brazil, which is considered close to being irreversibly damaged, and the Brazilian Pantanal.⁶

Figure 1 Soy production in Brazil 2015 to 2017 and key biomes



Source: USDA Foreign Agriculture Service (n.d.), "Brazil: Crop production maps – soybeans", viewed in July 2020; Polain de Waroux, Y., Garrett, R.D., Graesser, J., Nolte, C., White, C. and E.F. Lambina (2019), "The Restructuring of South American Soy and Beef Production and Trade Under Changing Environmental Regulations", World Development, Vol. 121: 188-202.

The Netherlands is a key destination for soy imports, for its own industries as well as further distribution within the EU. With 47 percent of 2018 imports (soybean equivalents), Brazil is the most important origin for soy imports to the Netherlands. The main goal of this research is to identify key players in the supply chain of Brazilian soy to the Netherlands, and to understand which companies are profiting the most from this trade.

While there is broad recognition among industry stakeholders in the Netherlands that soy production is one of the major deforestation drivers globally, sustainability efforts of supply chain actors still focus mostly on Roundtable on Responsible Soy (RTRS) credit purchases. What this means for the sustainability status of the soy processed and used in the production of livestock products is outside the scope of this research.

A summary of the findings of this report can be found on the first pages of this report.

1

Methodology

The objective of this research is to investigate which companies in the Dutch soy supply chain are profiting the most from the soy trade between Brazil and the Netherlands.

1.1 Scope

The research focussed on the key industry sectors on the Dutch market with exposure to the supply of Brazilian soy. Data availability differed for the various supply chain stages covered in the report. Global production and trade figures for soy are accessible up to 2019. However, company-related information is in most cases only available up to 2018. For this reason, the analysis of key stakeholders and the money trail connected to Brazilian soy is focussing on the years 2017 and 2018.

1.2 Definitions

The following terms and definitions are used in the analysis:

- **Soy:** is used as a general term for soybeans and the products resulting from soybean crushing: soymeal and soybean oil. The protein of the meal content differs depending on the growing region and whether the hulls are included in the resulting soymeal (44% protein meal) or kept separate (48 percent protein meal ('hi-pro')). The crushing result can vary between 73 percent for high-pro meal and 80 percent for low-pro meal.⁷ Based on this range, an average crushing result of 78.5 percent soymeal and 18.5 percent soybean oil is applied, with the remainder being hulls and waste.
- **Soybean equivalents:** The crushing ratio is also applied in calculating soybean equivalents, meaning that 1 tonne of soymeal equals 1.27 tonnes of soybeans required for its production.
- **Embedded soy:** in the Netherlands, soy is largely used in the form of soymeal in compound feeds consumed in different livestock sectors. The term 'embedded soy' is used to describe the soy needed for the production, trade, and consumption of livestock products from animals raised on soy-containing compound feeds. While the soy is not physically present in the final livestock product, it has been used for its production.
- **Deforestation:** deforestation is defined as the loss of natural forest due to conversion to agriculture or other non-forest land use; conversion to a plantation forest; or severe and sustained degradation of forested land. Furthermore, the concept of zero deforestation or deforestation-free in a commodity supply chain refers to a commodity whose cultivation took place on land where natural forest was neither illegally *nor* legally deforested after a certain cut-off date.

1.3 Supply chain & market research

The supply chain research to identify the flow of Brazilian soy in the Dutch market took a multi-step approach:

1. *Net volume of soybeans and derived products imported to and processed in the Netherlands:* This calculation considered soybean, soymeal, and soybean oil imports to and re-exports from

the Netherlands, including the volumes of soybeans crushed domestically. Data was derived from statistical databases and sector-specific publications. The resulting net available soymeal was 100 percent assigned to the different key livestock sectors since there are no other substantial applications for it. Soybean oil is consumed in smaller quantities, and potential application areas differ widely. This makes it difficult to ascertain exposure of individual market players. The fact that most soy imports from South America consist of GM-soy makes it less likely that the soybean oil resulting from domestic crushing is used in food products for the Dutch market as this would require labelling under EU regulations.

The leading importers of soy to the Netherlands also play an important role in imports to other EU countries. While considerable shares of Dutch soy imports are either immediately transhipped, or re-exported after crushing, no company-level figures on volumes sold on the Dutch market are available. Therefore, the revenue share of the Dutch activities of the companies in question as reported in financial filings was used as a proxy. Where no financial report was available an estimate was made based on their business activity description.

2. *Share of Brazilian soy in this volume*: once a commodity has entered the European Union (EU), it is no longer possible to trace it back to its origin based on publicly available sources. Instead the relative share of Brazilian soy in imports was applied to the overall result of crushing and net consumption of soy products in the Netherlands.
3. *Soymeal consumption per livestock sector*: Average shares of soymeal in compound feed production were applied to the feed volumes produced for the Dutch livestock production as reported by the animal feed industry. This allowed to distribute the available soymeal volume across the relevant livestock sectors. The weighted average soymeal content in compound feeds consumed by Dutch livestock is 14.1 percent.
4. *Average soymeal content in livestock products*: based on average compound feed composition, annual domestic compound feed consumption and livestock product production, the average soymeal content per unit of product (gr/kg or gr/egg) was calculated for the following key market sectors:
 - Pigs
 - Broiler chickens
 - Layers
 - Beef cattle
 - Dairy cattle.
5. *Top sector actors*: The data availability for companies operating in the different market sectors with high relevance in the soy supply chain is very constrained. Many of the companies are privately owned with limited reporting obligations. Detailed data on production and sales volumes is often treated as confidential business information. This data gap was observed for players along the different stages of the chain. Top actors per supply chain sector were identified by combining data drawn from company publications, market research and media articles. The presented data must be regarded as approximates. A certain margin of error is likely as assumptions were made by combining data from distinct sources, often covering different years.
6. *Exposure to Brazilian soy*: Based on the estimated share of Brazilian soy in the net domestic consumption, the exposure of individual top companies in the different supply chain sectors was calculated. The fact that the Netherlands is a leading exporter of livestock products - and consequently exports also considerable volumes of embedded soy - is not separately considered as the sustainability status of these products remains the responsibility of the producing companies.

1.4 Methodology for calculating the money trail in value and profits

For the identified key players in the sub-sectors trading, crushing, animal feed, livestock farming, dairy, slaughterhouses, egg producers and food retail/wholesale, estimates of turnover and profit linked to the Brazilian soy volumes have been calculated. These calculations draw on the companies' annual reports and regional numbers given in these reports.

For each player, the volume of the processed or embedded Brazilian soy used in its business is the starting point for the calculations. This approach means that the processed soy has a different price in each level of the chain:

- There is a price elevation of the Brazilian soy from importer/trader to processor in animal feed, and subsequently to farmer, livestock product producer and processor (slaughterhouse, dairy company, egg producers). The logic is that every part of the chain is adding value to the specific volume of Brazilian soy.
- For the step from slaughterhouse, milk processing and egg packing company to food retail and wholesale, the starting point consists of data on perishable sales in Ahold, combined with IRI data,ⁱ market shares in retail, gross profit margins and operating margins in the Netherlands. As a listed company, Ahold provides most data transparency and is a representative example due to its large market share on the Dutch market. The sanity check with IRI data shows that the applied division is based on a realistic estimate.
- The elevation premiums vary per step in the chain. They are relatively limited in a commodity type environment (trading) with heavy competition (slaughterhouse) and are larger in consolidated parts (animal feed) of the market with less competition.

The calculations present three value levels for the years 2017 and 2018:

- The value of the processed or embedded Brazilian soy, meaning cost price plus gross margin/profit (= net sales, but only for the embedded soy).
- The gross profit value earned on this net sales value of processed/embedded Brazilian soy.
- The value of operating profit. This is the profit after all other costs, like personnel costs, depreciation, administration costs etc, earned on the net sales value of processed/embedded Brazilian soy.

This methodology guarantees that only the value or profit generated on the kilograms of Brazilian processed/embedded soy is presented; the numbers do not include the value or profit on the kilogram of (whole) meat, litre of milk or egg in which it is embedded. The value and the profit on the whole product are much higher.

ⁱ IRI is a retail market intelligence and analysis company (www.iriworldwide.com/nl-NL).

2

Brazilian soy imports

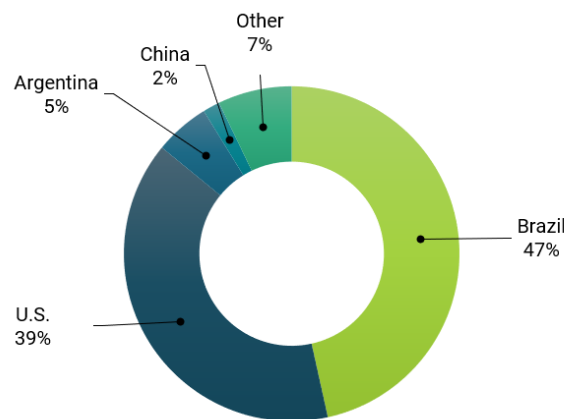
Brazil is the world's largest producer of soybeans. Key export markets are China and Europe. In Europe, the Netherlands acts as an entry and distribution hub for soy imports.

Brazil has seen a rapid growth in soybean cultivation area of 54 percent during the last 10 years, from around 24 million hectares in 2010 to 37 million hectares in 2019. At a similar pace, processing capacity as well as soy exports from Brazil have increased as well.⁸

A large share of the soybeans imported into the EU from various origins are crushed into soymeal (78.5 percent) and oil (18.5 percent). Nearly 100 percent of the soymeal is used in animal feed. Soybean oil is used in food, feed, industrial processes, and biodiesel. Small volumes of uncrushed beans ('full-fat soybeans') are also used in animal feed. The remaining uncrushed beans, a volume estimated to be below 6 percent of the total soybean volume, are used for human consumption.⁹

Within the European Union (EU), the Netherlands is the largest soy importer overall and the leading importer of Brazilian soy. In 2018, the Netherlands imported a total of 4.3 million tonnes of soybeans and 2.7 million tonnes of soymeal, of which Brazilian imports accounted for, respectively, 23 percent and 76 percent. The Brazilian soybean and soymeal imports to the Netherlands had a combined value of € 1.1 billion. Expressed in soybean equivalents, Brazil accounted for 47 percent of Dutch soy imports in 2018 (Figure 2).

Figure 2 **Origin of Dutch soy imports, 2018**



Note: Soybean equivalents.

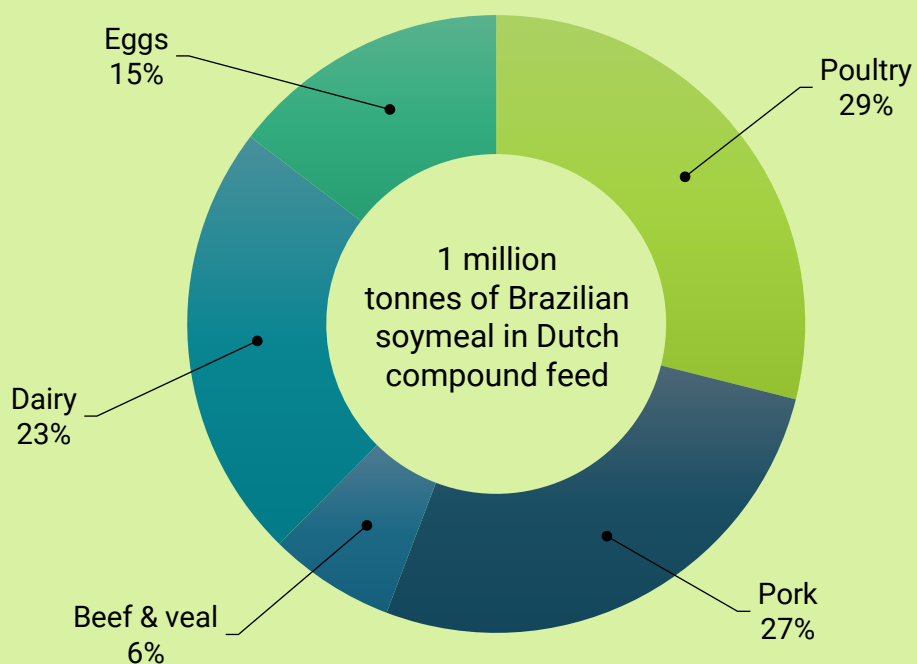
Source: Eurostat (2020), "EU trade since 1988 by HS2-HS4", viewed in June 2020.

Around two-thirds of the total available soy on the Dutch market is re-exported, either directly or after crushing.¹⁰ For these re-exports, the origin is no longer known from public sources. Based on the share of Brazilian soy in overall imports, it is estimated that around 1 million tonnes of Brazilian soymeal have been used by the Dutch downstream sectors in 2017 and 2018, as well as small volumes of soybeans and soybean oil. Based on the equivalent volume of soybeans required to produce the soymeal and the average yields in Brazil, this volume required a cultivation area of 380,000 to 400,000 ha.¹¹ This area equals almost one fourth of the agricultural land of the Netherlands.¹²

In 2018, around 2 million tonnes of soymeal were processed into compound feed in the Netherlands. Of this total, half originated from Brazil.

Around 44 percent of Brazilian soymeal were processed into feed for poultry meat and egg production, 27 percent for pork and 23 percent for dairy production.

Figure 3 Estimated distribution of Brazilian soymeal across livestock segments, 2018



3

Key actors in the Dutch soy supply chain

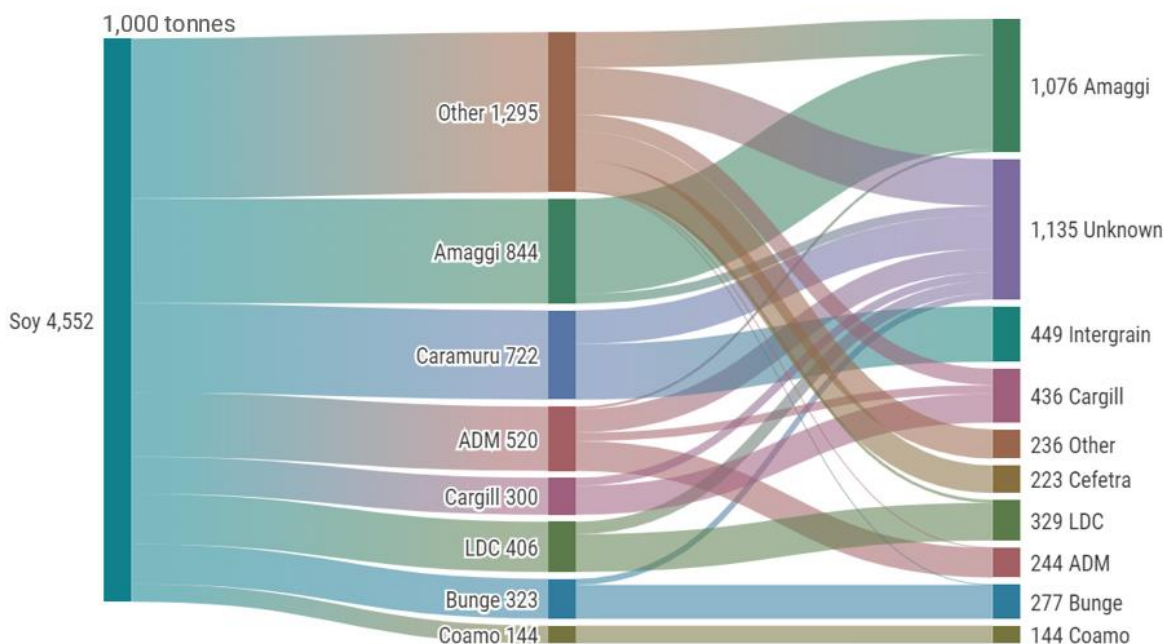
The Netherlands is the key entry point for soy exports to the European Union (EU), and the leading importer of Brazilian soy. Part of these imports are re-exported to other European countries, and a share is domestically consumed, especially by the expansive Dutch livestock industry. The following sections identify the key players at the different stages of the soy supply chain between Brazil and the Netherlands.

3.1 Soy traders

Data availability on the companies that are taking a leading role in the soy trade from Brazil to the Netherlands is very limited. Generally, commodity traders are rarely disclosing details on traded volumes, let alone broken down by origin or destination. Based on a variety of different sources, supply chain transparency initiative Trase.earth is attempting to fill this data gap; however, unknowns and insecurities remain. Figure 4 illustrates the key players at either side of the supply chain for the year 2018. There is some overlap between these two groups as well as with trading companies involved in immediate go-through trade, whereby the Dutch ports have a pure transshipment role. A sizable share of these volumes is likely going into re-export to other destinations.

Important traders include among others (subsidiaries of) Amaggi (Brazil), ADM (U.S.), Bunge (U.S.), Cargill (U.S.), Caramuru (Brazil) and Cefetra (Netherlands, part of BayWa Group, Germany).¹³

Figure 4 Soy flows from Brazil to the Netherlands, 2018 (Soybean equivalents)



Source: Trase.Earth (2020), *Brazil-Soy 2018*; Shipment data; own calculations; differences with Trase.earth due to soymeal conversion factor.

3.2 Soy crushers

Of the total volume of around 3 million tonnes of soybeans that enters the Netherlands on an annual basis, around three-quarters are crushed domestically into meal and oil, while most of the remaining quarter is exported to other European countries. The U.S. is the largest supplier of soybeans to the Netherlands. Most of the Brazilian soy shipped through the ports of Rotterdam and Amsterdam arrives in the form of soymeal.

Table 1 gives estimates for Brazilian soy handled by crushers Bunge and ADM in 2018. Cargill sold its oilseed crushing facility and part of the bulk terminal pier with associated transshipment installations to Bunge in 2017.¹⁴ Based on the relative share of Brazilian soybeans in total soybean imports, it is estimated that approximately 857 million and 706 million tonnes of Brazilian soybeans were crushed in the Netherlands in 2017 and 2018, respectively.

Table 1 Brazilian soy imports handled by crushers, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soybeans (1,000 tonnes) | Comments | Source |
|--------------|----------------------------|--|--|--------|
| Bunge | Unknown | n/a | • Acquired Cargill's oilseed crushing plant & part of bulk terminal in Amsterdam (2017). | 15 |
| ADM | Unknown | n/a | • Bulk terminal, crushing facility and refinery in Europoort. | 16 |
| Total | | 706 | | |

Source: own calculations, based on Eurostat (2020), Mielke Oilworld (2018) and shipment data for 2018.

3.3 Animal feed companies

The Dutch animal feed sector processed around 2.0 million tonnes of soymeal in 2018. Of this total, Brazilian soymeal accounted for an estimated 1.0 million tonnes.

In total, the Dutch animal feed industry produced around 14.9 million tonnes of compound feed in 2018.¹⁷ The market is fragmented, with a handful of large players with international operations accounting for a large production share, and many medium- and small-sized operators accounting for the remainder. ForFarmers, Royal de Heus, and Agrifirm account for more than half of the Dutch market (Table 2).

Table 2 Brazilian soymeal in compound feed production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|---------------|----------------------------|---|---|--------|
| ForFarmers | 30% | 316 | • No.1 feed company in Europe; • Key markets in BE, DE, NL, PL, UK; • NL sales compound feed >4 million tonnes. | 18 |
| Royal De Heus | 16% | 171 | • Expansion of international footprint; • Dutch feed market 34% of revenues. | 19 |
| Agrifirm | 10% | 106 | • Dutch feed market 41% of revenues. | 20 |
| Other | 44% | 406 | | |
| Total | | 1,000 | | |

Note: Brazilian soymeal volume estimated based on Dutch compound feed production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

About 20 percent of the market is divided between family business Fuite mengvoeders, Boerenbond Deurne and the cooperatives AgruniekRijnvallei and ABZ Diervoeding. The remaining part of the Dutch feed market is filled by more than fifty locally operating companies.²¹ This number is expected to further decline due to ongoing consolidation.²²

3.4 Livestock farming sector

The estimated 1.0 million tonnes of Brazilian soymeal processed into compound feed for the Dutch market in 2018 were fed to the livestock reared on Dutch farms.

The total number of farms in the Netherlands decreased considerably during the last decade, from 73,010 in 2009 to 53,230 in 2019.²³ During the same period, the average number of animals reared per farm increased across all livestock segments, except for young cattle for dairy. Table 3 shows the number of farms and animals in key livestock farming sectors in the Netherlands in 2009 and 2019.

Table 3 Livestock farms and animals in the Netherlands, 2009 and 2019

| 1,000 farms / animals | 2009 | | 2019 | |
|-------------------------------|--------------|----------------|--------------|----------------|
| | No. of farms | No. of animals | No. of farms | No. of animals |
| Livestock | | | | |
| Cattle, of which | 33.3 | 3,968 | 24.6 | 3,810 |
| Young cattle for dairy | 23.4 | 1,237 | 18.0 | 924 |
| Dairy cows | 20.3 | 1,489 | 16.3 | 1,578 |
| Veal calves | 2.1 | 894 | 1.7 | 1,065 |
| Young cattle for meat | 9.0 | 207 | 5.7 | 166 |
| Pigs ^a | 7.6 | 12,186 | 4.1 | 12,269 |
| Chickens, of which | 2.4 | 96,859 | 1.8 | 101,741 |
| Broiler chickens ^b | 0.9 | 50,219 | 0.9 | 55,847 |
| Layers ^b | 1.5 | 46,640 | 0.9 | 45,893 |

^aincl. piglets, breeding, and fattening pigs; ^bincl. parents;

Source: CBS (2020), "Landbouw; gewassen, dieren, grondgebruik en arbeid op nationaal niveau", viewed in June 2020.

3.5 Meat processors

Based on net sales, the meat- and dairy-processing industry are the largest sectors within the Dutch food industry, with shares of around 16 percent and 17 percent, respectively.²⁴ The Dutch meat, egg and dairy industries have a strong export orientation, serving markets throughout Europe and outside of it.

3.5.1 Pig slaughterhouses

In total, the Dutch pork sector consumed around 531,000 tonnes of soymeal in 2018, of which an estimated 271,000 tonnes originated from Brazil.

On an annual base, around 16 million pigs are slaughtered in the Netherlands.²⁵ While already an important exporter of pork, the sector has in recent years also profited from increasing Chinese demand, after domestic production there was hit by African Swine Fever. All bigger pig slaughterhouses have been approved for exports to China.²⁶ The top-3 companies control around 80 percent of the Dutch market (Table 4).²⁷ These producers supply the leading retailers like Albert Heijn, Jumbo, Superunie, Lidl, and Aldi.²⁸

Table 4 Embedded Brazilian soymeal in pork production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|------------------------|----------------------------|---|---|--------|
| Vion Food Group | 46% | 124 | <ul style="list-style-type: none"> Sites for pork & beef in NL & Germany; Boxtel by far largest pig slaughterhouse in NL. | 29 |
| Van Rooi Meat | 18% | 49 | <ul style="list-style-type: none"> Fully integrated site in Helmond. | 30 |
| Westfort Meat Products | 16% | 44 | <ul style="list-style-type: none"> 3 sites in NL. | 31 |
| Other | 20% | 53 | <ul style="list-style-type: none"> Compaxo, Gosschalk and Pali | 32 |
| Total | | 271 | | |

Note: Embedded Brazilian soymeal volume estimated based on Dutch pork production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

3.5.2 Poultry slaughterhouses

In total, the Dutch poultry meat sector consumed around 572,000 tonnes of soymeal in 2018, of which an estimated 292,000 tonnes originated from Brazil.

In total, around 620 million broilers were slaughtered in the Netherlands in 2018.³³ Detailed data on the production of individual companies is hardly available. Based on estimates, the top-3 broiler slaughterhouses accounted for almost two-thirds of slaughtering (Table 5).

Table 5 Embedded Brazilian soymeal in poultry production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|---------------------------------------|----------------------------|---|--|--------|
| Plukon Food Group | 22% | 64 | <ul style="list-style-type: none"> 2nd broiler producer Europe; 11 sites, of which 3 in NL. | 34 |
| Storteboom (2 Sisters Food Group, UK) | 20% | 59 | <ul style="list-style-type: none"> 2 sites in NL, 1 in Poland. | 35 |
| Remkes (YMBA, NL) | 20% | 58 | <ul style="list-style-type: none"> 2 sites (Remkes & GPS). | 36 |
| Other | 38% | 111 | | |
| Total | | 292 | | |

Note: Embedded Brazilian soymeal volume estimated based on Dutch poultry production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

3.5.3 Beef slaughterhouses

In total, the beef sector consumed around 132,000 tonnes of soymeal in 2018, of which an estimated 67,000 tonnes originated from Brazil.

In 2018, around 600,000 cows and 1.6 million calves were slaughtered in the Netherlands.³⁷ Part of veal production in the Netherlands is accounted for by bull calves from Germany. A large share of the produce is in turn exported to international markets.³⁸ The veal and beef meat sector is highly

concentrated, with just three companies accounting for more than 90 percent (Table 6). This is mostly due to the dominant role of VanDrie Group, the world’s largest integrated veal producer with activities from feed production to slaughter.³⁹ Vion, Gosschalk and Waddenvlees Dokkum are important actors in beef production.⁴⁰

Table 6 Embedded Brazilian soymeal in beef & veal production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|-----------------|----------------------------|---|---|--------|
| VanDrie Group | 53% | 32 | <ul style="list-style-type: none"> • Integrated producer of veal, beef via Ameco; • Global no. 1 in veal, calf feed & calf leather, 30% of EU calf slaughter; • Sites in NL, FR & BE • Largest privately-owned agri-business in NL. | 41 |
| Vion Food Group | 21% | 16 | <ul style="list-style-type: none"> • Pork & beef sites in NL & DE. • Global no. 7 beef producer. | 42 |
| Gosschalk | 20% | 15 | <ul style="list-style-type: none"> • Cattle & pig slaughterer. | 43 |
| Other | 6% | 5 | <ul style="list-style-type: none"> • Waddenvlees Dokkum & others | |
| Total | | 67 | | |

Note: Embedded Brazilian soymeal volume estimated based on Dutch beef & veal production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

3.6 Egg packers

In total, the Dutch egg production consumed around 291,000 tonnes of soymeal in 2018, of which an estimated 148,000 tonnes originated from Brazil.

Table 7 Embedded Brazilian soymeal in egg production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|------------------------|----------------------------|---|--|--------|
| Van Beek Group | 29% | 42 | <ul style="list-style-type: none"> • Contracted poultry farmers in NL, DE, BE. | 44 |
| Kwetters International | 19% | 28 | <ul style="list-style-type: none"> • Sourcing from farmers in NL & DE, in DE also own farms. | 45 |
| Interovo Egg Group | 11% | 16 | <ul style="list-style-type: none"> • Most eggs sourced from own farms; • Operations in NL, DE, BE, ES, AU, PL. | 46 |
| Eierhandel van Zetten | 10% | 16 | <ul style="list-style-type: none"> • Own farms in NL & DE, plus purchase from independent farms. | 47 |
| Global Food Group | 10% | 15 | <ul style="list-style-type: none"> • Liquid egg producer with 2 sites in NL; • Activities throughout Europe. | 48 |
| Other | 21% | 31 | | |
| Total | | 148 | | |

Note: Embedded Brazilian soymeal volume estimated based on Dutch egg production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

Annual egg production in the Netherlands reaches around 10.5 billion. The egg production chain involves various stages, including parent farms, day hatchers, rearing companies and laying hen holders. The eggs are delivered to egg packing stations and egg product manufacturers. Around 70 percent of eggs produced in the Netherlands are sold to consumers as table eggs and used in food service. The remaining 30 percent are turned into liquid or dried egg products for use in processed foods. Export is important in almost every link of the production chain, with Germany as a key trading partner.⁴⁹

Transparency of the egg production sector is low. Table 7 lists some of the large egg packing stations which handle a considerable share of the Dutch production. Some have own egg production, others source from egg producing farms.

3.7 Dairy companies

In total, the Dutch dairy sector consumed around 456,000 tonnes of soymeal in 2018, of which an estimated 232,000 tonnes originated from Brazil.

The Dutch dairy industry has a very international orientation, with Belgium, France, and Germany as the main markets within the EU. Furthermore, markets in Asia and the Middle East are of major importance. The Dutch milk supply decreased significantly in 2017 and 2018 due to the introduction of a phosphate reduction scheme and consequently shrinking dairy cow herds.⁵⁰ Key products into which the Dutch milk production is processed include cheese (55 percent), milk powder (15 percent), consumption milk (7 percent) and condensed milk (5 percent).⁵¹

Table 8 Embedded Brazilian soymeal in dairy production, 2018 (estimates)

| Company | Market share NL (estimate) | Volume Brazilian soymeal (1,000 tonnes) | Comments | Source |
|------------------------------------|----------------------------|---|---|--------|
| Friesland Campina | 43% | 100 | <ul style="list-style-type: none"> Cooperative, 17,413 members in NL, DE & BE. | 52 |
| Vreugdenhil Dairy Foods | 9% | 22 | <ul style="list-style-type: none"> Powdered milk producer; Sales around the world. | 53 |
| Royal A-Ware | 8% | 18 | <ul style="list-style-type: none"> Sites in NL & BE; Supplies Albert Heijn private label dairy products. | 54 |
| DOC Kaas | 6% | 13 | <ul style="list-style-type: none"> Cheese producing cooperative. | 55 |
| Bel Leerdammer (Bel Group, France) | 6% | 13 | <ul style="list-style-type: none"> Production of Leerdammer cheese; Marketing of Bel Group brands. | 56 |
| CONO Kaasmakers | 3% | 7 | <ul style="list-style-type: none"> Cooperative with 440 members; Cheese production; Milk supply to Nestlé & Ben&Jerry's. | 57 |
| Arla Foods | 2% | 4 | <ul style="list-style-type: none"> Part of Scandinavian dairy cooperative. | 58 |
| Other | 24% | 56 | <ul style="list-style-type: none"> E.g. Henri Willig, Nutricia, Rouveen, De Graafstroom. | |
| Total | | 232 | | |

Note: Market share estimated based on milk intake; Embedded Brazilian soymeal volume estimated based on Dutch dairy production, company shares, and average soymeal content in compound feeds. See Appendix 1 for details.

A significant share of the milk production is exported. The Netherlands accounts for 5 percent in world trade in milk products, which makes it the fifth largest dairy exporter in the world. Processing takes place in 53 dairy processing facilities operated by 25 companies.⁵⁹

Similar as in other livestock sectors, data availability on individual companies and their production volume is scarce. Table 8 lists some of the top companies in the sector and estimates for their market share, with cooperative FrieslandCampina as the clear leader.

3.8 Retailers

The Dutch grocery retail market is dominated by a small group of large players: Albert Heijn (Ahold Delhaize), Jumbo, Lidl (Schwarz Group, Germany), Plus and Aldi (Aldi Nord, Germany) accounted for a combined 77 percent of the market in 2018 (Figure 5). In the food service and wholesale sector, Sligro is the market leader with 25 percent of the Dutch market in 2018.⁶⁰

Figure 5 Market share supermarkets in the Netherlands, 2018



Source: Distrifood (n.d.) "Market shares: Market shares 2010-2019 IRI," online: <https://www.distrifood.nl/food-data/marktaandeelen>, viewed 5 May 2020.

Supermarkets are the most important sales channels for livestock products. Of the meat sales in the Netherlands in 2018, around 80 percent were sold in supermarkets, while 20 percent were sold by butchers and other specialised food stores.⁶¹ The meat sales share of supermarkets has increased in recent years, while the share of butchers and other specialised food stores has decreased.⁶² In turn, sales of livestock products (meat, dairy, eggs, fish) account for around one fourth of total sales and more than half of perishable sales of Dutch supermarkets (including hard discount).⁶³

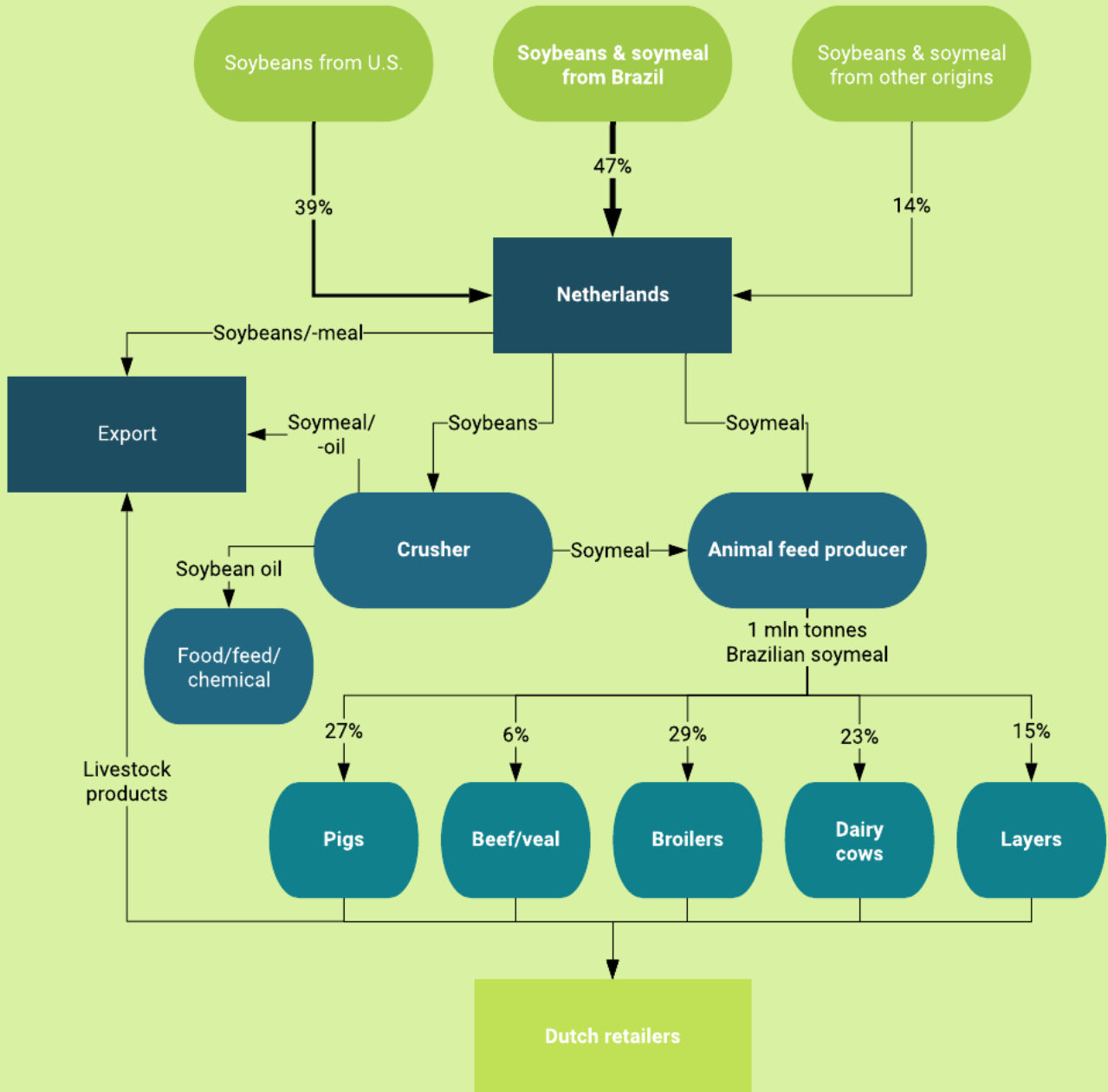
3.9 Other market sectors

In addition to the livestock sector, smaller volumes of soy are also used in other Dutch market sectors. These include the use of soybeans to produce food products, such as plant-based drinks and tofu. The soybean oil resulting from the crushing process is for example used as refined cooking oil, in margarines, dressings and for other food purposes. Since a large share of the Brazilian soy production originates from GM crops, for which the use in food products for human consumption requires labelling under EU -regulation,⁶⁴ it is likely that soybeans for food use are more often sourced from non-GM European or Asian production.

Smaller volumes of soybeans and soybean oil are also used in livestock feed. In addition, industrial and chemical applications of soybean oil include its use in biodiesel, soaps, and fatty acids. According to estimates, around 1.1 million tonnes of soybean oil have been used for biodiesel production in the EU in 2019.⁶⁵ For the Dutch market, only statistics on the feedstocks in domestic biodiesel consumption are available, where soybean oil plays a negligible role. For 2018, a

contribution of soybean oil of 0.2 percent to the total energy content of biodiesel consumed in the Netherlands that qualifies to be counted as renewable was reported for the first time in years. This share would equal a volume of approximately 856 tonnes, which can originate from domestic biodiesel production or imports from e.g. Argentina.⁶⁶ No data on feedstocks in Dutch biodiesel production, which totalled around 1.8 million tonnes in 2018, are published.⁶⁷

Figure 6 Simplified flow of Brazilian soy in the Netherlands



4

The Money trail

The various actors in the Dutch soy supply chain profit from this involvement. The following sections aim to estimate this money trail in the years 2017 and 2018, and to identify the players which profited most.

4.1 Value generated from Brazilian soy

Estimates on the value generated from Brazilian soy in the years 2017 and 2018 are summarized in Table 9. The context of these outcomes is explained in the following sections, with a focus on the gross profit generation, as clarified in the methodology in 1.4.

Table 9 Value generated on Brazilian soy by key supply chain actors in the Netherlands

| € million | 2017 | | | 2018 | | |
|--------------------------------|--------------|--------------|------------------|--------------|--------------|------------------|
| | Value | Gross profit | Operating profit | Value | Gross profit | Operating profit |
| Traders | | | | | | |
| Amaggi Europe | 91.1 | 0.8 | 0.3 | 126.0 | -0.3 | -0.6 |
| ADM | 43.6 | 7.0 | 3.5 | 10.9 | 1.1 | 0.4 |
| Bunge | 49.9 | 2.1 | -2.1 | 42.8 | 3.6 | 1.3 |
| Cargill | 29.9 | 1.4 | 0.6 | 27.4 | 2.0 | 1.1 |
| Cefetra | 57.3 | 0.2 | 0.1 | 33.5 | 0.4 | 0.2 |
| Intergrain | 4.4 | 0.8 | 0.3 | 3.1 | 0.7 | 0.2 |
| Total top-6 traders | 276.2 | 12.2 | 2.6 | 243.7 | 7.5 | 2.7 |
| Crushing – Bunge, ADM | | | | | | |
| Total crushing | 125.7 | 11.7 | 1.7 | 108.2 | 16.8 | 8.6 |
| Animal feed | | | | | | |
| ForFarmers | 137.4 | 27.3 | 8.4 | 147.4 | 28.5 | 8.8 |
| Royal De Heus | 73.1 | 13.5 | 3.4 | 78.5 | 14.2 | 3.4 |
| Agrifirm | 48.6 | 11.5 | 1.3 | 52.9 | 12.9 | 1.3 |
| Total top-3 animal feed | 259.0 | 52.4 | 13.1 | 278.9 | 55.6 | 13.6 |

| | 2017 | | | 2018 | | |
|------------------------------------|--------------|--------------|------------------|--------------|--------------|------------------|
| € million | Value | Gross profit | Operating profit | Value | Gross profit | Operating profit |
| Dairy | | | | | | |
| FrieslandCampina | 67.3 | 23.6 | 2.5 | 73.7 | 26.5 | 2.2 |
| Vreugdenhil | 11.3 | 1.8 | 0.3 | 12.4 | 2.2 | 0.3 |
| Royal A-Ware | 11.0 | 3.0 | 0.2 | 12.3 | 3.6 | 0.3 |
| DOC Kaas | 5.8 | 0.0 | 0.0 | 6.3 | 0.0 | 0.0 |
| Bel Leerdam | 7.7 | 2.0 | 0.5 | 8.3 | 2.2 | 0.4 |
| CONO Kaasmakers | 3.7 | 0.7 | 0.1 | 4.1 | 0.9 | 0.1 |
| Arla | 2.3 | 0.5 | 0.0 | 2.6 | 0.7 | 0.1 |
| Total top-7 dairy | 109.0 | 31.7 | 3.5 | 119.6 | 36.1 | 3.4 |
| Slaughterhouses | | | | | | |
| Vion (pork, beef) | 78.3 | 16.9 | 0.4 | 88.0 | 21.6 | 0.3 |
| Van Rooi Meat (pork) | 26.3 | 4.8 | 0.9 | 28.8 | 5.6 | 0.4 |
| Westfoort Meat Products (pork) | 20.4 | 1.0 | 0.1 | 22.2 | 1.2 | 0.0 |
| Plukon (poultry) | 40.3 | 12.4 | 1.4 | 43.3 | 13.1 | 0.4 |
| Storteboom (poultry) | 35.6 | 9.9 | 0.6 | 38.3 | 10.6 | 0.7 |
| Remkes/GPS (YMBA) (poultry) | 43.4 | 17.8 | 3.7 | 34.9 | 7.2 | 0.8 |
| VanDrie Group (beef, veal) | 17.2 | 3.2 | 1.0 | 18.6 | 3.6 | 1.0 |
| Gosschalk (beef, pork) | n/a | n/a | n/a | n/a | n/a | n/a |
| Total top-7 slaughterhouses | 261.5 | 66.0 | 8.0 | 274.0 | 62.9 | 3.7 |
| Egg producers | | | | | | |
| Van Beek Group | 20.0 | 1.4 | -0.3 | 22.7 | 2.6 | 0.7 |
| Kwetters International | 13.3 | 0.9 | -0.3 | 15.1 | 1.7 | 0.4 |
| Interovo Egg Group | 9.4 | 2.3 | 0.1 | 11.1 | 3.5 | 1.0 |
| Eierhandel van Zetten | n/a | n/a | n/a | n/a | n/a | n/a |
| Global Food Group | 7.5 | 1.0 | 0.0 | 8.4 | 1.4 | 0.2 |
| Total top-4 egg packers | 50.2 | 5.7 | -0.5 | 57.3 | 9.2 | 2.3 |

| € million | 2017 | | | 2018 | | |
|--|--------------|--------------|------------------|--------------|--------------|------------------|
| | Value | Gross profit | Operating profit | Value | Gross profit | Operating profit |
| Food retail / wholesale | | | | | | |
| Albert Heijn/Ahold | 98.6 | 39.4 | 4.8 | 110.7 | 44.3 | 5.4 |
| Jumbo | 52.2 | 20.9 | 2.6 | 60.9 | 24.4 | 2.2 |
| Lidl | 26.4 | 10.6 | 1.3 | 31.1 | 12.4 | 1.5 |
| Plus | 17.9 | 7.1 | 0.9 | 20.3 | 8.1 | 1.0 |
| Aldi | 16.8 | 6.7 | 0.8 | 17.4 | 7.0 | 0.9 |
| Sligro (Wholesale) | 13.8 | 5.5 | 0.8 | 16.2 | 6.5 | 0.5 |
| Total top-6 food retail/wholesale | 225.6 | 90.2 | 11.2 | 256.6 | 102.6 | 11.5 |

Source: Profundo, Annual Reports; See Appendix 1 for details.

4.2 Traders

The total value of the 3 million tonnes of Brazilian soy imported to the Netherlands is estimated at € 1 billion. However, a part of this volume is transhipped to other markets. In Table 9, only the estimated share of the soy used in the Dutch agricultural chain is considered; the value and margins of soy for which the Netherlands was only a transit point were not included.

- As a leading trader, Amaggi realizes a high value of Brazilian soy sales, but a low profit as it has low margins.
- ADM and Bunge realize the highest gross profits.
- The top-6 traders earn only a gross profit of € 12.2 million in 2017 and € 7.5 million in 2018.

4.3 Crushing

This group includes Bunge and ADM. It generated an estimated gross profit on Brazilian soy of € 12 million in 2017 and € 17 million in 2018. After taking over the Cargill facilities in Amsterdam, Bunge is probably the most important crusher.

4.4 Animal feed

Market leader ForFarmers generated a net sales value on Brazilian soy of an estimated € 140 million annually. The gross profit on this soy is estimated at € 28 million annually, the operating profit at € 8.5 million. The top-3 generated a combined gross profit of € 56 million in 2018.

4.5 Livestock farming sector

The Dutch farming sector is highly fragmented. Due to the high fragmentation, and the low profitability in farming, the total profit made on Brazilian soy might be relatively limited, even for the group as a whole.

4.6 Dairy

FrieslandCampina is clearly the dominant company in the Dutch dairy sector. The cooperative realizes approximately € 70 million value annually on processed Brazilian soy (embedded in raw milk from farmers). Due to its leadership, the gross profit margin is high, meaning that

FrieslandCampina realized an estimated € 24-27 million gross profit on Brazilian soy in 2017 and 2018. Its operating profit linked to Brazilian soy reached an estimated € 2-2.5 million annually.

4.7 Slaughtering

The meat processing sector shows more consolidation than the farming sector, but margins are low. This might be caused by the strength of the Dutch food retail sector, leading to depressed profitability at commodity companies lacking a strong brand.

The leading slaughterhouse Vion, active in pork and beef/veal, is generating a net sales value on embedded Brazilian soy in the Netherlands of an estimated € 80 million annually. Gross profit was € 17 million in 2017 and € 22 million in 2018. The operating profit is estimated at € 0.4 million per year as operating margins are low. The other Dutch pork slaughtering houses show an equal structure.

The same situation can be observed in poultry. The leading processor Plukon realizes a net sales value on embedded Brazilian soy of an estimated € 40 million per year and a gross profit of € 12-13 million annually. The operating profit is estimated at € 1m per year as margins are low. Storteboom (2 Sisters Group) and Remkes have nearly the same size as Plukon.

In beef/veal, VanDrie Groep, which is the largest veal processor and a large exporter, also earns low margins.

4.8 Egg producers

Although the egg producers as a group can generate a high sales value on embedded Brazilian soy, their low margins lead to a limited profit generation.

4.9 Supermarkets/Food retail and Wholesale

The Dutch agricultural chain is marked by a high export share of production, which means that embedded Brazilian soy is exported in dairy, meat, and eggs. The part that is not exported flows into Dutch supermarkets as well as wholesale for food service and specialist stores.

Ahold's Dutch supermarket chain Albert Heijn generated an estimated annual value of € 100 million on embedded Brazilian soy (or only 0.7% of Ahold's Dutch 2018 net sales) and an estimated gross profit of € 40 million per year. This is generated mainly through perishable products, which account for 46 percent of its system-wide sales. According to retail market research company IRi, meat, dairy, eggs, and yellow fats belong to this category, contributing 53 percent to perishable sales in the Dutch supermarket sector.⁶⁸ For Jumbo as the second largest retailer, the numbers are lower due to its lower market share as well as lower margins. This is also true for the hard discounters Lidl and Aldi. Sligro is the leader in wholesale/foodservice. Its outcomes are in line with those of the food retailers Aldi and Plus.

4.10 Top-10 companies benefiting from Brazilian soy

In the Netherlands, Albert Heijn is the largest beneficiary of processed Brazilian soy. The company earned a gross profit in 2018 of € 44 million, which was 15 percent of all Dutch profits in all chains related to Brazilian soy (Table 10). Jumbo, the Dutch number 2 supermarket chain, is on position 4. The number 3 supermarket Lidl is on spot 9.

Compound feed company ForFarmers also earns a high position. The other feed manufacturers De Heus and Agrifirm also belong to the top-10.

FrieslandCampina (#3) is the only company in the top-10 that produces its own brands.

The top-10 companies which benefit from selling Brazilian soy in the Dutch market, realize a total gross profit of € 200m annually on this soy. This is ca 70 percent of the gross profit earned in the whole chain. This is quite a large concentration of profits.

Table 10 Top-10 companies with largest benefits from Brazilian soy (gross profit)

| | € million | Sector | 2017* | 2018* | 2017 as % total | 2018 as % total |
|----|-------------------------------|----------|--------------|--------------|--------------------|--------------------|
| 1 | Albert Heijn (Ahold Delhaize) | Retailer | 39.4 | 44.3 | 15% | 15% |
| 2 | ForFarmers | Feed | 27.3 | 28.5 | 10% | 10% |
| 3 | FrieslandCampina | Dairy | 23.6 | 26.5 | 9% | 9% |
| 4 | Jumbo | Retailer | 20.9 | 24.4 | 8% | 8% |
| 5 | Vion | Meat | 16.9 | 21.6 | 6% | 7% |
| 6 | Royal De Heus | Feed | 13.5 | 14.2 | 5% | 5% |
| 7 | Plukon | Meat | 12.4 | 13.1 | 5% | 5% |
| 8 | Agrifirm | Feed | 11.5 | 12.9 | 4% | 4% |
| 9 | Lidl | Retailer | 10.6 | 12.4 | 4% | 4% |
| 10 | Storteboom | Meat | 9.9 | 10.6 | 4% | 4% |
| | Total | | 186.0 | 208.5 | 69% | 72% |

Source: Profundo; *) gross profit on embedded Brazilian soy

4.11 Summarizing the various sectors in the chain

In total, the leading companies in the supply chain of Brazilian soy in the Netherlands generated a net value of € 1,307 million in 2017 and € 1,338 million (+2.4 percent) in 2018 (Table 11).

The gross profit on Brazilian soy was € 270 million in 2017 and € 291 million in 2018 (+7.7 percent).

Table 11 Summary of results per sector

| € million | 2017 | | | 2018 | | |
|-----------------------------------|----------------|--------------|------------------|----------------|--------------|------------------|
| | Value | Gross profit | Operating profit | Value | Gross profit | Operating profit |
| Total top-6 traders | 276.2 | 12.2 | 2.6 | 243.7 | 7.5 | 2.7 |
| Total crushing | 125.7 | 11.7 | 1.7 | 108.2 | 16.8 | 8.6 |
| Total top-3 animal feed | 259.0 | 52.4 | 13.1 | 278.9 | 55.6 | 13.6 |
| Total top-7 dairy | 109.0 | 31.7 | 3.5 | 119.6 | 36.1 | 3.4 |
| Total top-7 slaughterhouses | 261.5 | 66.0 | 8.0 | 274.0 | 62.9 | 3.7 |
| Total top-4 egg packers | 50.2 | 5.7 | -0.5 | 57.3 | 9.2 | 2.3 |
| Total top-6 food retail/wholesale | 225.6 | 90.2 | 11.2 | 256.6 | 102.6 | 11.5 |
| Total | 1,307.2 | 269.9 | 39.6 | 1,338.3 | 290.7 | 45.8 |
| Growth % | | | | 2.4% | 7.7% | 15.7% |

Source: Profundo, Annual Reports

The gross margin (gross profit divided by the value) and the operating margin (operating profit divided by the value) for the various sectors are summarized in Table 12. Note that these percentage margins are achieved on value numbers of 'embedded' soy that are higher in value in every step of the chain.

Table 12 Margins per sector

| € million | 2017 | | 2018 | |
|-----------------------------------|--------------|------------------|--------------|------------------|
| | Gross margin | Operating margin | Gross margin | Operating margin |
| Total top-6 traders | 4.4% | 0.9% | 3.1% | 1.1% |
| Total crushing | 9.3% | 1.4% | 15.5% | 7.9% |
| Total top-3 animal feed | 20.2% | 5.0% | 20.0% | 4.9% |
| Total top-7 dairy | 29.0% | 3.2% | 30.2% | 2.8% |
| Total top-7 slaughterhouses | 25.2% | 3.1% | 23.0% | 1.3% |
| Total top-4 egg packers | 11.4% | -1.1% | 16.1% | 4.0% |
| Total top-6 food retail/wholesale | 40.0% | 4.9% | 40.0% | 4.5% |
| Total | 20.6% | 3.0% | 21.7% | 3.4% |

Source: Profundo, Annual Reports

5

Conclusions on the gross profit shares of key sectors

Based on the selection of companies included in the analysis, the sectors that benefit most from the gross profit pool of the processing of Brazilian soy in the Netherlands, are food retail/wholesale (33-35 percent), animal feed (19 percent in 2017/18) and the slaughterhouses (22-24 percent in 2017/18) (Table 13). While retailers and animal feed producers benefit from the consolidated status of their sectors, the outcomes for the slaughterhouses are positively impacted by their size, partly based on the export of meat.

The soy traders have relatively low gross profit benefits due to their limited value-adding processes. The egg packers have a small size per company, are active in a competitive environment and do not add a lot of value. The crushers show a volatile development as they compete with counterparts in Brazil.

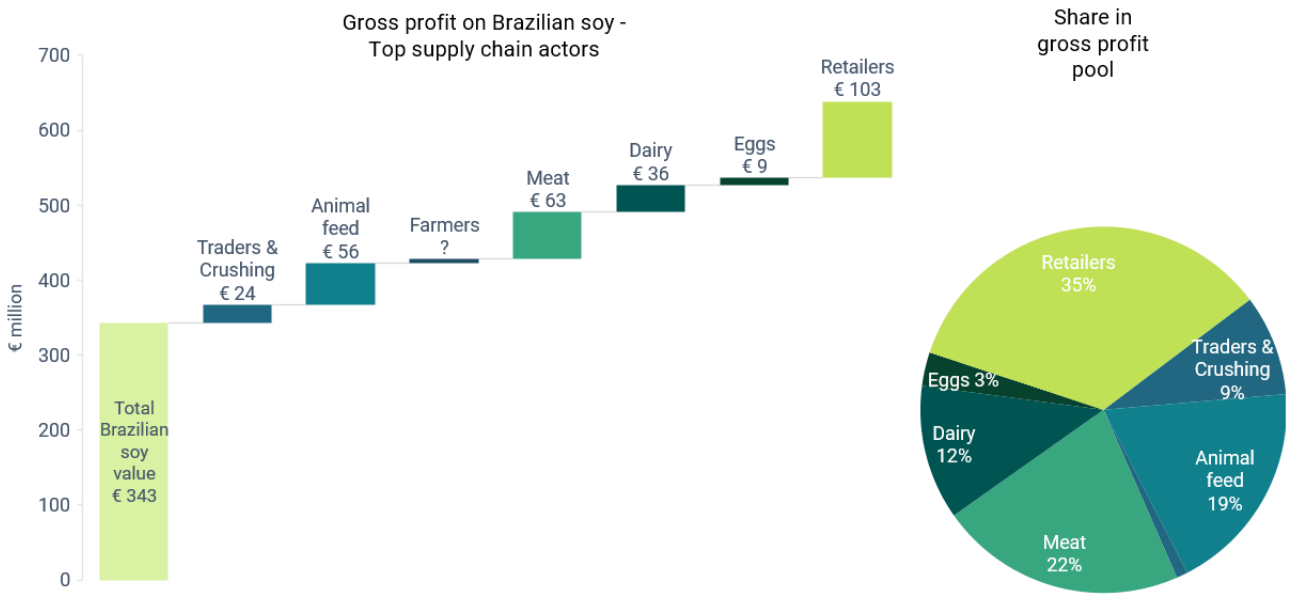
Table 13 Summary of contribution per sector

| € million | 2017 | | | 2018 | | |
|-----------------------------------|-------|--------------|------------------|-------|--------------|------------------|
| | Value | Gross profit | Operating profit | Value | Gross profit | Operating profit |
| Total top-6 traders | 21% | 5% | 7% | 18% | 3% | 6% |
| Total crushing | 10% | 4% | 4% | 8% | 6% | 19% |
| Total top-3 animal feed | 20% | 19% | 33% | 21% | 19% | 30% |
| Total top-7 dairy | 8% | 12% | 9% | 9% | 12% | 7% |
| Total top-7 slaughterhouses | 20% | 24% | 20% | 20% | 22% | 8% |
| Total top-4 egg packers | 4% | 2% | -1% | 4% | 3% | 5% |
| Total top-6 food retail/wholesale | 17% | 33% | 28% | 19% | 35% | 25% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |

Source: Profundo; Annual Reports.

The results from Table 11 and Table 13 are summarized in Figure 7. While it is important to keep in mind that these results are related to a selection of top supply chain actors, it visualizes the important share of the estimated gross profit pool from Brazilian soy that the retailers generated in the Dutch market. This result is due to the comparatively high margins that retailers generate on perishable products and the fact that a couple of large players dominate the market.

Figure 7 Brazilian soy in the Netherlands - Gross profit and gross profit share of top supply chain actors, 2018



Note: Estimates made for a selection of top actors in key sectors involved in the supply chain of Brazilian soy in the Netherlands. The livestock farming sector is too fragmented to be considered.

Appendix 1 Underlying data for processed and embedded soymeal

Table 14 Key compound feed producers, 2018 (estimates, 1,000 tonnes)

| Company | Compound feed sold in NL | Share total NL compound feed sales | Comment | Total soymeal in compound feed | Brazilian soymeal in compound feed |
|-------------------------------|--------------------------|------------------------------------|--|--------------------------------|------------------------------------|
| ForFarmers | 4,400 | 30% | Estimate based on 4.6 mln tonnes compound feed sold in NL 2018, incl. small volume of non-feed | 621 | 316 |
| Royal De Heus | 2,380 | 16% | NL 34% of revenues; media article says more than 2 mln tonnes in NL | 336 | 171 |
| Agrifirm | 1,481 | 10% | NL compound feed 41% of revenues | 209 | 106 |
| Other | 6,599 | 44% | | 797 | 406 |
| Total NL compound feed | 14,860 | | | 1,963 | 1,000 |

Note: based on weighted average of 14.1% soymeal in compound feeds; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: FEFAC (2019), *Compound Feed production (1989-2018)*; Hoste, R. (2016, September), *Soy Footprint of Animal Products in Europe*, Wageningen, The Netherlands: Wageningen Economic Research; Colenbrander, E. (2019, March 22), "Voerindustrie stabiel ondanks thuismarkt", *Nieuwe Oogst*; ForFarmers (2020), *Annual Report 2019*, pp. 65, 72-77, 141; Koninklijke De Heus BV (2019), *Financial Report 2018*, p. 34; *FeedStrategy* (2020), "Company directory: De Heus"; Koninklijke Coöperatie Agrifirm (2020), *Annual Report 2019*, pp. 4, 46; Kloosterman, C. (2020, May 26), "Afzet voer onder druk door krimp veestapel", *Boerderij*; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 15 Key pork producers, 2018 (estimates, million heads / 1,000 tonnes soymeal)

| Company | Annual slaughter NL (heads) | Share total NL slaughter | Comment | Total embedded soymeal in pork | Embedded Brazilian soymeal in pork |
|------------------------|-----------------------------|--------------------------|--------------------------------|--------------------------------|------------------------------------|
| Vion Food Group | 7.2 | 46% | 140,000 heads/week | 244 | 124 |
| Van Rooi Meat | 2.8 | 18% | 55,000 heads/per week | 96 | 49 |
| Westfort Meat Products | 2.6 | 16% | 50,000 heads/week | 87 | 44 |
| Other | 3.1 | 20% | Incl. Compaxo, Gosschalk, Pali | 104 | 53 |
| Total NL pork | 15.7 | | | 531 | 271 |

Note: based on an average slaughter weight (total weight from slaughtering divided by total heads slaughtered); average soymeal content in pig feed of 10%; estimate of 351g of soymeal embedded in 1kg of pork meat; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: CBS Statline (2020), "Vleesproductie; aantal slachtingen en geslacht gewicht per diersoort"; *Boerderij* (2019, April 16), "Volop investeringen in slachterijen"; *BoerenBusiness* (2018, July 14), "Wanneer waren de geslachte varkens het zwaarst?"; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 16 Key poultry meat producers, 2018 (estimates, million heads / 1,000 tonnes soymeal)

| Company | Annual slaughter NL (heads) | Share total NL slaughter | Comment | Total embedded soymeal in poultry meat | Embedded Brazilian soymeal in poultry meat |
|---------------------------------------|-----------------------------|--------------------------|---|--|--|
| Plukon Food Group | 136 | 22% | 8.7 mln heads/week in 11 locations, estimated NL share of 30% | 125 | 64 |
| Storteboom (2 Sisters Food Group, UK) | 125 | 20% | 1.4 mln heads/week in Kornhorn, 1 mln in Putten | 115 | 59 |
| Remkes (YMBA, NL) | 124 | 20% | | 114 | 58 |
| Other | 237 | 38% | | 218 | 111 |
| Total NL poultry | 622 | | | 572 | 292 |

Note: based on an average slaughter weight (total weight from slaughtering divided by total heads slaughtered); average soymeal content in poultry feed of 30%; estimate of 557g of soymeal embedded in 1kg of poultry meat; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: CBS Statline (2020), "Vleesproductie; aantal slachtingen en geslacht gewicht per diersoort"; Plukon (2020), *MVO Verslag 2019*; 2Sisters Food Group (n.d.), "European poultry"; Fortune, A. (2020, April 24), "Remkes to acquire majority stake in Heij's Food Products", *FoodNavigator*; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 17 Key beef & veal producers, 2018 (estimates, million heads / 1,000 tonnes soymeal)

| Company | Annual slaughter NL (heads) | Share total NL slaughter | Comment | Total embedded soymeal in beef/veal | Embedded Brazilian soymeal in beef/veal |
|---------------------------------|-----------------------------|--------------------------|---|-------------------------------------|---|
| VanDrie Group | 1.1 | 53% | 1.5 mln calves/year, of which 73% in NL; 25,000 cattle from Ameco acquisition | 62 | 32 |
| Vion | 0.4 | 21% | 20.7% market share | 31 | 16 |
| Gosschalk | 0.4 | 20% | 19.5% market share | 29 | 15 |
| Other | 0.1 | 6% | incl. Waddenvlees Dokkum | 10 | 5 |
| Total NL beef & veal | 2.1 | | | 132 | 67 |

Note: based on an average slaughter weight (total weight from slaughtering divided by total heads slaughtered); average soymeal content in beef cattle feed of 9%; estimate of 346g of soymeal embedded in 1kg of beef; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: CBS Statline (2020), "Vleesproductie; aantal slachtingen en geslacht gewicht per diersoort"; Boerderij (2017, May 15), "Blik op runderslachtingen: Meer vraag naar steaks en hamburgers"; VanDrie Group (2018), *GRI Standards: CORE-table 2017*, p. 2; VanDrie Group (2018, March 29), "VanDrie Group breidt uit naar rundvleesmarkt"; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 18 Key egg packers & producers, 2018 (estimates, million eggs / 1,000 tonnes soymeal)

| Company | Annual egg intake NL | Share total NL egg intake | Comment | Total embedded soymeal in eggs | Embedded Brazilian soymeal in eggs |
|-------------------------|----------------------|---------------------------|---------------------------------|--------------------------------|------------------------------------|
| Van Beek Group | 3,000 | 29% | | 83 | 42 |
| Kwettters International | 2,000 | 19% | | 55 | 28 |
| Interovo Egg Group | 1,140 | 11% | Estimate based on 3.8 mln hens. | 32 | 16 |
| Eierhandel van Zetten | 1,100 | 10% | | 30 | 16 |
| Global Food Group | 1,040 | 10% | 20 mln eggs intake / week | 29 | 15 |
| Other | 2,220 | 21% | | 61 | 31 |
| Total NL eggs | 10,500 | | | 291 | 148 |

Note: based on total egg production; average soymeal content in layer feed of 17%; estimate of 28g of soymeal embedded in 1 egg; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: Rabobank (n.d.), "Cifers en trends: Legpluimveehouderij"; *FD* (2017, August 12), "De Eierketen van Gen to Schap"; Smaak Academie Achterhoek (2017, March 3), "Eieren van blij kippen uit Wehl"; Global Food Group (n.d.), "Facts & Numbers"; *Familiebedrijf in Beeld* (2018), "70-jarig Jubileum Kwettters", p. 21; Van Keken, K. (2019, July), "Bloedgeld", *Quote*; *Boerderij* (2019, February 6), "Eierhandel R. van Zetten hofleverancier"; *Boerderij Vandaag* (2019, February 22), "We blijven bescheiden"; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 19 Key dairy producers, 2018 (estimates, 1,000 tonnes)

| Company | Annual milk intake NL | Share total NL milk intake | Comment | Total embedded soymeal in milk | Embedded Brazilian soymeal in milk |
|----------------------|-----------------------|----------------------------|--|--------------------------------|------------------------------------|
| FrieslandCampina | 6,000 | 43% | 11.8 mln tonnes across all countries; estimated NL share 50% | 195 | 100 |
| Vreugdenhil | 1,300 | 9% | | 42 | 22 |
| Royal A-Ware | 1,100 | 8% | Estimate based on 2017 volume | 36 | 18 |
| DOC Kaas | 796 | 6% | | 26 | 13 |
| Bel Leerdam | 770 | 6% | | 25 | 13 |
| CONO Kaasmakers | 409 | 3% | | 13 | 7 |
| Arla | 241 | 2% | 0.7 mln tonnes in NL, BE & FR; estimated NL share 33% | 8 | 4 |
| Other | 3,384 | 24% | | 110 | 56 |
| Total NL milk | 14,000 | | | 456 | 232 |

Note: based on total milk intake; average soymeal content in dairy cattle feed of 14%; estimate of 33g of soymeal embedded in 1 litre of milk; average share of 51% Brazilian soymeal in total soymeal used in the Netherlands; differences in totals due to rounding.

Sources: *Melkvee* (2019, June 11), "Nederlandse melkproductie blijft achteruit hollen"; FrieslandCampina (2019), *Annual Report 2018*, p. 6; Vreugdenhil Dairy Foods (2019, June 6), "Vreugdenhil Dairy Foods maintains growth in volume"; *Melkvee* (2017, March 29), "Royal A-ware zoekt 100 miljoen kilo melk extra"; DOC Kaas (2019), *Jaarverslag 2018*, p. 8; *Veetelt* (2019, May 16), "Directeur Joost van der Hoogte stopt bij Bel Leerdamme"; CONO Kaasmakers (n.d.), "Over CONO - Feiten en cijfers"; Arla Foods (2019), *Corporate Responsibility Report 2019*, p. 38; estimates based on IDH & IUCN (2019), *European Soy Monitor*.

Table 20 Perishable sales by retailers Netherlands, including products with embedded soy

| Netherlands (EURm) | 2017 | 2018 | % of sales 2018 |
|---------------------------|-------------|-------------|------------------------|
| Net sales supermarkets | 37,420 | 38,954 | 100.0% |
| Of which: | | | |
| Total perishable | 16,653 | 17,219 | 44.2% |
| Meat/fish | 4,817 | 4,865 | 12.5% |
| Dairy/eggs/yellow fats | 2,518 | 2,624 | 6.7% |
| Cheese | 1,673 | 1,730 | 4.4% |

Source: IRI (2019), *Topline Report VriesVers*, p. 12.

Table 21 Soy value (Brazilian & other) in perishables in supermarkets (% of input price)

| EUR million | 2017 | 2018 |
|--------------------|-------------|-------------|
| Pork companies | 6.7% | 8.1% |
| Poultry companies | 7.8% | 8.1% |
| Beef | 1.5% | 1.6% |
| Dairy | 2.5% | 3.0% |
| Eggpackers | 13.5% | 15.9% |
| Average (A) | 6.4% | 7.4% |
| Weighted average | 6.7% | 7.4% |

Source: Profundo, based on average output data various sectors.

Table 22 Input costs Ahold Netherlands (EUR million)

For the step from slaughterhouse, milk processing and egg packing company to food retail and wholesale, the starting point consists of data on perishable sales in Ahold, combined with IRI data, market shares in retail, gross profit margins and operating margins in the Netherlands. As a listed company, Ahold provides most data transparency and is a representative example due to its large market share on the Dutch market. Other supermarkets' outcomes have been derived from Albert Heijn's structure of sales and margins and applying market shares. Discounters Aldi and Lidl got a 10% discount on outcomes as they have less perishables.

| EUR million | 2017 | 2018 |
|--|-------------|-------------|
| Net sales | 13,706 | 14,218 |
| Operating profit | 669 | 698 |
| Operating profit/Net sales Netherlands | 4.88% | 4.91% |
| Share of perishables (global) | 46% | 45% |
| <i>Estimates Profundo based on IRI + AR 2018</i> | | |
| Net sales perishables | 6,305 | 6,398 |
| Meat/fish | 1,824 | 1,808 |
| Dairy/eggs/yellow fats | 953 | 975 |
| Cheese | 633 | 643 |

| EUR million | 2017 | 2018 |
|---|--------------|--------------|
| Other perishable | 2,894 | 2,973 |
| Gross margin perishable sales (estimate*) | 40.0% | 40.0% |
| Input costs soy-based products (meat, dairy, eggs, cheese) (B) | 2,046 | 2,055 |

Source: Ahold Delhaize (2019), *Annual Report 2018*; IRI (2019), *Topline Report VriesVers*, p. 12; estimates by Profundo, *broker analyst contacts.

Table 23 Value and profit on embedded soy – Ahold

For the step from slaughterhouse, milk processing and egg packing company to food retail and wholesale, the starting point consists of data on perishable sales in Ahold, combined with IRI data, market shares in retail, gross profit margins and operating margins in the Netherlands. As a listed company, Ahold provides most data transparency and is a representative example due to its large market share on the Dutch market. Other supermarkets' outcomes have been derived from Albert Heijn's structure of sales and margins and applying market shares. Discounters Aldi and Lidl got a 10% discount on outcomes as they have less perishables.

| EUR million | 2017 | 2018 |
|---|------------|------------|
| Soy value in soy-based products (AxB=C) | 131 | 151 |
| Brazilian share in soy (D) | 52% | 51% |
| Value Brazilian soy input (CxD=E) | 69 | 77 |
| Net sales/input price average AH global (conservative estimate*) (F) | 1.42 | 1.43 |
| Value Brazilian soy output (based on gross margin) (CxF=G) | 98 | 110 |
| Gross margin perishable sales (Profundo, broker analyst contacts) (H) | 40% | 40% |
| Gross profit Brazilian embedded soy (GxH=I) | 39 | 44 |
| Operating margin (J) | 4.88% | 4.91% |
| Operating profit embedded soy (GxJ) | 4.8 | 5.4 |

Source: Profundo; *global gross margin is used in this line, leading to a slightly lower multiplier than by using the perishable margin.

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Peer reviewers: Fernand de Boer, senior equity analyst at a sell-side Benelux broker; Milena Levicharova, impact investment analyst at a Dutch asset manager; Joeri de Wilde, investment strategist at Triodos Investment Management. All saw the money trail methodology as one of the preferred ways to calculate the value exposure for companies active in the chain, in an environment of lack of transparency by companies. One peer reviewer indicated that the money trail outcomes could have been even higher, for instance for Albert Heijn: Ahold's Dutch margin is depressed by bol.com. Overall, the recommendations from peer reviewers would have non-material impacts on the outcome presented in this report.

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