



**BTC TRADE FOR DEVELOPMENT**

# Tara Gum

*A look into current and future markets*



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[Globally Cool](#) - International Business Made Easy

Final report

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# 1 EXECUTIVE SUMMARY

This market study commissioned by the Trade for Development Centre and realised by Globally Cool is planned to contribute to improving the business management, market information and strategic planning capacities of producers' and export organisations in the production countries in South America. Based on 40 interviews and additional desk research, the global market for tara gum has been detailed. The main findings of the several chapters are the following:

## 1.1 Global trade flows 2012-2015

Peru supplies practically all tara gum available on the world market. Production is driven by international demand, as domestic demand is rather limited. In recent years global tara gum exports have increased considerably, from 1.6 thousand tonnes in 2007 to 2 thousand tonnes in 2014. Major reason for this growth was the increase of tara imports worldwide in 2012 due to the scarcity of guar gum. After the supply and demand of guar gum rebalanced, the demand for tara gum decreased again, although so far it remains considerably higher than in 2007.

In 2014, tara gum had a 0.3% share in worldwide hydrocolloid exports. In turn, galactomannans account for over 80% of worldwide hydrocolloid trade in 2014.

The focus countries Germany, Argentina and France are the world's main importers of tara gum. The USA is currently the 6<sup>th</sup> largest importer of tara gum, after Switzerland and Japan.

The world market price for tara gum generally fluctuates between USD6.00-8.00, but decreased considerably in 2014 and 2015 as a result of the historically low guar gum prices.

## 1.2 Global trade channels, segments and requirements

The food industry is tara gum's main market (representing about 60-70% of demand), where it is used as a thickener and stabiliser for various types of products. Other important segments are the pharmaceutical and cosmetics industry. Importers and distributors play a main role in selling the tara gum to these industries.

## 1.3 Global trends and forecast

Although there are some trends that may positively influence demand for tara gum in the next decade, these trends do not offer opportunities to tara gum alone, but equally to other gums as well. While the food industry is expected to remain the largest market segment for tara gum, the pharmaceutical and cosmetics industry are forecast to show the highest growth in the next decade. An alternative could be organic or fair trade certification, however opportunities in these niche markets are rather limited; therefore suppliers should only opt for organic certification if there is good potential among existing buyers.

Two critical factors that will continue to limit (or offer the key to) the success of tara gum are:

- Willingness of R&D departments at (food, pharmaceutical, cosmetics) processing companies to work on try-outs, reformulation processes etc.;
- Time and energy spend on the promotion of tara gum by hydrocolloids distributors.

In the meantime, in a way to improve market opportunities for tara gum (and powder) worldwide, the Peruvian stakeholders in the sector should work on a sector promotion plan and also should actively promote tara gum following this plan.

## 2 INTRODUCTION AND METHODOLOGY

The Trade for Development Centre ([TDC](#)) of the Belgian development agency BTC aims at economic and social empowerment of small producer organisations by enhancing their business knowledge and improving their access to markets. Tara (both powder and gum) from South America is one of the products that receives attention of TDC, and the results of this market study by Globally Cool will contribute to improving the business management, market information and strategic planning capacities of producers' and export organisations in the production countries in South America.



### 2.1 Statistical product definition

The classification of tara gum in this document is based on the Harmonised System (HS) classification developed by the World Customs Organisation. Table 1 shows which HS codes has been used to calculate international trade statistics such as imports and exports. The international 6-digit HS code 130239 for tara gum also includes xanthan, carrageenan, konjac, and alginates, whereas Peru uses a specific 10-digit code for tara gum.

Table 1 relevant HS codes

HS code	Description
1302390000	Mucilages and thickeners derived from vegetable products, whether or not modified (excl. from locust beans, locust bean seeds, guar seeds and agar-agar), incl. e.g. xanthan gum
1302391000	Tara gum ( <i>Caesalpinia Spinosa</i> )
1302320000	Guar gum and locust bean gum (LBG)

Source: International Trade Centre, ITC

### 2.2 Methodology

The following countries were selected to focus on in the primary research process: USA, France, Germany and Argentina. Some additional interviews have been conducted with companies from other countries, such as Belgium, the Netherlands, and Italy.

#### 2.2.1 Primary research

Within the period of September 2015 – February 2016, 40 telephone and face-to-face interviews were conducted with buyers and traders in some of the world's leading markets (USA, France, Germany and Argentina) and Belgium.

### 2.2.2 *Desk research*

Desk research consisted of scanning online available statistics, market studies, news and company profiles. In short the main group of sources used are the following:

- Statistical data (Eurostat, Trademap, customs databases)
- Relevant generic and country specific internet sources
- Previous market studies executed by several organisations.

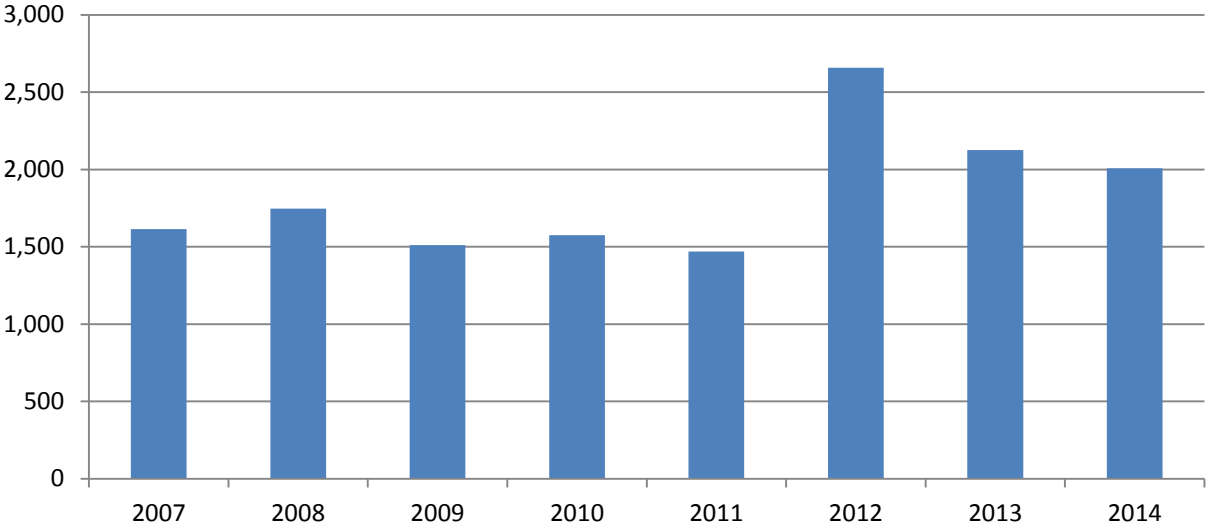
### 3 GLOBAL TRADE FLOWS 2007-2014

This chapter contains an analysis of global trade flows, covering exports and imports, trade prices and production.

#### 3.1 World exports

In recent years global tara gum exports have increased considerably, from 1,600 tonnes in 2007 to 2,000 tonnes in 2014. This increase in export volume started with a peak in 2012, which is further clarified in the paragraph on trade prices. Before 2012, world exports of tara gum fluctuated around 1,500 tonnes. More than 90% of world exports come from Peru, with the three leading Peruvian exporters of tara gum being Exandal, Silvateam and Molinos. Note that the statistics in this chapter are based on Peruvian exports only.

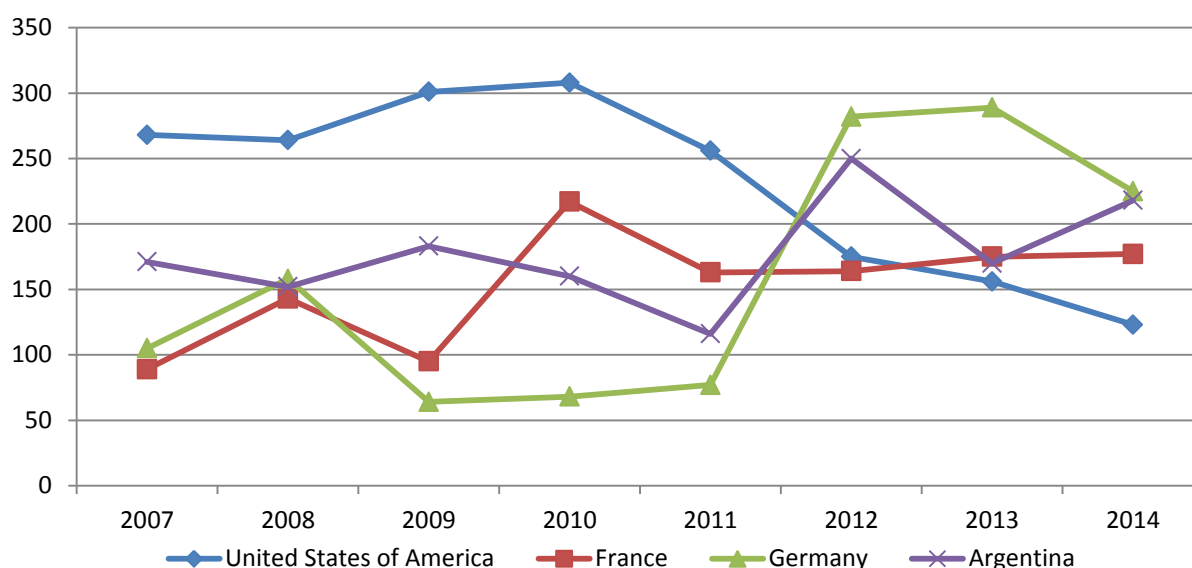
Figure 1 Volume of worldwide tara gum exports, 2007-2014, in tonnes



Source: International Trade Centre, ITC

The 2012 peak in tara gum exports was mainly due to sharp increases in exports to Germany, Argentina, Switzerland, Spain, Italy and Chile. Exports of tara gum to these countries declined again in the following years. In the particular case of Argentina, it is well possible that the local presence of shale oil and gas production led to an extreme shortage of guar gum, resulting in a sharp increase in both volume (see Figure 2) and value (see Figure 6).

Figure 2 Volume of tara gum exports to each focus country, 2007-2014, in tonnes



Source: International Trade Centre, ITC

This graph illustrates the variable character of the tara gum market, with the 2007-2014 export patterns differing greatly between focus countries. Especially notable is the decline in tara gum exports to the USA since 2010. The cause of this decline is explained in paragraph 3.6.1.

Table 2 Volume of worldwide natural thickener exports, 2007-2014, in tonnes

	2007	2008	2009	2010	2011	2012	2013	2014
LBG	64,996	64,995	64,075	61,810	72,605	70,045	63,263	89,120
guar gum	170,187	114,097	176,091	256,845	403,560	388,720	356,586	528,707
tara gum	1,614	1,746	1,510	1,575	1,470	2,658	2,126	2,007
other	112,784	115,833	104,487	113,156	118,369	133,953	145,037	138,896

Source: International Trade Centre, ITC

The three galactomannans guar, locust bean and tara gum account for over 80% of worldwide natural thickener export volumes in 2014. This is the highest share since 2007, following some fluctuations between 2007 (68%) and 2013 (74%).

This strong position of galactomannans is mainly due to guar gum's dominance of the market (70% in 2014). In 2014, tara gum had a relatively low 0.26% share in worldwide natural thickener exports, the same share as in 2011. The share was a little higher in 2010 and 2013 (0.36%), 2007, 2009 and 2012 (0.45%), and highest in 2008 (0.59%).

In the focus countries, the share of tara gum in natural thickener imports is relatively high: 1.4% in France, 0.5% in Germany and 3.0% in Argentina. With a share of 0.03%, the USA is an exception. This low percentage is caused by the USA's disproportionately high imports of guar gum, which is basically used in their oil industry for hydraulic fracturing. The absolute volumes in 2014 for these countries are revealed in Table 4.



Table 3 Volume of natural thickener exports to each focus country, 2014, in tonnes

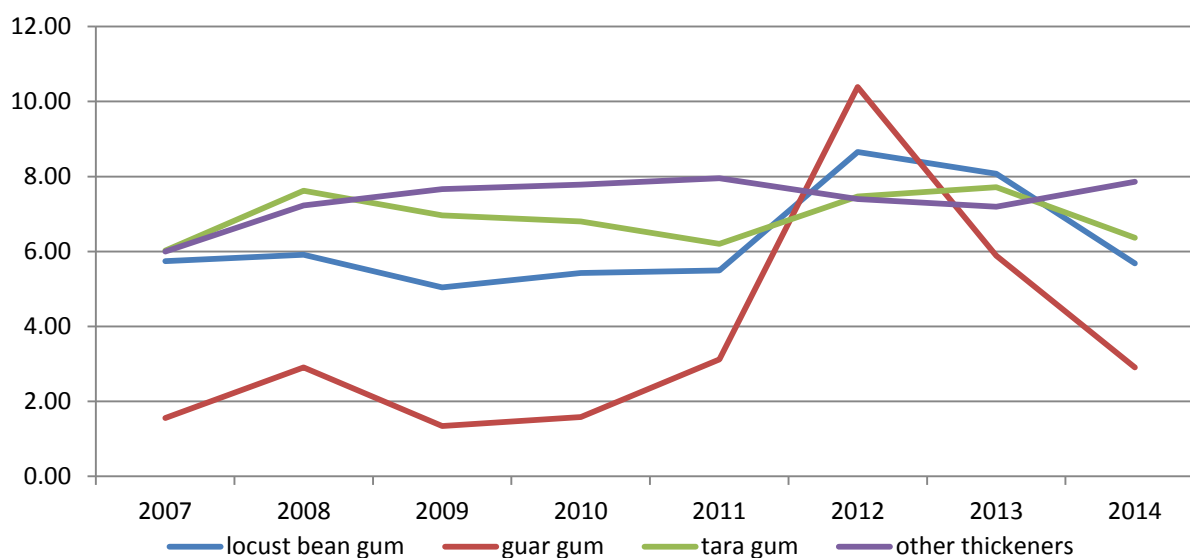
	USA	France	Germany	Argentina
LBG	9,964	4,846	5,252	2,453
guar gum	375,374	1,282	16,313	2,837
tara gum	123	177	225	218
other natural thickeners	11,352	6,633	19,621	1,708

Source: International Trade Centre, ITC

### 3.2 Trade prices

The price of tara gum is of course dictated by the demand:supply ratio. An important factor is the success of the harvest. Harvests can be negatively affected by phenomena such as El Niño. Another important factor is the price of tara gum’s main competitors, guar and LBG. A low guar and/or LBG price has a negative impact on the tara gum price. The opposite is also valid, although for this situation should be noted that prices of tara gum should not follow the other gum’s prices too directly. Several importers mentioned that the steep price increase of tara gum in 2011/2012 following the sharp price increase of guar gum, led to dissatisfaction among several relatively new customers of tara gum. As soon as guar gum prices began to come down in 2012/2013, these new customers shifted back to guar gum.

Figure 3 Global natural thickener prices, 2007-2014, in USD



Source: International Trade Centre, ITC

As this figure illustrates, the world market price for tara gum generally fluctuates between 6.00 and 8.00 USD per kilogram, which is in general considered as too high for being competitive in the long term by several importers in the world’s leading markets. Traditionally, guar gum is much cheaper than other natural thickeners, adding to its popularity. However, guar gum is also used to produce tight oil and shale gas through hydraulic fracturing (“fracking”). Currently the USA, Canada, China and Argentina are the only four countries in the world producing commercial volumes of either shale gas or tight oil, with the USA being by far the main producer of both (91% of tight oil and 90% of shale gas in 2014).

Figure 4 USA tight oil production, 2007-2014, in million barrels per day

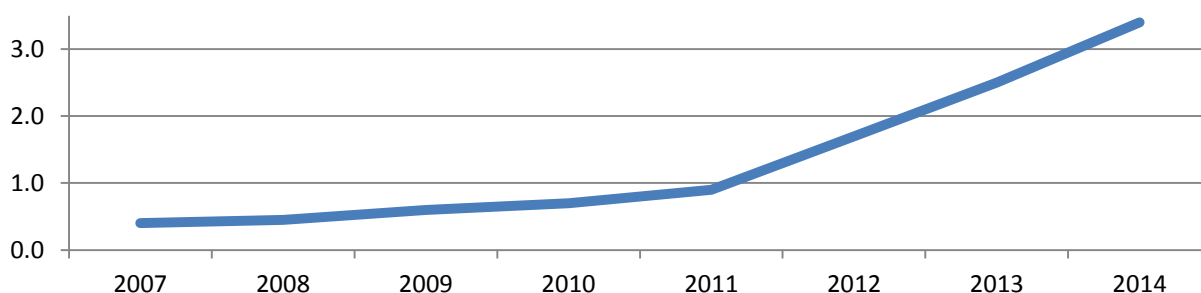
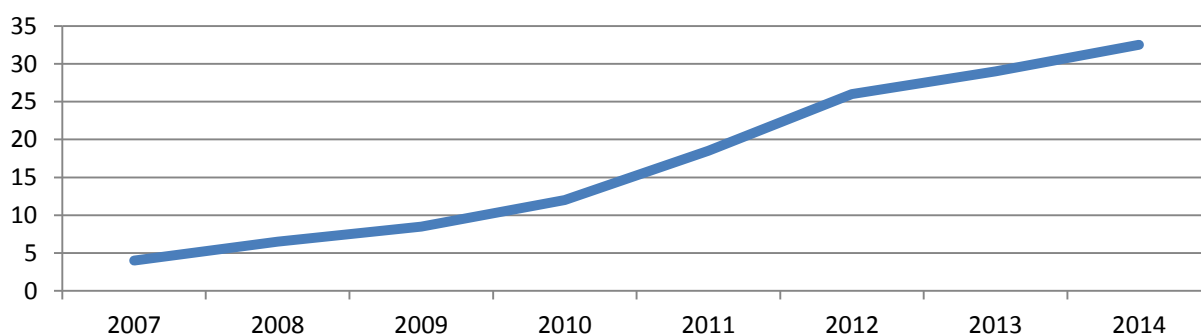


Figure 5 USA dry shale gas production, 2007-2014, in billion cubic feet per day



Source: EIA derived from state administrative data collected by DrillingInfo Inc.

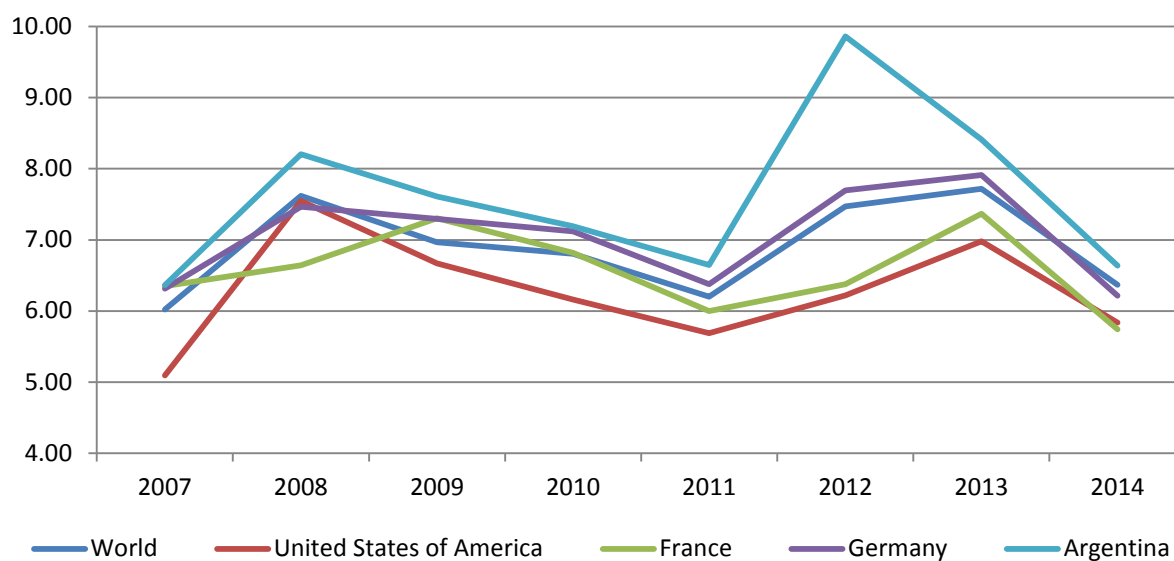
As fracking experienced a boom in the USA, worldwide exports of guar gum soared from 257 thousand tonnes in 2010 to 404 thousand tonnes in 2011 (of which 375 thousand tonnes was destined for the USA). This led to a steep increase in the price for guar gum, as it was becoming scarce. Tara gum exports benefited from these developments, especially as in 2012, tara gum attracted several new customers. The aforementioned peak in tara gum exports was the result.

To meet the increased demand for guar gum, however, farmers increased their production. This meant that by 2013, guar gum was no longer scarce and prices decreased accordingly, dropping back to their 2011 level and in the years 2014-2015 even to historically low levels (USD 4.10 per kilogram in December 2015). As guar gum prices came down, exports grew significantly and the demand for tara gum decreased again.

At the same time it should be noted here that several tara gum suppliers increased their prices when they noticed the growing demand and also some scarcity for tara gum. This move was unfair in the eyes of many tara gum traders, making tara gum too expensive and not competitive in the long term. According to these traders, the excessively high price of tara gum made many users shift back from using tara gum in their formulations to using guar gum as soon as the price of guar gum returned to normal levels.

Although the oil and gas industries found alternatives to guar, guar gum remains the superior material to use in fracking. After peaking in 2015, fracking output is predicted to decline in the coming years due to both low oil prices and increasing environmental concerns, meaning guar gum prices are expected to stay at their "normal" level. This, in turn, means a steep increase in demand for tara gum like in 2012 is not to be expected in the near future.

Figure 6 Global tara gum prices, 2007-2014, in USD per kilogram



Source: International Trade Centre, ITC

As this figure illustrates, the price of tara gum on the world market mostly shows a similar pattern in the world's leading importing countries. Other observations are:

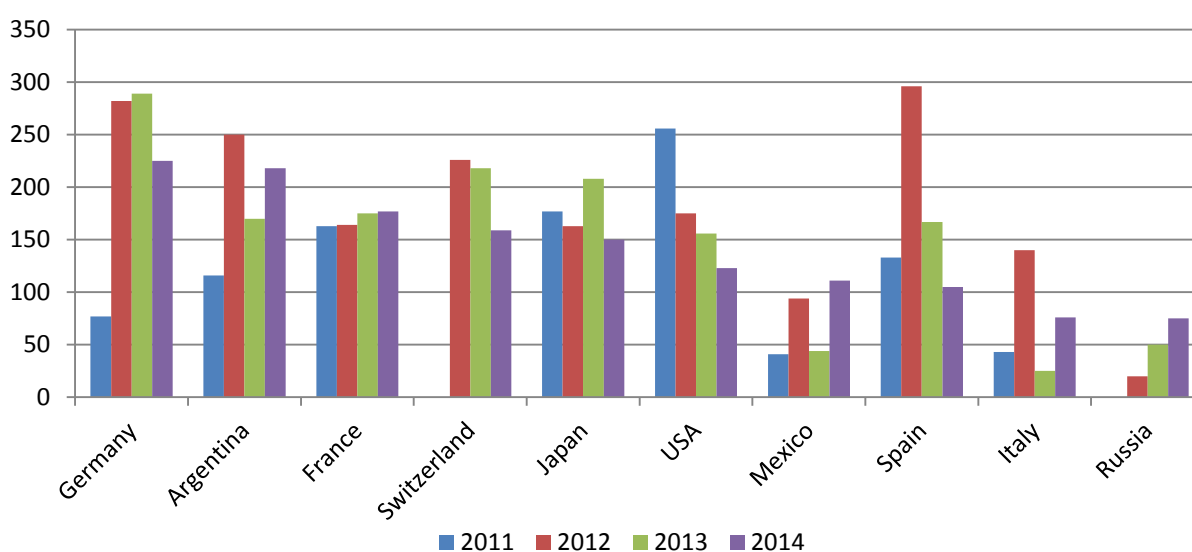
- In the case of France (2008 and 2012), and Argentina (2012) there are considerable differences.
- Argentina's imports prices are relatively high most of the time.
- Germany's import prices follow world prices closely.
- Prices in the USA and France are relatively low in the period under review.

### 3.3 World imports and leading importing countries

The main findings of the next two figures, also in relation to the selection of focus countries, are:

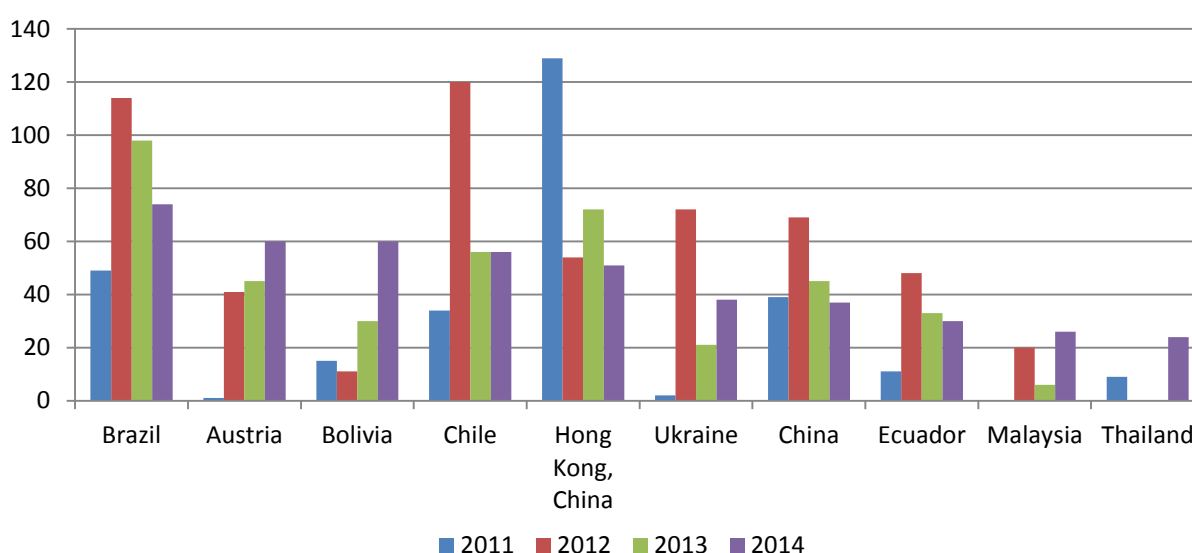
- The focus countries Germany, Argentina and France are the world's main importers of tara gum.
- The USA is currently the 6<sup>th</sup> largest importer of tara gum, after being overtaken by Switzerland and Japan in recent years.
- Leading importing country in Europe is Germany, followed by France, Switzerland, Spain and Italy.
- Mexico and Russia complete the list of top ten importing countries.

Figure 7 Top 10 importing countries of tara gum, 2014, in tonnes



Source: International Trade Centre, ITC

Figure 8 Top 11-20 importing countries of tara gum, 2014, in tonnes



Source: International Trade Centre, ITC

These figures of several countries (e.g. Argentina, Mexico, Spain and Italy) clearly illustrate the variable character of the tara gum market, in which companies can adjust their need for tara gum based on e.g. the availability and price of guar gum.

### 3.4 Leading exporting countries of guar gum and LBG

Tara gum competes with guar gum and locust bean gum as it has more or less similar characteristics. Their origin, however, is completely different:

- Guar gum: Guar is traditionally cultivated in India and Pakistan, but has been introduced in other regions as well because of the recent high demand. 83% of guar gum is produced in India, about 4% in Pakistan and in Italy, around 2% in the USA and Spain.

- LBG: LBG is made from the seeds of the carob tree. The carob tree is native to the Mediterranean region, e.g. Spain, Portugal, Greece and Italy.

### 3.5 Production

Peru supplies practically all tara on the world market. In 2015 Peruvian tara production amounted to 37 thousand tonnes, after an average annual increase of 3% since 2010 (PROMPERU). Production is driven by international demand, as Peruvian demand generally represents between 3-5% only.

Tara gum is produced by grinding the endosperm from the roasted seeds, whereas tara powder is extracted from dried tara pods by grinding the husks. From 1kg tara, 80gr gum and 600gr powder can be produced. This means Peru produced around 3 thousand tonnes of tara gum in 2015.

Although native to Peru, the tara plant (*Caesalpinia spinosa*) can be found throughout northern, western and southern South America, from Venezuela to Argentina. It is also cultivated in drier parts of Asia, the Middle East and Africa and has spread into California. This means these regions could possibly produce tara commercially in the future.

### 3.6 Focus countries

The content of this report is built on research in the focus countries USA, France, Germany, and Argentina. The demand for and trade of tara gum in these countries is described below. In addition, also some more details on the situation for Switzerland and the Netherlands are presented.

#### 3.6.1 USA

Since 2005/2006, USA imports of tara gum increased every year and the USA quickly became the world's leading importing country of tara gum. Probably one of the main drivers of this development is the following: since 2005/2006 Unilever has used tara gum as an important ingredient in its' Breyer line of ice cream products, probably applying the patented technique as described in [Frozen Aerated Products Patent EP 1400176 A1](#). According to Unilever, tara gum was added to reduce crystallization in the carton, but an important reason of using tara gum was also to realize a creamy mouthfeel while using limited or no milk fat. In the year 2010, the USA imported more than 300 tons and after that, somewhere in 2010 or 2011, Unilever started to replace tara gum in several of their ice cream products with LBG and/or guar gum and carrageenan. But still, tara gum is used in several of Unilever's ice creams (see [Breyer's Natural Vanilla](#) (ingredients: Milk, Cream, Sugar, Natural Tara Gum, Natural Vanilla Flavor)) and this [SlowChurned ice cream of Dreyers](#) (a brand of Nestlé). The size of the pharmaceutical and cosmetics industry segments are believed to be less than 5% of the total market.

#### 3.6.2 France

Although French import volumes did not reach the peak volume of 2010, since 2011 imports show a steady year-on-year growth. The food industry is the largest market segment, with a particular large pastry and bakery industry which offers good opportunities for tara gum applications in the next decade. Other relevant sub-segments in the food industry that may offer good opportunities are ice cream and dairy (cheese and yoghurt).

Another reason why France performed so strongly in 2011-2014 is the presence of cosmetics formulations producer Seppic in the country. This company introduced Solagum Tara in 2012, which is a natural gum powder that can be used to thicken and stabilize emulsions and cream-gels. It also acts as a texturizing agent by providing a structuring effect and very soft feel. Seppic sells the Solagum Tara all over the world, for example to [Trulux](#) in Australia.

### 3.6.3 Germany

While German annual imports moved between 50-150 tons until 2012, in 2012 imports increased sharply to a volume of more than 280 tons. In 2013 it peaked at almost 290 tons, and in 2014 imports dropped to 225 tons (in 2015 they further declined to between 180-190 tons). The two leading Peruvian exporters Exandal (this company has its' European warehouse located in Hamburg) and Silvateam are the main suppliers to the German market, while there are several hydrocolloids distributors that buy from these companies and sell to companies that use the tara gum as ingredient (also see Chapter 4).

Among the leading distributors in Germany are [Neupert Ingredients](#), [TER Chemicals Distribution Group](#), [A2 Trading](#) and [C.E.Roeper](#). Like in France, in recent years the non-food applications have gained in market share, not only because new pharmaceutical and cosmetic products with tara gum were introduced, but also because in the food industry in several products tara gum was replaced by LBG and guar gum in 2014-2015 (also refer to 3.2).

Examples of categories and products that have tara gum as ingredient are:

- Food industry:
  - Ice-cream: Unilever Langnese's Ice Creams [Calippo Cola](#), [Calippo Strawberry](#) and [X-pop](#); Unilever's ice cream factory in Germany is one of the largest in Europe with 600 employees, Italian's Ferrero's ice cream [Maxi King](#).
  - Bread and bakery: [Milk Bread from Edeka](#) (produced in France), [Neukircher toast](#), [Fackelbrot Cheddar Mozzarella](#) (note: tara gum is ingredient of the used mayonnaise).
  - Dairy and deserts (several types of [Instant Pudding](#) from Komet Poehle)
  - Sauces ([Kania Schaschik sauce](#) from Lidl, [mayonnaise](#))
  - Meat: [Veganuss Vita Wurst](#).
- Food/Pharmaceutical (Nutritional): [Nutilus](#) easy-to-use thickening powders, pre-thickened oral nutritional supplements and pre-thickened hydration drinks, developed by [Danone Medical Nutrition](#) and produced in the Netherlands.
- Cosmetics industry: [organic day and night cream](#), [moisturizing gel](#) and [MSM moisturizing gel](#).

A final note for Germany: Peruvian export statistics show higher volumes exported to Germany than German statistics show on German imports of tara gum from Peru. The explanation of this difference is the following: These containers are exported from Peru with destination "Germany", but while the cargo is underway, the destination is redirected to the final destination country. In this particular situation for Germany this practice is used by Exandal because that exporter has a warehouse in Hamburg, while Exandal's European destinations are frequently outside Germany and sometimes not known at the time of shipping yet.

### 3.6.4 Argentina

Although also in other countries the name "Peruvian carob" is used for tara gum, it is probably most frequently used in countries in South America, such as Argentina. Most tara gum applications in Argentina are found in the food industry, with ice cream, cheese, jams, sweets, marmalade, pastas and mayonnaise as the most important products. Nestlé has an important share of the ice-cream market and a few of its' ice-cream types have tara gum as ingredient, while also Danone has used tara gum in its' dairy products. Like in Germany, tara gum imports in the period 2012-2014 have been on a higher level than before 2012, however they are forecast to decrease to pre-2012 levels when guar gum prices come back to normal levels (which already has started to happen in 2015).

There are several distributors of tara gum in Argentina: [Soriano](#), [Santana](#), [Cordis](#), [Adinat](#), [Alimat](#) (part of Mathiesen, sells pure tara gum and in a mix called “Mathex GP71”), [Bio Vanda](#), [C-dia](#), [Agebe](#), [Dankan](#) and [Indunor](#) (Silvateam).

### 3.6.5 Switzerland / Netherlands

The trade statistics for tara gum to the Netherlands and Switzerland show a remarkable pattern over the years. While Peruvian exports to the Netherlands are substantial in the period under review (e.g. in the period 2011-2014: 80, 223, 185, and 200 tons respectively), according to Dutch customs data there is no import under HS code 130239. For Switzerland it is more or less the other way around.

The explanation of this difference is the following: These containers are exported from Peru with destination “the Netherlands”, but while the cargo is underway, the destination is redirected to Switzerland. This means that it is difficult to estimate the market size in the Netherlands. However, it is valid to assume that the food industry segment is rather small, which was also found through interviews with hydrocolloid distributors in the Netherlands. Although in the supermarkets there are products with tara gum, their number is rather limited. A few examples are some of Unilever’s [ice-creams](#) (like in Germany), or some products from the German food retailer Lidl (which are often produced in Germany), Hero [breakfast juice](#) and Oetker’s [pizza burger](#).

Of the other segments, particularly the food/pharmaceutical or nutritional segment should be mentioned. Since 2013 The Netherlands is home to the production of [Danone Medical Nutrition’s Nutilis](#) easy-to-use thickening powders, pre-thickened oral nutritional supplements and pre-thickened hydration drinks. This powder contains a blend of tara gum, xanthan gum and guar gum.

In Switzerland’s food industry segment there are some products with tara gum as ingredient, like Carma’s pudding powders (several types in Carma’s [assortment](#), such as [Carmaflan](#) and [Panna Cotta Powder](#)), (like in Germany and the Netherlands) some of Unilever’s ice-cream types (e.g. [Calippo](#)).

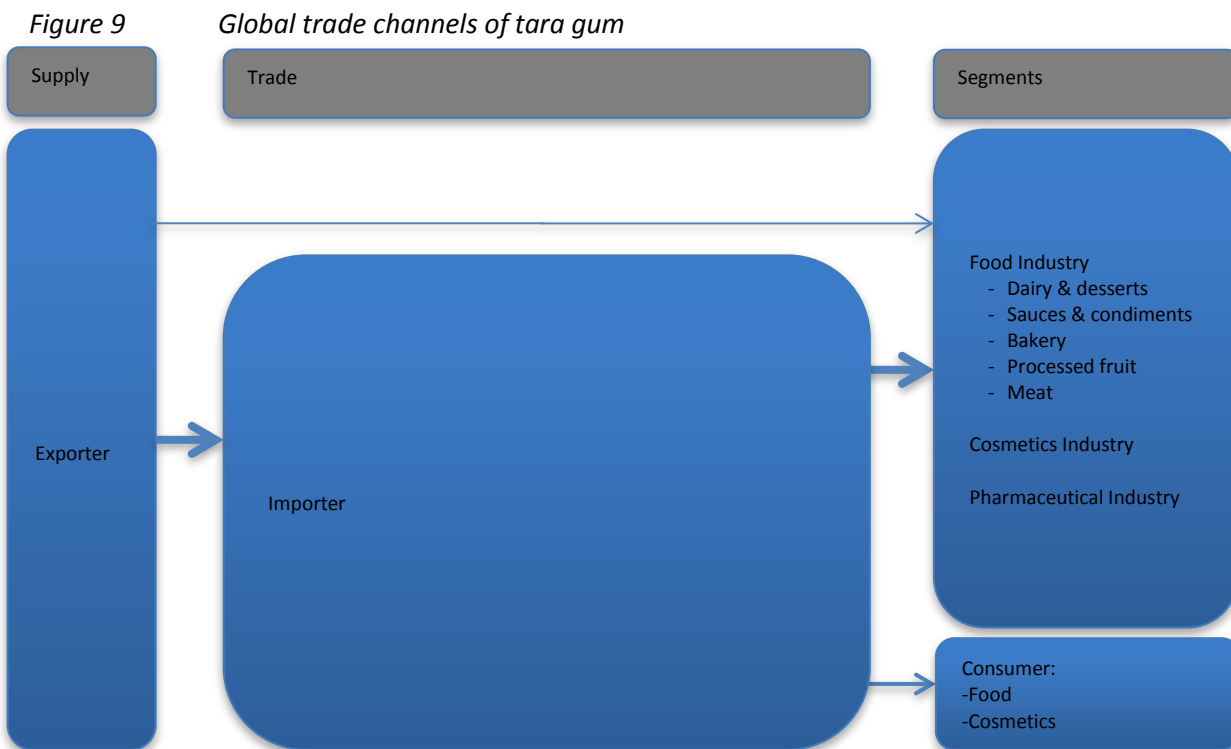
In the Swiss cosmetics industry tara gum mostly finds an application in organic products, for example this Dea Dia [hair spray](#) or this [face cream](#) (which is by the way not produced in Switzerland but in neighboring country Austria). Last but not least, the Swiss cosmetics company [Mibelle](#) introduced this unique tightening ingredient that is based on Swiss ice wine combined with tara gum, called [Vinup-Lift](#).

## 4 GLOBAL TRADE CHANNELS, SEGMENTS AND REQUIREMENTS

### 4.1 Trade channels and segments

Almost all exported tara gum is destined for the industrial market, but there is a very small consumer market for it as well.

The figure below shows a simplified trade channel structure.



Source: Globally Cool

Exporters are mostly located in Peru but they can also be re-exporters in another (mostly European) country. Re-exporters in another country are mainly located in neighbouring countries (e.g. Netherlands and Germany).

Exporters usually supply an importer (generally a trader in natural food additives / thickeners / hydrocolloids) that might add value to the tara gum, e.g. by blending it with other thickeners to create a custom product to suit their customers' specific needs. The importers sometimes also fulfil the role of distributor, which means that they sell to (industrial) users of tara gum directly. But most frequently the importer sells to distributors, who in turn sell it to customers in the food industry (whether or not adding value by blending etc.).



Tip: exporters should focus on importers/distributors of hydrocolloids. These companies have the relationships and a lot of application know-how in the food and other industries.

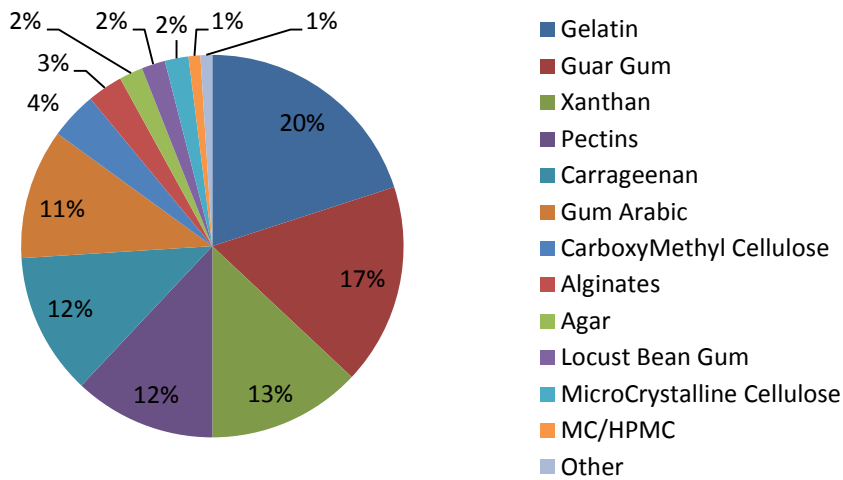
#### 4.1.1 Hydrocolloids market

Tara gum is part of the group of hydrocolloids that are non-starch based. This group covers a wide range of products, with applications in several industries (in addition to the food industry, also the cosmetics and oil industry) and its market size is about USD 5 billion per year, with an average of 4-6% growth annually through to 2018.



As a galactomannan, tara gum is best suited to replace fellow galactomannans guar gum and LBG. These gums represent approximately 20% of the global food hydrocolloids market, giving tara gum an interesting market potential.

Figure 10 Composition of the global hydrocolloids market



Source: Food Ingredients First, Markets and Markets

#### 4.1.2 Food industry

The food industry is tara gum’s main market (representing about 60-70% of demand), where it is used as a thickener and stabiliser for various types of products. It is usually listed among the ingredients as tara gum or E417; often in combination with one of the other thickeners guar gum or LBG.

Table 4 Examples of food products with tara gum as ingredient

<p>La Boulangère - <a href="#">Chocolate Chip Viennese Baquettes</a></p>	<p>Langnese - <a href="#">Magnum Double Caramel</a> Note that because of a recipe change in 2016 there is no tara gum in the ingredients anymore.</p>	<p>Phillips - <a href="#">Coastal Crab Cake</a></p>	<p>Kania - <a href="#">Curry-Gewürzketchup</a></p>
			

The table below shows the major segments/applications for tara gum in the food industry.

**Table 5 Major food market segments and applications for tara gum**

Segment	Application	Benefits
Dairy & desserts	Frozen desserts, liquid dairy products, puddings, custards, etc.	Fat-like texture (rich, buttery mouth-feel), heat-shock protection by control of ice crystal growth, syneresis reduction
Sauces & condiments	Salad dressings, mayonnaise, ketchup, dips, spreads	Increased viscosity, suspension, improved texture and spreadability, syneresis reduction and oil stability
Bakery	Pastries, cakes, breads, etc.	Soft texture, increased moisture retention and maintained freshness
Processed fruit	Jams, jellies, fillings, etc.	Fruit suspension, improved texture and mouth-feel, syneresis reduction
Meat	Meat based products	Improved structure, moisture retention, bite and texture





### 4.1.3 Pharmaceutical industry

Tara gum can be used as a controlled release carrier in the formulation of gastro retentive controlled release tablets and emulsions for drugs. In most patents that mention tara gum, however, tara gum is just one of the many water-soluble polymers cited as being functional. Also here, tara gum competes with (the often superior) guar gum and/or LBG.

### 4.1.4 Cosmetics industry

Recent years have shown an increasing use of tara gum in cosmetic applications owing to the increasing use of natural ingredients in the cosmetic industry. The cosmetics industry is a relatively small but growing market for tara gum, with common application as a thickening and stabilising agent in e.g. creams, lotions, conditioners and soaps. Tara gum’s ability to retain moisture makes it an especially interesting cosmetics ingredient. It is usually listed as tara gum or *Caesalpinia spinosa* gum. Also in cosmetics applications, tara gum is just one of the many water-soluble polymers cited as being functional and again tara gum competes with (the often superior) guar gum and/or LBG.

**Table 6 Examples of cosmetic products with tara gum as ingredient**

<a href="#">The Body Shop - Pomegranate Firming Serum</a>	<a href="#">Neutrogena - Naturals Multi-Vitamin Nourishing Moisturizer</a>	<a href="#">Yes to - Grapefruit Dark Spot Correcting Serum</a>	<a href="#">Living Proof - Perfect Day (PhD) conditioner</a>
			

#### 4.1.5 Consumer market

There is also very small (<1%) niche consumer market, where tara gum finds application in mainly molecular gastronomy, but also in cosmetic purposes. Molecular gastronomy is especially popular in France, Spain and Belgium.

For the consumer market, volumes are much smaller. Consumer tara gum is usually sold through specialised retailers like culinary or cosmetic (web)shops (e.g. this [Swiss e-shop](#) or [Dragonspice](#) in Germany). Although margins are high and there is potential for growth, due to its limited applications consumer tara gum will remain a niche market.

## 4.2 Barriers to trade

Tara gum is usually traded under HS-code 130239(1000). It can enter the focus countries USA, France, Germany and Argentina duty-free.

It is widely accepted as safe food additive in many countries with E-number E417, while in the USA tara gum has the so-called GRAS status (Generally Recognized As Safe). This is a FDA designation that a specific substance or ingredient is generally considered safe by experts, and so is exempted from the usual Federal Food, Drug, and Cosmetic Act (FFDCA) food additive tolerance requirements. In addition, tara gum is also allowed to use as a pharmaceutical ingredient (in the USA this means it is described in the US Pharmacopeia). Tara gum's EINECS code is 254-409-6 and the CAS registration number is 39300-88-1.

## 4.3 Product and additional requirements

### 4.3.1 Physical, organoleptic and chemical

The physical, organoleptic and chemical specifications for tara gum do not differ a lot across the world, however they may vary from company to company. The most common specifications are:

- Colour and odour: white and odourless powder
- Galactomannan: >75-80%.
- Viscosity in a 1% concentration: medium grade varying between roughly 3,000-4,500 cps, high grade ranging from 4,000 to 6,800 cps. For depolymerized (or low-viscosity) tara gum this value is about 300 cps.
- MESH 100: > 80%.
- Humidity: 8-14%.
- Acid insoluble matter: <2%
- Ash: <1.5%
- Protein: <3.5%
- Starch: undetectable
- pH: 4.0-7.0

### 4.3.2 Microbiological criteria

The microbiological quality must be in accordance with the importing country's regulation on microbiological properties, but for tara gum mostly there are no problems encountered in meeting import requirements. Common criteria for tara gum are: Total Plate Count: <5000 ufc/g, Moulds and Yeast: <500 ufc/g, Escherichia Coliforms: <1 ufc/g, Salmonella detection: negative in 25g. In virtually all countries worldwide these criteria meet the regulations.

### 4.3.3 *Maximum Residue Levels (MRLs)*

Countries define so-called “Maximum Residue Levels” (MRLs), which are upper legal levels of a concentration for pesticide residues in or on food or feed products. This is to ensure the lowest possible consumer exposure. Standards can be different in individual countries, but the MRLs of individual countries can be found on the internet (e.g. the [EU’s pesticide database](#)). There are also databases that offer MRL information of many countries worldwide, like [GlobalMRL](#). Subscription is free for MRL information for the USA, while information for other countries is only accessible with a paid account. Note that in the European Union, although there is a Regulation (EC) 396/2005 in place, individual member countries of the European Union may have their own MRLs set for specific pesticides.

### 4.3.4 *Contaminants*

Food contamination refers to the presence of harmful chemicals and microorganisms in food, which can cause illness (other than foodborne illness caused by microbiological contamination). For the European Union, residues of contaminants must be in accordance with [EC Regulation 1881/2006](#) and subsequent amendments.

Some requirements are: Arsenic: <3 mg/kg, Lead: <5 mg/kg, Mercury: <1 mg/kg, Cadmium: <1 mg/kg, Heavy metals (like Pb): <20 mg/kg. If the residues of contaminants are below the above listed levels, virtually all markets worldwide are accessible.

### 4.3.5 *Food safety requirements*

#### 4.3.5.1 *Food safety certification*

Food safety is a key issue in worldwide food legislation. In Europe, the [General Food Law](#) is the legislative framework regulation for food safety, while in the USA the [FDA Good Manufacturing Practices \(21 CFR, part 110\)](#) must be followed. Traceability (further described below), hygiene, quality assurance and control are important elements of the regulations. In controlling food-safety hazards, it is important to define critical control points (HACCP) by implementing food-management principles. Another important aspect involves subjecting food products to official controls. Products that are not considered safe will be denied access to the market in question.

#### 4.3.5.2 *Traceability*

Food safety has been a growing concern among consumers in the last decades. Several scandals related to imported food have put food retailers under increased pressure to assure their customers of the origin and authenticity of food products. As a consequence, food companies including importers and retailers, for example in the EU, are required to have traceability systems in place. In case of tara gum, traceability refers to the ability to trace, follow and record all the parts of the supply chain. Exporters should know and document from whom they buy their food ingredients, which products are used during their processes and to whom they supply their products and label the final products. Traceability is strongly related to certification, as in the incorporation of certification and standards, traceability is an important aspect of conformity.

#### 4.3.5.3 *Food management systems*

There are several food management systems and certifications used worldwide. As a rule of thumb, most potential buyers in the developed world accept the systems recognised by the Global Food Safety Initiative (GFSI).

The following certification schemes can be relevant for tara gum producers, traders or processors: GLOBALG.A.P., Food Safety System Certification 22000 (ISO 22000), BRC Global Standard for Food Safety (British Retail Consortium) and IFS Food Standard (International Featured Standard).

#### 4.3.6 *Optional requirements*

Depending on the target market (segment), optional specifications or standards may apply to tara gum. Such specifications follow the certification requirements for that target market. Examples are: organic, fairtrade, gluten free or kosher.

In the case of organic certification: while the product must meet several requirements, the buyers must also be accredited as organic certified traders. However, as tara gum is already vegetable (and often wild) produce which usually makes up less than 1% of a final product, organic certification is and is expected to remain a small market in the next decade.

#### 4.3.7 *Packaging, handling and labelling*

Packaging and handling is in the first place according to the customer's requirements. But in practice, there are some commonly used packaging sizes worldwide. By far the most common packaging size is 25 kg stitched bags 84x52cm, made of polypropylene, (kraft) paper with inner polyethylene or multiwall (kraft) paper. Another packaging size for larger quantities is a polypropylene super ton bag of 1000kg. The packaging material must be food grade in accordance with the relevant legislation for food contact materials.



The packages shall be legibly coded as per customer's coding procedures, which often prescribe to provide the following information, mostly in the English language: production month, date, year and production line. Case markings, if relevant, often have to identify product name, pack size, customer, stock number and date (date will be the same as date on package).

Containers are usually fully stacked, up to the roof, to use all container space and reach a 20 tonnes weight per container. For this practice, it is very important to thoroughly clean the container beforehand. Another option is the use of pallets, which is safer but it makes transport per ton more expensive. If the customer requires the use of pallets, the customer will also prescribe the type of pallet and its security (like shrink-wrap, pallet-wrap or banding). In practice, the type of pallet depends on the warehouse requirements. It is also possible for the customer to request their tara gum in bulk shipments, in order for them to package the tara gum in their own facility.



Each buyer has specific requirements for storage, but mostly it comes down to the following:

- Clean, dry (relative humidity sometimes prescribed as 45-65%RH or maximum of 70%), out of sunlight, away from walls.
- Cool, with maximum temperatures of 15°C to 21°C and ranges between 0-21°C.
- Well ventilated, away from strong odours or odour-free area.
- Properly protected against infestation by insects and other pests.

In the case of tara gum for the consumer market, consumer package labelling must comply with the regulations applying to the target market in question. As consumer package labelling regulations can

be quite complicated and the consumer segment is rather small, the consumer packaging development is normally the responsibility of the distributor in the target country.

#### 4.4 Price requirements

As a rule of thumb, the Free on Board (FOB) price should be multiplied by a factor 1.2 to cover the minimum importer's costs (transport, testing, inspection, and import costs). Most distributors of tara gum sell a range of hydrocolloids for a range of sectors and subsectors in the food, pharmaceutical and cosmetics industry. These distributors spend serious amounts of money on R&D activities for texturizing systems, developing application-specific blends in close cooperation with their customers. To cover these costs, the final price a customer of a blend with tara gum as component is paying may easily reach triple the FOB price. Also, the margin for small volumes (<50kg) can be easily 50% higher than normal volumes.

As explained in 3.2, an important factor in the market price development of tara gum is the price of tara gum's main competitors, guar gum and LBG. Changing price levels of guar gum and LBG affect the price level of tara gum. Other competing products can be xanthan gum and starch; food or pharmaceutical producers may compare price levels of all these products in case they evaluate their ingredients and cost price. In addition: another important issue that should not be neglected is the necessary dosage; the replacement of starch in a product by tara gum can be very cost effective because of a lower required dosage, for example. But also compared to LBG, the dosage can be between 25-30% lower.

Last but not least: large (and also medium-sized) food processing companies that work with strict budgets and forecasts do not like price fluctuations, but prefer stable price levels through the years. Such companies often have professional sourcing or purchasing managers in place who are responsible for the financial performance of purchasing, including ingredients. As budget performance (actual expenses according to budget targets) is an important business indicator for most purchasing departments, often a stable price is preferred over a fluctuating but on average lower price.



Tip 1: Give potential buyers a clear overview of cost benefits of buying/ using tara gum, over other gums.  
Tip 2: Stable prices should be guaranteed as much as possible.

#### 4.5 Opportunities for organic or fair trade tara gum

##### 4.5.1 Organic labelling in Europe

In Europe, foods may be labelled "organic" if at least 95% of their agricultural ingredients meet the necessary standards. As tara gum usually makes up less than 1% of a final product, it doesn't need to be organic in order for the final product to qualify for organic certification.



##### 4.5.2 Organic labelling in the USA

In the USA, there are two organic labels: "Organic" and "Made With Organic". Like in Europe, American "Organic" labelling requires 95% of a food product's ingredients to be certified organic. The "Made With Organic" label requires 65% certified organic ingredients. Again, as tara gum usually makes up less than 1% of a final product, it doesn't need to be organic in order for the final product to qualify for organic certification.




However, both labels require non-certified ingredients to be included in the [National Organic Program](#) list. Although several gums are on this list (e.g. guar gum and LBG), tara gum currently is not. To add tara gum, a [petition](#) can be submitted to the USDA's National Organic Program.

#### 4.5.3 Fair Trade

Food composite products carrying the Fairtrade Mark must consist of at least 20% Fairtrade certified ingredients. This means that tara gum, which usually makes up less than 1% of a final product, doesn't need to be Fairtrade certified. Do note however, that regardless of its percentage in a product's ingredients, if a Fairtrade certified ingredient is available it must be used. For tara gum however, this does not offer improved opportunities as there are some very good competing alternatives (LBG and guar gum). For the coming decade, it is therefore not expected that the market for fair trade food composite products will grow so fast that fair trade tara gum will have increasingly good opportunities in that market.

#### 4.5.4 Price levels of organic and fair trade (tara) gum

Market prices of organic gums are virtually double the price of the conventional gum. In December 2015, for example, conventional guar gum was traded at USD 1,200/ton, versus organic guar gum at USD 2,300/ton. For LBG this was USD 8,000 versus USD 16,000. Hydrocolloids importers and distributors consider this large difference as a main obstacle for organic gum's market growth.

	Tip: Only opt for organic certification if there is good potential among existing buyers. Currently a few suppliers (Exandal and Silvateam) already offer organic tara gum, while fair trade tara gum is only offered by Exandal.
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## 5 GLOBAL TRENDS

This chapter lists the main trends that shape the market for tara gum now and in the next decade.

### 5.1 Clean labelling

There is not one definition of clean labelling as the definition lies with the consumer. It encompasses issues like recognisable ingredients, minimal ingredients, minimally processed food, no artificial ingredients, no preservatives, non-GMO, all-natural, organic and country of origin. Clean labelling is an important consumer trend as many consumers think that natural ingredients are by definition healthier, safer and more sustainable than synthetic ingredients. As tara gum is a natural ingredient, it can replace more synthetic ingredients like CMC.

There is, however, a catch to this trend. Although tara gum may be perfectly suited for clean labelling, the average consumer is not familiar with it. In general, consumers base their opinion of an ingredient mainly on its name. They tend to be wary of ingredients they perceive to be chemical (e.g. E-numbers, like tara gum's E417), or ingredients they don't know from their kitchen cupboards. Because many consumers are not familiar with "tara" and may associate "gum" with artificial additives, they might not recognise tara gum as being a natural ingredient. One well-known example of critical articles about tara gum are these related to Unilever's ice-cream brand Breyers, like [Unnatural Breyers Ice-cream](#) and [Tara gum Unilevers Response](#).

Consumers that do some additional research may be deterred by the fact that there are currently no (or limited) toxicity test results on tara gum for human consumption (e.g. [Harmful or Harmless: Guar Gum, Locust Bean Gum, and More](#)).

### 5.2 Natural, organic and beyond

The organic market has been growing quickly worldwide in recent years. Although in 4.5 it was explained that market opportunities for organic (or fair-trade) tara gum are rather limited, the demand for organic and natural products is expected to remain a trend in the next decade.

### 5.3 Diet products

As the population in the Western world is getting heavier, the demand for products containing less fat and calories is growing. Reducing fat or calories often results in taste compromises, therefore food manufacturers use other ingredients (such as tara gum) to mask the reduction. Probably the segment with the best opportunities in this respect is "dairy & desserts", where tara gum's major benefit is the fat-like texture.

### 5.4 Flexibility in labelling

In most food products the dosage of tara gum is less than 1% calculated as a proportion of the total quantity, while the total share of hydrocolloids normally is below the 2% share. A trend seen in recent years, particularly caused by changing formulas since 2011-2012 as a result of the exploding guar gum prices, is the application of "flexible labelling". Such flexible labelling is possible in case the gum formulation is less than 2% of the total quantity. It means that the label mentions several gums (e.g. "guar gum, locust bean gum, tara gum"), while the product can actually contain only one or two of the mentioned gums. This gives the food producer flexibility in term of gums use, without the expense of multiple label stocks.





Tip 1: List all benefits of your tara gum in your promotion material and describe them from a customer perspective.

Tip 2: Find inspiration at distributor's websites, e.g. [Provisco](#), or this brochure of [Coyote](#).

Tip 3: Consider to make use of video promotion material, like [TIC](#) or [Exandal](#) are doing.

## 6 Global forecast, opportunities and conclusion

Last but not least, this chapter reveals a look into the market opportunities in the next decade. Coupled with the main conclusions, below also follow some recommendations to the Peruvian supply chain members.

### 6.1.1 Hydrocolloids distributors develop the market

The hydrocolloids market development is and will remain the primary task of hydrocolloids distributors. These companies have a very broad knowledge of the market in their countries, including a lot of application know-how. From their experience, it is a time-consuming process to reformulate existing products, as the substitution of gums by other gums may affect taste, viscosity, texture, mouth-feel etc. In the past decade, the most important cause for a sharp growth in 'reformulation demand' was the price explosion of guar gum. As explained in 3.2, this situation is not foreseen to occur again.

### 6.1.2 Two critical success factors

It seems so simple: tara gum as the bridge between the cold water soluble guar gum and the cold water insoluble LBG, providing high viscosity at low temperatures (although not completely soluble in cold water). There are plenty of possible applications known and mentioned by many (like the overview in Table 5), however so far there are still relatively few products in which tara gum is applied. Although tara gum in for example ice-cream or ketchup is frequently mentioned as a very successful application, the tara gum is still not widely used in these products.

Two critical factors that will continue to limit (or offer the key to) the success of tara gum are:

- Willingness of R&D departments at (food, pharmaceutical, cosmetics) processing companies to work on try-outs, reformulation processes etc.;
- Time and energy spend on the promotion of tara gum by hydrocolloids distributors.

### 6.1.3 Promote the benefits of tara gum

Although there are some trends (see 5.1 to 5.4) that may positively influence demand for tara gum in the next decade, these trends do not offer opportunities to tara gum alone, but equally to other gums as well. Therefore, in a way to improve market opportunities for tara gum (and powder) worldwide, the Peruvian stakeholders in the sector should work on a sector promotion plan.



Tip: Seek cooperation with other companies active in the tara supply sector in Peru, join forces and work on a promotion plan for the whole sector.

The promotion of tara gum should focus on tara gum's unique selling points compared to guar gum or LBG. In the case the comparison with LBG is made, the unique selling points could be, for example:

- tara gum (E417) is better soluble in cold and hot system than locust bean gum,
- tara gum has higher galactose content (25%) than LBG (20%; guar has 34%),
- in the same concentration tara gum offers higher solution viscosity than LBG.
- historically tara gum has more stable and lower prices than LBG.

### 6.1.4 Which market segments offer best opportunities?

While the food industry is expected to remain the largest market segment for tara gum, the pharmaceutical and cosmetics industry are forecast to show the highest growth in the next decade. This expectation is based on the launch of some promising products in recent years, such as [Vin-Uplift](#). One other segment that could offer new and considerable growth potential is the feed industry.

### 6.1.5 Which countries offer best opportunities?

Per market segment, the following countries and/or regions offer the best opportunities:

- Food industry: Germany, France, Switzerland, Spain and Italy.
- Pharmaceutical and cosmetics: Europe, with focus on Germany, France, Switzerland, Netherlands.



Tip: The food industry in Japan and Australia should be further investigated, as these countries are thought to offer good opportunities for tara gum.