

A TOUGH STORY OF LEATHER

A journey into the tanning industry
via the Santa Croce District



**CHANGE
YOUR SHOES**

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PART ONE: The International Context

1.1. The animal issue

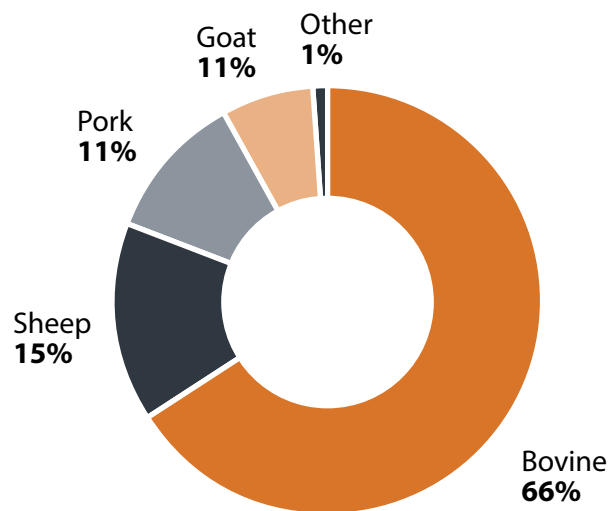
The journey of a leather shoe is long and arduous, because it is beset with numerous problems, both environmental and social. The leather used to make shoes is obtained from the hide covering the bodies of animals, not those living in the wild but, rather, animals farmed under human control. So the journey of a pair of shoes can start from a village in the Sahel, a ranch in Texas or a pasture carved out from a patch of the Amazon rainforest. Leather production represents a turnover of 50 billion dollars each year and is closely tied to the red meat industry, which itself has an export turnover of around 100 billion dollars annually, not including the value of derived products such as milk and wool.¹

Entities in the tanning industry claim to play a positive environmental role, because they remove a waste product generated by the meat industry, much in the way of scavengers. But the quantities of money surrounding the leather industry are so substantial that it is difficult to see the industry as one that relies on the production of leftovers by other sectors. Suffice it to say that this industry represents the foundation for the construction of an industrial empire, closely linked to luxury goods, made up of shoes, handbags, belts, wallets, furniture and vehicle upholstery, etc.,

¹ <http://www.euroleather.com/> and <http://www.trademap.org>

that has an estimated total turnover in excess of a trillion dollars a year. So, essentially, an entire world would collapse without leather. A quick flick through any journal devoted to the leather sector shows that there is a general complaint by owners of tanneries about the dearth of raw material. So the more likely scenario is two sectors, the meat industry and the leather industry, working together as allies to create growth in livestock farming and slaughtering. After all, the largest leather producer is JBS, a Brazilian multinational specialised in those two sectors. With 185,000 employees and annual turnover of 50 billion dollars, the company slaughters 100,000

Figure 1. Production of raw skins by type (in percent of total global skin production – 2010)



Source: United Nations Industrial Development Organization, *Future trends in the World Leather and Leather Products Industry and Trade*, 2010, p. 17

cattle, 70,000 pigs and 25,000 lambs each day, from which it obtains meat and skins that it tans in 26 tanneries it owns, distributed in various countries around the world, including Brazil, Argentina, China, Germany, Italy, Mexico, South Africa, Vietnam and Uruguay.

Almost 90% of the raw skins produced throughout the world originate from four types of mammals: cattle, sheep, pigs and goats. But the bulk are from cattle, which alone provide two-thirds of global production. We will therefore focus solely on the production chain for cow hide.

Box 1. The environmental impact of farming

In times of environmental crisis such as we are now experiencing, even the livestock sector is under scrutiny because of the water it consumes, the food it uses, the land it occupies and the wastes it produces.

It takes 15,000 litres (15 cubic metres) of water to produce one kilo of beef. In practice, this equates to a small swimming pool full of water for four steaks. These numbers seem impossible, until we look more closely at what an animal eats during its life cycle: 1,300 kilos of grain and 7,200 kilos of fodder. It takes a great deal of water just to grow all this stuff. We also need 24 cubic metres of water to keep the animal watered and 7 cubic metres to keep it clean. So, to produce just one kilo of beef, it takes 6.5 kilos of grain, 36 kilos of fodder and 15 cubic metres of water.

On a global scale, more than 40% of annual cereal production is used to feed livestock, resulting in a total of almost 800 million tonnes of grain, plus 250 million tonnes of oil seeds, primarily soya. In many regions, these are cultivated as single-crop farming and exported throughout the world by powerful multinationals such as

Cargill, ADM and Bunge. So, to conclude, almost one third of the 14 billion hectares of arable land available throughout the world is used to obtain food to be given as feed to animals. If we also consider the minor ingredients used in feed mixes for animals, such as straw, beets and other plants, we can calculate that three-quarters of the world's arable land is involved in some way in the production of animal foodstuffs. And if this were not enough, even the forests are being sacrificed on the altar of livestock farming. Brazil, for example, is home to 211 million head of cattle, a national total exceeded only by the corresponding figure for India. The amount of land required to raise all of these animals is enormous, and attention has been focussing on the Amazon rainforest as a means of providing the necessary hectares.

A study conducted by the Brazilian Instituto Nacional de Pesquisas Espaciais (INPE) determined that only 4.9% of the deforested land in Brazil is intended for agriculture. And while 21% is unused pending a decision as to how it will be used, 62.2% is used as pasture. So the largest rainforest on

the planet is disappearing so we can raise livestock. The French association Envol Vert estimates that cattle farming intended for the production of meat and leather contributes at a rate of 65% to deforestation of the Amazon: the pasturelands are located primarily in a fifty-kilometre-wide strip along the main roads passing through the forest.

Forests have an incredibly important role for a number of reasons, not least because they combat climate change as a result of their ability to absorb carbon dioxide. And climate change is another specific area in which the finger is being pointed at the farming sector, because livestock contributes to the production of greenhouse gases. The extent of this contribution is still being debated, because not everyone uses the same criteria. Depending on the factors considered, the figure varies between 16% and 32%. The FAO claims that animals contribute 14.5% to the production of greenhouse gases, but the calculation used takes into account only gases associated with animal excrement. If we were to include those linked to the production of grain, the figure would double.

Reference texts: Meat Atlas, published in 2014 by Heinrich Böll Stiftung and Friends of the Earth – Europe; Le cuir tanna la forêt, published in 2013 by Envol Vert.

1.2. From livestock farming to the production of raw skins

The country with the world's largest population of cattle is India, but this nation only ranks fifth if we focus on the meat produced. The United States is the country with the highest beef and veal production, but it ranks only third in terms of exports, as a result of its large-scale domestic consumption. Table 1 provides a summary of the largest nations in terms of beef and veal production, domestic consumption and export. It is somewhat surprising to see that India is the world's largest exporter of beef and veal.

Table 1. Production, domestic consumption and export of beef and veal in thousand tonnes (2014)

Country	Production	Domestic consumption	Export
Usa	11.078	11.244	1.167
Brazil	9.723	7.896	1.909
UE	7.410	7.480	301
China	6.890	7.297	30
India	4.125	2.043	2.082
Argentina	2.700	2.503	197
Australia	2.595	790	1.851
TOTAL	59.690	57.629	10.003

Source: United States Department of Agriculture - Foreign Agricultural Service, *Livestock and Poultry: World Markets and Trade, April 2015* (http://apps.fas.usda.gov/psdonline/circulars/livestock_poultry.pdf); <http://www.indexmundi.com>

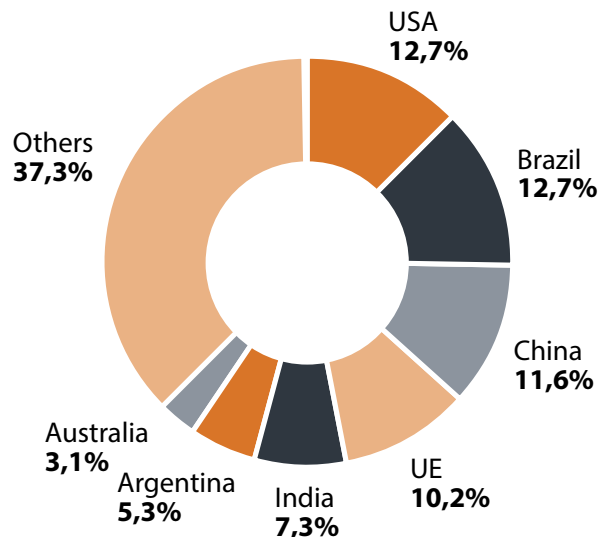
Production of meat and production of leather go hand in hand, so much so that the rankings for leather production coincide almost exactly with those for meat production. There is merely a slight imbalance in regard to China, for reasons that have not been clearly established.

Table 2. The five leading producers of raw cowhides in thousand tonnes (2013)

Country	Usa	Brazil	China	UE	India
Production	834	832	760	668	479

Source: FAO, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

Figure 2. Leading producers of raw cowhides by weight (in % of total world production, 2013)

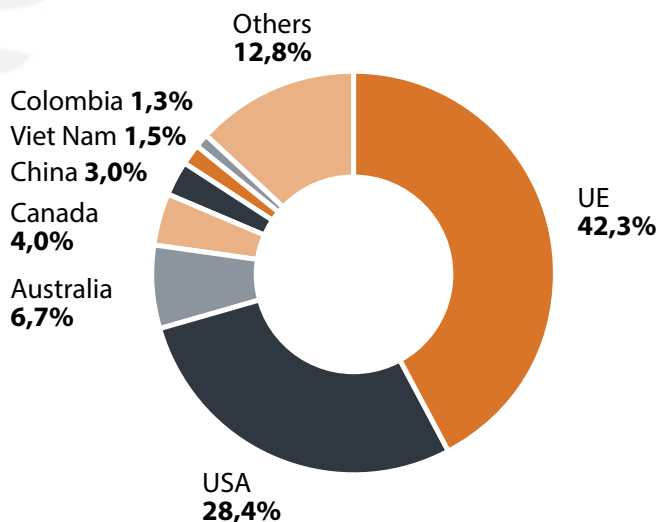


Source: drawn from FAO data, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

1.3. From production to exportation of raw skins

We should expect to see an alignment between the largest producers and the largest exporters of cowhides. But instead, we have found that the largest producer, Brazil, contributes only 0.34% of global exports. Other significant producers, such as Argentina and India, provide 0.15% and 0.06% respectively of the total quantity of raw skins traded throughout the world.

Figure 3. Leading exporters of raw cowhides by weight (in % of total global exports, 2013)



Source: drawn from FAO data, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

Of the major producers of raw leather, only the European Union and the United States are also major exporters, and together, they supply 70% of all raw cowhides available in international markets. We should note, however, that almost all EU exports are to other EU nations. For example, France, which

along with Germany and the Netherlands, is among the largest producers of cattle in Europe, exports almost 80% of its raw hides production to Italy. In 2013, the EU had a small trade surplus, but an analysis of the period from 2007 to 2013 shows years with trade deficits. This suggests that the EU can no longer be certain of its self-sufficiency.

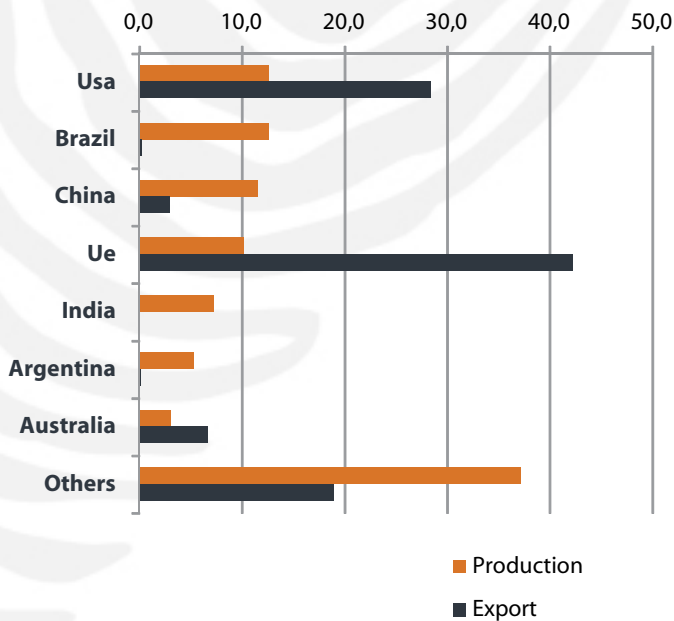
Table 3. Change in EU imports-exports of raw cowhides in thousand tonnes

Year	Imports	Exports	Balance
2007	871	814	-57
2008	779	871	92
2009	674	891	217
2010	1144	1104	-40
2011	1070	1052	-18
2012	976	1053	77
2013	1068	1123	55

Source: FAO, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

Figure 4 provides a summary of the weight of each country (or area) in terms of the global production and exportation of raw leather. It is clear that the United States, the EU and Australia ('the North of the world') are major producers and exporters at the same time, while Brazil, China and India ('the South of the world') are major producers but minor exporters.

Figure 4. Production and exporting of raw cowhides (in % of global totals, 2013)



Source: drawn from FAO data, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

In the period from 2000 to 2015, the countries of the South have increased their annual production of raw cowhides by 2%, while the countries of the North have reduced it by 1.1%.² The trend therefore indicates a gradual increase in the share of production by countries in the South, while the North is progressively reducing its commitment to an activity that poses certain environmental issues. But the increased production by the South is not being reflected by increased exports, as a result of the decision to process the skins produced domestically wherever possible. This is a situation that also works for the North, which is happy to move the harmful phases of the process outside its own borders.

² FAO, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

Figure 5. Change in production of raw skins (cattle, sheep and goat) in the South and the North of the world, between 2004 and 2013 (2004=100)

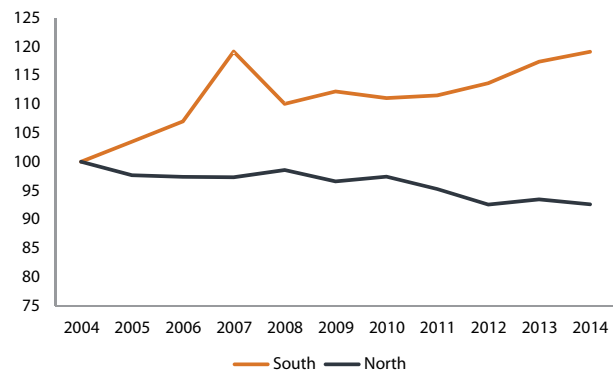
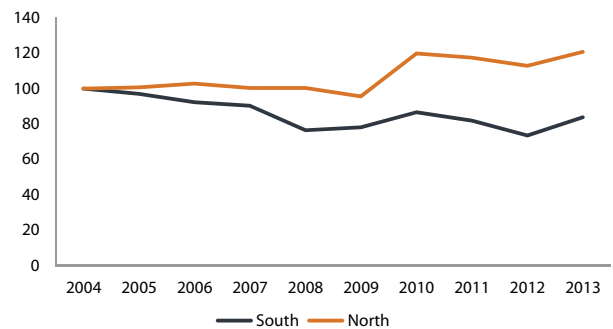


Figure 6. Change in exportation of raw skins (cattle, sheep and goat) in the South and the North of the world, between 2004 and 2013 (2004=100)



Source: drawn from FAO data, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

Despite the fact that the emerging nations produce almost double the quantity of raw leather produced by the richer nations, international trade flows move from the latter to the former. The emerging nations are net importers of raw leather, led by China, which imports vastly more than it exports: in 2013, the country recorded more than one million tonnes of imports compared to a little less than 9,000 tonnes of exports.

Table 4. Global structure of production and trade of raw skins, in thousand tonnes (average 2011-2013)

	Production	Foreign trade balance	Total availability
Emerging nations	4214,4	+1251,9 (net import)	5455,8
Richest nations	2240,6	-1010,8 (net export)	1230,2

Source: FAO, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

In fact, tanning is one of the key areas for development in newly industrialised nations, for three essential reasons: 1. It requires technology that is relatively cheap, 2. It is a type

1.4. Processing and trading of semi-processed leather

It is a known fact that many nations in the South of the world want to keep their raw skin production in-country in order to promote the development of the domestic tanning industry, with the dual objective of generating products for export with greater added value and of creating jobs.

To ensure this type of outcome, certain countries have imposed restrictions on exports, which can involve duties, quotas and bans. We have not found any full studies on these mechanisms, so the map drawn up in 2007 by Unido on export duties is therefore particularly important. A summary of this information is provided below.

of production activity that advanced nations are tending to divest themselves of because of the substantial pollution that it generates, and 3. It is a sector that precedes the development of another type of production activity typical of the process of industrialisation, namely the manufacture of shoes.

The exception to this is Italy, which has a long tradition of tanning and shoe production, and continues to be heavily involved in both sectors, despite the challenges generated by globalisation.

Table 5. Duties on exports of hides and subsequent processing (in % on prices, January 2007)

	Hides	Wet blue	Leather Crust	Finished Leather	Manufactured products (Leather shoes)
Argentina	10	15	5	5	5
Brazil	9	9	0	0	0
India	60	60	60	0	0
Kenya	15	0	0	0	0
Pakistan	20	20	0	0	0
Paraguay	12	0	0	0	0
Russia	15	10	10	0	0
Tanzania	20	0	0	0	0
Uganda	20	0	0	0	0
Uruguay	8	8	0	0	0

Source: *United Nations Industrial Development Organization, Future trends in the World Leather and Leather Products Industry and Trade, 2010, p. 109*

The limited information found in OECD documents and obtained from directly involved Governments shows that 17 countries have export restrictions on raw hides, and they

are prepared to review their policies on an ongoing basis given the changes in the domestic and international context.³ For example, India has introduced an additional 15% duty on vegetable-tanned leather.⁴ And while Nigeria has simply imposed a ban on the export of raw skins, other countries have introduced their own duties, sometimes in the form of a fixed duty, as is the case with Turkey,

3 Jeonghoi Kim, *Recent trends in export restrictions*, OECD Trade Policy Paper 101, 19 July 2010

4 'India: leather industry under threat', 1 August 2013 (<http://www.leathermag.com/news/newsindia-leather-industry-under-threat>)

which applies a surcharge of 0.5 dollars for each kilo of raw skin exported, and sometimes in the form of a percentage value, as Angola and Indonesia do, imposing rates of 20% and 25% respectively.⁵ Among the countries that are most focused on preventing exports of raw skins, Kenya has been gradually increasing its customs duties since 2007, up to 80%. This model has since been adopted by Tanzania, which initially increased duties to 60% and is now also considering raising them to 80%.

5 Jeonghoi Kim, *op. cit.*

Box 2. Kenya's reasons and opposition from Europe

The Kenyan Government's decision to increase the export duty on raw skins has created problems in relations with the European Union, which was seeking to create a free trade area with Africa. For the African nation, the livestock sector represents 10%-15% of the GDP. Raw skins were traditionally used to supply tanneries abroad and the associated added value for Kenya was minimal. In 2007, the Government in Nairobi therefore decided to increase duties on exports of raw skins to 40%, as part of a specific economic development programme named Vision 2030 Programme. In 2015, these duties were in fact increased to 80%. The quantity of the total production of skins remaining in the

country for initial tanning has therefore risen from 56% in 2004 to 96%-98% in 2010. Between 2003 and 2007, local production of semi-processed and finished skins essentially increased four-fold, with the creation of 1,000 direct jobs and 6,000 indirect jobs, and improved salaries for the 40,000 workers employed in the sector. Other African nations, such as Tanzania and Uganda, have followed Kenya's example. The European Union does not look favourably on this policy, because it makes it more difficult for its Member States with strong tanning industries to obtain raw leather. It is therefore using the mechanism of Economic Partnership Agreements (EPA) as a blackmailing tool to impose its

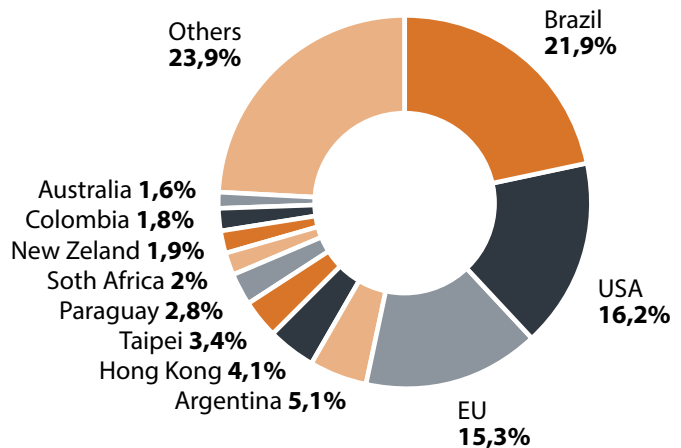
wishes. Developed as economic cooperation agreements for nations in Africa, the Caribbean and the Pacific, former European colonies, EPAs are actually commercial agreements that Europe is trying to use to protect its own interests. With regard to export duties, the treaty lays down an obligation for prior authorisation of the EPA by the Council, of which the European Union obviously forms a part, and the EU thus has a real power of veto. And while the application can be made only for a limited number of products, the duties are in any case reviewed after 24 months of application. The issue of export duties is one of the points preventing a number of States from signing the agreement.

Reference text: Mark Curtis, *Developing the Leather Sector in Kenya through Export Taxes: The Benefits of Defying the EU 2010*, Kenya Business Tax Newsletter. 2015-2016 Budget News, June 2015

To offer a better understanding of the global dynamic, we should emphasise the fact that processing of hides is a very lengthy process that results initially in raw tanned leather, referred to as wet blue. These hides are no longer subject to putrefaction processes but nonetheless need further processing before they become finished leathers ready to be transformed into shoes, handbags or upholstery for furniture or vehicles. Initial processing of the wet blue produces the crust, which has received an initial colour base. The final phase of the process is the finishing, which provides the crust with the exact colour required and various other external characteristics.

There are certain countries that produce primarily finished leathers, and others primarily semi-processed. The available statistics do not provide clear data in this regard, but an analysis of exports shows that the largest exporters of semi-processed leather are Brazil, the United States and the European Union, with Italy being a leading contributor.

Figure 6. Leading exporters of semi-processed cow and horse hides by weight (in % of total global exports, 2014)



Source: <http://www.trademap.org> (International Trade Center)

Table 6. Leading exporters of semi-processed cow and horse hides, in tonnes (2014)

Brazil	405.171
Usa	299.392
Ue	283.027 (Italy: 183.915)
Argentina	95.093
Hong Kong	75.896
Taipei	63.326
Paraguay	52.145
South Africa	36.727

Source: <http://www.trademap.org> (International Trade Center)

Approximately two-thirds of the wet blue exported by the EU is produced in Italy, and almost half the total quantity of semi-processed leather produced in Europe (129,841 tonnes) is intended for China. This could suggest that the EU has accepted the role of a producer of semi-processed leather. But to understand the actual position of the EU, we also need to look at imports. And here we see that the EU imports almost

double what it exports. Here again, the major contributor is Italy, which is the destination for 76% of European imports, primarily from Brazil and the United States. We can therefore conclude that the EU is a major net importer of wet blue and that its intention is to produce finished leather, because this is the area where the greatest profits can be achieved.

Table 7. Leading importers of semi-processed cow and horse hides, in tonnes (2014)

Cina	760.417
UE	499.262 (Italy: 380.524)
Viet Nam	172.643
Taipei	91.384
Hong Kong	81.624
South Korea	46.040
Spain	40.001
Thailand	39.514

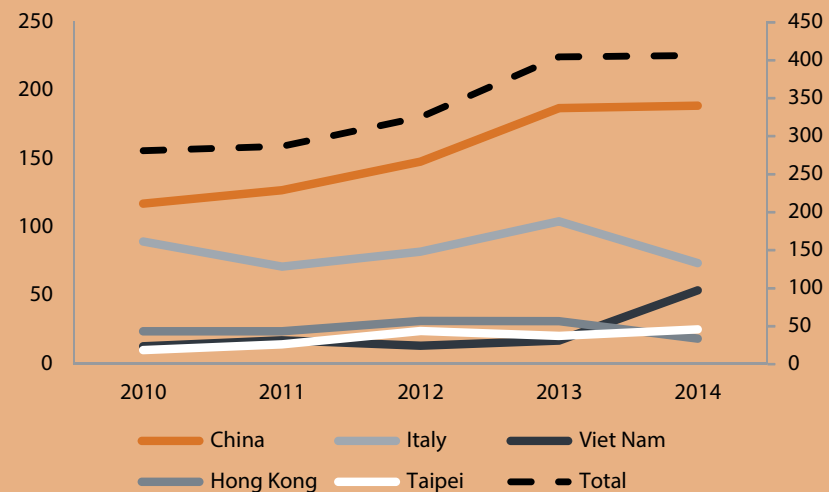
Source: <http://www.trademap.org> (International Trade Center)

Box 3. Focus on Brazil

With almost 10 million tonnes of beef and veal produced each year, Brazil is the world's number 2 in terms of production and consumption of beef and veal, beaten only by the United States. It had also been the world's leading exporter, although it was surpassed in 2013 by India.

Brazil is the second largest country in the world in terms of production of raw hides, but has a limited role as an exporter, because it has chosen instead to develop the local tanning industry, above all in São Paulo and Rio Grande do Sul. In recent years, the Ministry of Industry and Economic Development has committed substantial financial resources to implementation of the 'Brazilian

Figure 7. Change in Brazilian exports of semi-processed cow hides and principal markets, in thousand tonnes (2010-2014)



Source: <http://www.trademap.org> (International Trade Center)

Leather' programme, promoted by Apex, the export promotion agency. This explains Brazil's emergence as a leading exporter of semi-processed leather, which are then sent to the major processing nations.

1.5. An attempted summary

Although the statistics are not completely satisfactory in all cases, if we put together all of the available elements, we can assert that:

- The United States is the leading global producer of raw leather, but the sixth-largest producer of tanned leather. This is a consequence of the fact that this country sells a large proportion of leather in the raw state. With regard to tanned leather, the balance of payments is broadly positive for both wet blue and finished leather. This is an indicator that the nation produces leather in quantities that exceed the processing capacity of its manufacturing industry. A significant portion of its exports are to the major processing nations: China, Italy, Mexico and Vietnam.
- Brazil is the second-largest producer of raw leather but does not sell it in that state, preferring instead to process it and sell it in the form of tanned leather, of which it is the world's third-largest producer. Brazil is a major net exporter of both wet blue and finished leather. This is an indicator that it has production capacity for tanned leather that is much higher than can be absorbed by its domestic leather goods manufacturing industry, which is however substantial. Most of its exports go to the major processing nations: China, the United States and Italy.
- China is the third-largest producer of raw leather but does not sell the leather in that state, processing it instead into finished leather. The import-export flows show that despite the large-scale availability of the raw material domestically, the country is not self-sufficient, and is therefore a major net importer of both raw hides and wet blue. This makes China the leading producer of finished leather, but it is nonetheless unable to meet the total demand from its own manufacturing industry, especially the footwear sector, which has developed domestically. China is therefore also a major importer of finished leather.
- The European Union is the fourth-largest producer of raw hides, which it uses primarily for the requirements of its own Member States. A comparison of imports and exports shows a trend towards a loss of self-sufficiency primarily through imports from the United States. The tanning industry, especially in Italy, is so extensive that it also needs to import large quantities of wet blue, mainly from Brazil and the United States. The result is that the EU is the world's second-largest producer of tanned leather, with an export capacity that covers 25% of global trade in finished leather. Despite its high propensity for exports, the EU still retains a significant quantity of finished

leather for use by its own manufacturing industry, which is particularly concentrated on the manufacture of shoes.

- India is the world's fifth-largest producer of raw hides but does not sell the skins in that state, processing it instead into finished leather. Its tanning industry has become so large that the country is in fact a net importer of both raw hides and semi-processed leather. Overall, it is the fourth-largest producer of tanned leather, and is in one

of the top positions in terms of exports of finished leather.

- Various other countries, both major producers of raw hides (such as Kenya, Ethiopia and Pakistan) and otherwise (such as Bangladesh), are seeking to gain ground in the processing of leather. Some of these nations intend merely to increase their involvement in the various phases of tanning, while others have ambitions to move into subsequent production of leather goods.

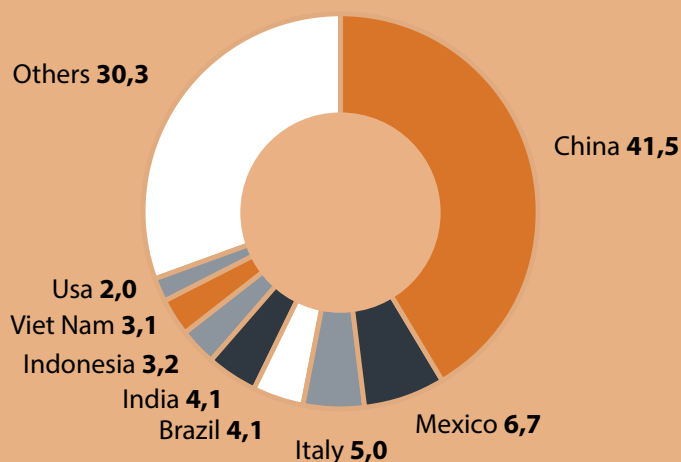
Box 4. Shoes: the final stage

A significant proportion of cow hides produced throughout the world (slightly more than 50%) is used for the manufacture of shoes. The leading producer is China, which is alone responsible for almost half of world production, followed by Mexico, Italy and Brazil.

Of the almost 4½ billion pairs of shoes produced in 2014 throughout the world, a good 1.8 billion were produced by China, and around 300 million by Mexico.

But producing a lot does not automatically mean earning a lot. Indeed, while in terms of quantity, the South exports more than double the number of pairs of shoes exported by the North (1.38 billion compared to 673 million), in terms of monetary value, the situation is reversed: the North earns more than 28.6 billion dollars from its exports, while the

Figure 8. Leading producer nations of leather shoes (in % of world production 2014)



Source: FAO, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014, 2015*

South earns 25.6. This is an inevitable result of a phenomenon that consumers are experiencing in real terms: the average purchase price for shoes produced and exported

by Italy in 2013-2014 was around €38.40, while the average price of the shoes that Italy imported in the same period was less than a third: only €12.50 (source: Ermeneia, *Shoe Report 2015*, Assocalzaturifici, 2015).

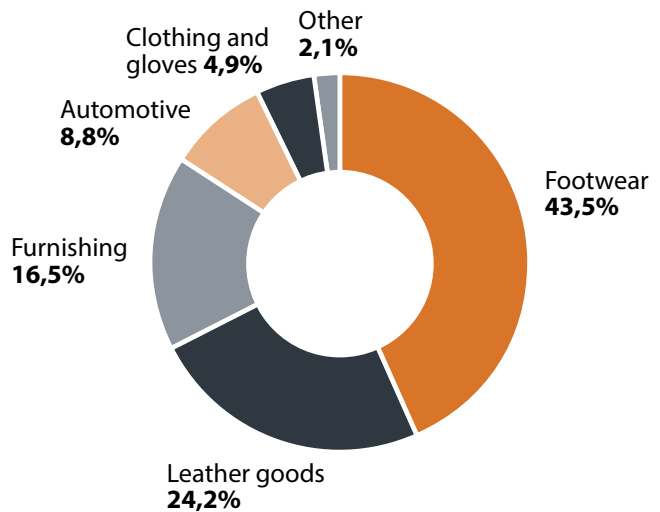
PART TWO: The Italian Context

2.1. The sector in terms of size and geographical distribution

Italy does not have significant livestock farming: with six million head of cattle farmed, this number represents a mere 0.36% of the global total. Thus, production of raw skins is also minimal: only 1% of the world total in 2013⁶. However, the country has a long and rich tradition of tanning, and, in terms of weight, represents 9% of global production of sole leathers and 7.4% of global production of tanned cattle hides for all other purposes⁷. In monetary terms, this represents 17% of total world production and 30% of exports of finished leather⁸.

Total production by the Italian tanning industry, for the 2013 year, was 5.25 billion euros, intended primarily for footwear (43.5%), leather goods (24.2%) and furniture and furnishings (16.5%).

Graph 1. Italian tanning production by destination (% in volume, 2013)



Source: UNIC, Report on sustainability 2014

In geographical terms, tanning activity is performed mainly in three districts, which together cover 88.6% of total Italian production. In order of importance, the districts are the following: Arzignano in Veneto, along the Chiampo Valley in Vicenza Province, Santa Croce in Tuscany, between the provinces of Pisa and Florence, and Solofra in Campania, between Naples and Avellino. More specifically, the district of Arzignano, which contributes 52% of the figure for production, is characterised by standardised production more oriented towards furniture, furnishings and vehicle interiors, Santa Croce, which provides 28% of total production, focuses more on high-end production geared towards the footwear and leather goods

6 Processing of FAO data, *World statistical compendium for raw hides and skins, leather and leather footwear 1998-2014*, 2015.

7 Ibid.

8 UNIC, *Report on sustainability 2014*.

industries, and Solofra, with an 8.6% share of the industry, specialises in the tanning of sheep and goat hides.

In terms of jobs, UNIC, the Italian tanners' association, estimates 18,000 workers employed in the sector, but this is based on data provided by regional branches⁹.

⁹ Op. cit.

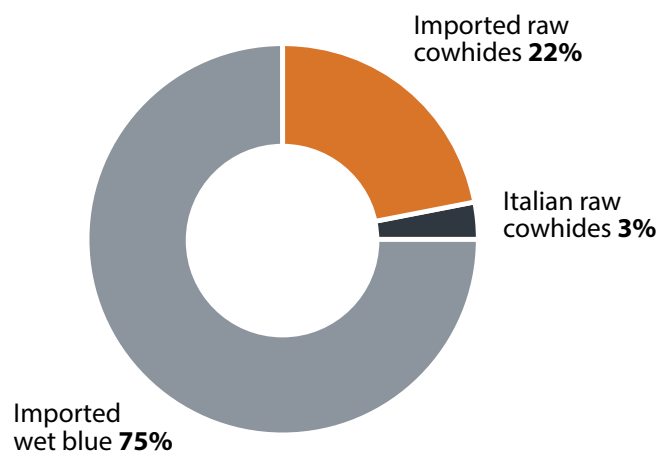
2.2. The raw material

The Italian tanning industry has experienced a profound transformation in the last forty years. The industry traditionally worked with raw skins, which were transformed into finished leather by the various phases of the tanning process. But from the 1980s, the initial phases of the process were increasingly abandoned, with the sector focusing more on the final parts of the process. This change came about as a result of two major phenomena. On the one hand, the introduction of stricter environmental laws forced companies to make investments that not all of them wished to make or could sustain. On the other, there was an increase in the price of raw skins due to increases in customs duties charged by producer nations as a strategy to promote their own tanning industries. This means that, currently, of all cattle leather produced in Italy, only 25% is obtained through domestic processing of raw hides. The remainder represent merely retanning of wet blue originating abroad. This figure, added to the figure for raw hides, indicates that 97%

Through comparison against other sources, a more likely estimate of the number of people employed in the sector is around 23,000, plus several thousand temporary workers not included in traditional statistics. The majority of those employed (46%) work in Arzignano, followed by Santa Croce with 35.5% and Solofra with 15%.

of leather produced in Italy originate from raw hides imported from other nations¹⁰.

Graph 2. Italian finished cow leather by raw material used (in % weight, 2014)



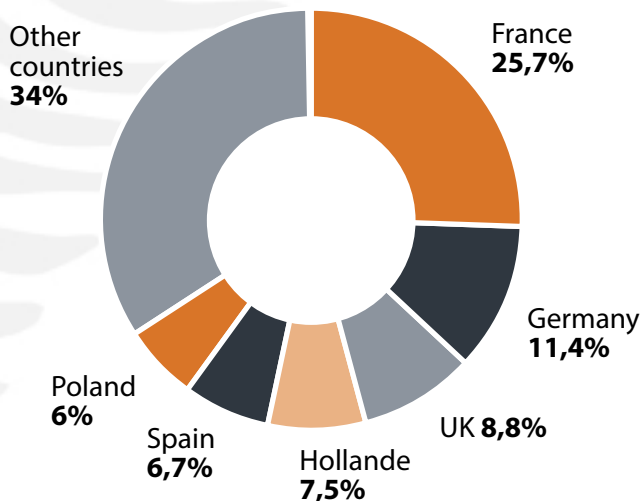
Source: processing of UNIC wet blue data calculated on the basis of the equivalent in raw hide

The raw hides processed in Italy amounted to 446 626 tonnes for 2014, of which only

¹⁰ According to data provided by UNIC, bovine raw material used by the Italian tanning industry in 2014 was made up of 54 000 tonnes of domestic raw hide, 390 626 tonnes of imported raw hide, and 380 524 tonnes of imported *wet blue*. Considering that a tonne of raw hide produces an average of 288 kilos of *wet blue*, we can calculate that the *wet blue* imported into Italy corresponds to 1 321 263 tonnes of equivalent raw hide.

54 000 (12%) were of Italian origin. Of the largest foreign suppliers, France and Germany together account for 37% of Italian imports. With regard to wet blue, the major suppliers are Brazil and the United States.

Graph 3: Italian imports of raw cowhides by origin (% weight, 2014)

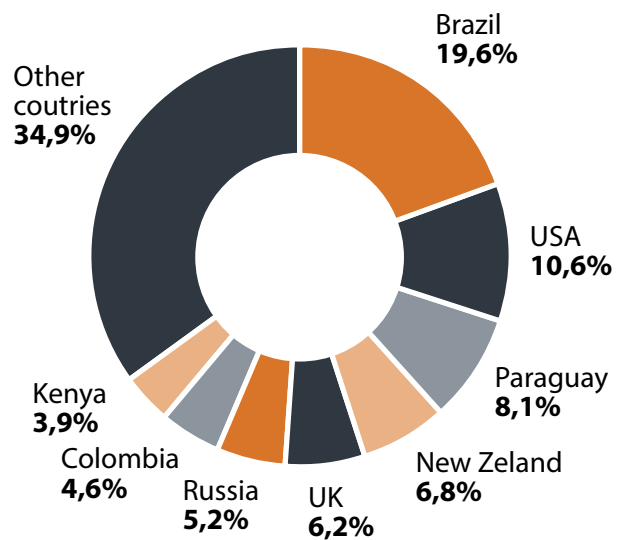


Source: <http://www.trademap.org> (International Trade Centre)

2.3. Cases of vertical integration

The tanning industry in Italy is part of a long tradition, dating back as far as Roman times. So the tanning industry today is backed by a history of small craftsman's workshops that have existed since the 1800s, or even earlier, in areas characterised by abundant watercourses and large-scale animal slaughter operations. This may help to explain why the Italian tanning industry is still dominated by small, family-owned businesses. Cases of tanneries owned by large private companies, recently created, are very rare

Graph 4: Italian imports of wet blue by origin (% weight, 2014)



Source: <http://www.trademap.org> (International Trade Centre)

exceptions. An even rarer breed is those tanneries owned by major industrial groups focused on controlling the entire production cycle, from tanning to manufacturing of leather goods, which are rare not only in Italy but worldwide.

Two exceptions are LVMH (the owner of Louis Vuitton) and Kering (the owner of Gucci). Between October 2011 and May 2012, LVMH first acquired control of a large and famous tannery in Singapore, Heng Long, specialised in crocodile skins, and then

purchased the even more prestigious French tanning firm, Les Tanneries Roux, which has been active since 1803¹¹.

As for Kering, 2013 saw its acquisition of France Croco, a tannery specialised in crocodile skins founded in 1974 in Normandy, with approximately 60 employees. And, in early 2015, Kering announced that it was intending to invest an additional 15 million dollars in France Croco to create another establishment near the existing one, with an even greater production capacity¹². Indeed, in 2001, through its control of Gucci, Kering assumed ownership of the largest tannery of reptile skins in Europe, the Caravel located in Castelfranco di Sotto, in the Province of Pisa. The Group initially acquired only 51%, but in 2008 it took over full ownership, with a definitive split from the old shareholders coming in 2015 when the brothers Alessandro and Andrea Dolfi left the Caravel management team following disagreements with Kering¹³. Their place was taken by Filippo Kenji Nishino, who was already director of industrial operations for Kering, who assumed full control over production decisions at Caravel. 'Vertical integration forms part of Kering's strategy to support its brands in reaching

their full potential'¹⁴, not only in terms of fine leathers but also for bovine skins: 'the idea of upstream integration of the production process was conceived in 2001 following the high-profile events associated with mad cow disease and foot-and-mouth disease, factors that resulted in a scarcity of skins in the market and a consequent increase in prices. Companies like Gucci cannot run the risk of supply shortages or falls in quality', stated the then Chairman of Gucci, Giacomo Santucci, in 2004¹⁵. Because of this fact, along with other partners already involved in the tanning sector, Gucci created Blutonic in 2004, in order to open a tannery in Santa Croce specialised in the production of wet blue intended for the tanneries supplying Gucci with finished leather.

In 2013, Kering continued its penetration into the tanning sector through the acquisition of a Serbian tannery, as a joint venture with its Blutonic partners. This operation was encouraged by a subsidy of 8 000 euros offered by the Serbian Government for each worker employed, which, for the envisaged 120 employees, means a Government subsidy of almost one million euros¹⁶. The tannery is located in Ruma and was renamed Gucci Luxury Tannery DOO.

11 http://www.fashionnetasia.com/en/BusinessResources/6110/Raw_Materials_Luxury_All_you_need_to_know_about_tanneries_being_snapped_up_by_luxury_brands.html

12 <http://www.leathermag.com/news/newsthe-spotlight-falls-on-supply-chain-security-kering-group-4302633>

13 Cristiano Marcacci, *Dolfi divorzia da Caravel e Gruppo Gucci*, 'Il Tirreno', 9 May 2015.

14 <http://wwd.com/business-news/designer-luxury/gucci-parent-kering-acquires-tannery-6864180/>

15 Gian Marco Ansaloni e Angelo Magri, *Ora Gucci concia la pelle in casa*, 'MF Fashion', 22 July 2004.

16 <http://www.bloomberg.com/news/articles/2013-05-15/ppr-to-make-luxury-leather-goods-in-serbia-with-state-support>

Table 1. Kering Group tanneries in Europe

Name (year or acquisition or initial production)	Location	Skins processed	Types of processing	Employees (estimated)
Caravel (2001)	Castelfranco di Sotto (Pisa-Italia)	Alligator, lizard, ostrich	From raw to finished	76
Blutonic (2004)	Ponte a Egola (Pisa-Italia)	Cow	From raw to wet-blue	15
France Croco (2013)	Périers (Francia)	Crocodile	From raw to finished	60
Gucci Luxury Tannery DOO (2013)	Ruma (Serbia)	Cow	From raw to finished	120

2.4. Attempts to multinationalise

The family-run dimensions of Italian tanneries have not prevented some of these businesses from developing on an international scale, by opening tanneries abroad. One example of this is Antiba, a company in Santa Croce that owns tanneries in India, and Vicenza Pelli, an Arzignano firm with an operation in Serbia. But the kings of international expansion are

the Mastrotto brothers, who have expanded their operations from Veneto to Brazil, Tunisia and Vietnam. The primary reason seems to be the need to have access to low-cost finished leather to be placed on a world market now flooded with new entrants that are managing to sell at prices much lower than those applied by the older, industrialised nations.

Box 1. The Mastrotto story

In Italy, one of the major names in the tanning sector is that of the Mastrotto Family from Veneto. The founder of the business was Arciso, who had a tannery in Arzignano in 1958 with his three sons: Rino, Bruno and Santo. The three brothers then split the business, creating two separate tanning empires. On the one hand there is Rino, who founded Rino Mastrotto Group SpA, and on the other, Bruno and Santo, who created Gruppo Mastrotto SpA. Officially, the two groups are comple-

tely separate, but investigations conducted in 2011 into the three brothers for missed payments to public coffers, brought to light the existence of numerous financial corporations, domiciled in various tax havens, that could be used as joint business vehicles. For example, both groups operate in Brazil and, although it is officially stated that they act as two completely separate entities, no one, besides the brothers, knows how things really stand, because there is no available information.

In official terms, Rino Mastrotto Group has total turnover for 2013 in excess of 280 million euros and a workforce of 471 employees at its Italian offices alone. But alongside its warehouses and operations in Veneto, it also has an establishment in Brazil and one in Vietnam¹⁷.

Gruppo Mastrotto, for its part, has 2 000 employees and a total turnover estimated at more than 450 million euros, and although

¹⁷ <http://www.ilgiornaledivicenza.it/territori/arzignano/in-mille-per-conoscere-la-pelle-pulita-1.1772677>

the bulk of its operations are in Veneto, it also has production units in Brazil, Indonesia, Croatia and Tunisia¹⁸.

The Mastrotto brothers went to Brazil in the 1990s, for the very simple reason that it was the second-largest producer of livestock in the world and thus offered extensive opportunities for procurement of raw materials. It was no coincidence that Bruno and Santo, needing to find a local partner, decided on the Reichert family, which is not only a major shoe manufacturer, but also has a large livestock farming operation in the municipalities of Chapadão

do Sul and Chapadão do Céu, on the border between the States of Mato Grosso do Sul and Goiás. It should be noted that Greenpeace has included Gruppo Mastrotto and Rino Mastrotto Group among the major purchasers of rawhides originating from animals farmed in deforested zones¹⁹.

According to the information available, Rino operates in Brazil via Bermas Ltda, a tannery located in Maracanaú, in the State of Ceará, which employs approximately 300 individuals, while Bruno and Santo operate through Mastrotto Reichert SA, a tannery in Cachoeira,

in the State of Bahia, which has a staff of approximately 700. The official mouthpieces for the three brothers claim that their Brazilian operations only produce finished leather for furniture and vehicles. But it would not be surprising if they also produced wet blue for the retanning businesses that the two groups operate in Italy. Gruppo Mastrotto, belonging to Bruno and Santo, is in any case guaranteed supply of wet blue by its Croatian operation, which confirms the trend towards transferring the most polluting phases of the process to areas where the costs are lower.

18 <http://www.mastrotto.com/it/company-profile/>

19 *Slaughtering the Amazon*, Greenpeace International, June 2009.

2.5. The emergence of the middlemen

Among the Italian companies that are acquiring tanneries abroad there are also a number that do not operate primarily in the processing of skins. One example of this is Esastampa, a company within the Posarelli Group, founded in Calcinaia in the Province of Pisa in 1974. This business, which specialises in screen printing, has patented a special system for printing on skins, which led it to acquire, in 1999, a majority shareholding in a company in Chisinau, Moldavia, called Piele, a major government-owned tannery that produced high-quality semi-processed and finished leather. Today, the company churns out a vast range of soft skins for uppers, haberdashery, clothing and shoes²⁰.

20 <http://3237.md.all.biz/>

But the real outsiders in the acquisition of foreign tanneries are commercial entities that see themselves as international intermediaries bringing together global demand and supply. One such entity is Frescopelli, a company founded in Milan in the 1970s to sell skins and pelts, and then moved to Santa Croce for reasons of prestige. In 1999, the company purchased the tannery EffeGi, but closed it some years later and currently has only one warehouse in Santa Croce used for the transit of foreign skins that are not completely finished, which are given to local subsuppliers for finishing before being delivered to final Italian or European purchasers. But of all the skins sold by Frescopelli, only a small

number pass through its warehouse in Santa Croce. Like a spider in the middle of a vast web, Frescopelli receives orders from every corner of the globe and fills them by activating the tannery within its group that best meets the needs of the customer in terms of price, quality and distance. And while the group is a specialist in commercial relationships with Russia²¹, we know that it owns a tannery in India (Future Pelli India Private Limited) and an operation in China (Dongguan Sunshine Leather)²². Some sources report that Frescopelli also owns tanneries in Nigeria and Ethiopia, but this cannot be confirmed because the group is shrouded in secrecy. Its main shareholder is in fact Mamo SA, a financial corporation domiciled in Luxembourg, and it is therefore impossible to find out who owns it or any companies it owns. We only know that the residual capital is owned by members of the Haddad and Haggiag families, wealthy families of Libyan origin that are involved in a variety of sectors, including finance, property and film.

21 <http://www.altascuola.confindustria.it/Conf/Even.nsf/DOCSTPRIV/C3DAA6255FFCC75441256D4900392A90?OpenDocument>

22 Frescopelli balance sheet and website.

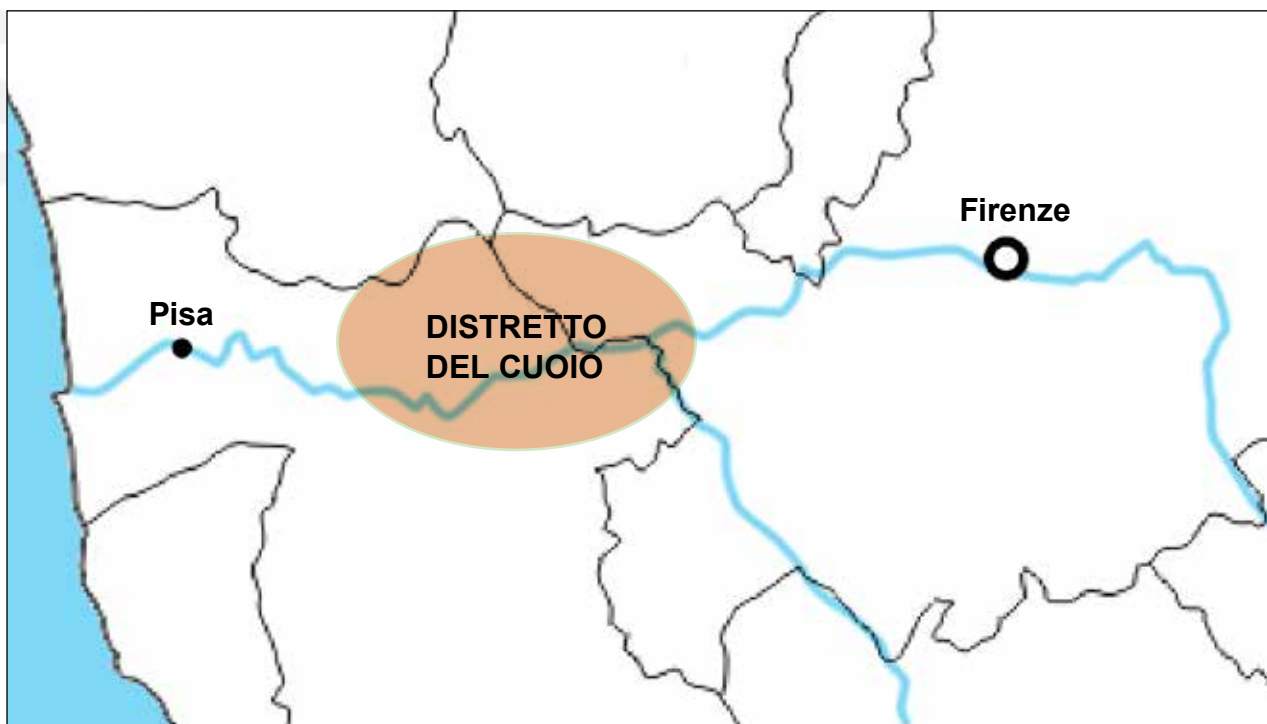
PART THREE: The Santa Croce District

3.1. Organisational structure and employment

The ‘Santa Croce tanning district’ is located on both banks of the River Arno, halfway between Pisa and Florence. It extends over a radius of 10 kilometres, and has a population of 110

000 inhabitants. It comprises the municipalities of Bientina, Castelfranco di Sotto, Montopoli Valdarno, Santa Croce sull’Arno, Santa Maria a Monte, San Miniato and Fucecchio.

Figure 1. The leather district of Santa Croce sull’Arno



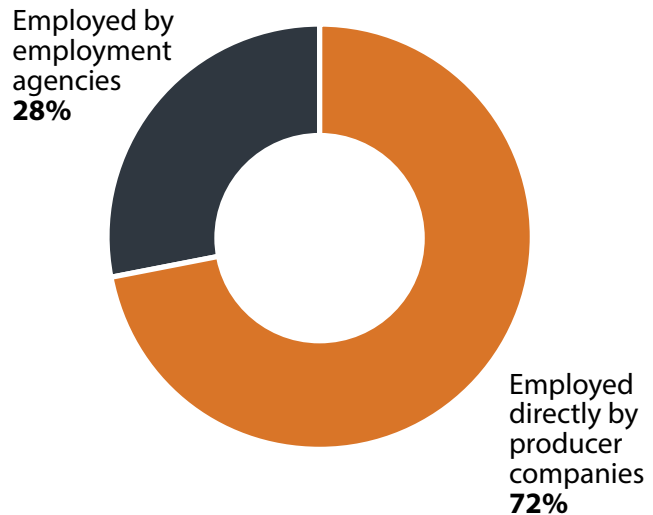
Santa Croce has been home to tanning activities for a very long time, but only took on the characteristics of an industrial district from the 1800s. To obtain a better understanding of the landscape of the district, we should note that the process used to obtain a finished leather involves a range of processing activities that go beyond tanning in the strict sense. Essentially, processing of skins can be divided into three separate sections: pre-

tanning, tanning and finishing. Pre-tanning is used to remove dirt, hair, meat residues and fat from the skins, while tanning transforms them into a material that will no longer putrefy, and finishing provides the skins with the desired appearance in terms of thickness, colour, gloss, impermeability and a number of other characteristics.

There are a total of 240 tanneries in the District of Santa Croce, mostly small-scale businesses.

Some are equipped to perform all phases of processing, but these are rare. Most only have the machinery strictly necessary for tanning activities. The district is therefore also home to a large number of other establishments, more than 500 in fact, which undertake specific processing operations. These are the sub-contractors that the tanneries use to perform preliminary work and final processing operations that require particular machines. Overall, the district employs 12 700 individuals, split into two broad categories: those who are employed directly by producer companies and those employed by employment agencies, also referred to as temps. The former represent 72% of the total, and the latter 28%.

Graph 1. Jobs on the basis of method of hiring



Source: Processing of data from the Pisa Chamber of Commerce and the Pisa Employment Centre

3.2. Size and ownership of companies

The average size of businesses is fairly small, with the average being 11 employees per company. Only seven tanneries have more than 100 employees. One of the largest is Conceria Incas SpA, a company with 135 employees that covers almost the entire production cycle: from initial washing to finishing. This number rises to 190 if we include the staff employed by the other two companies in the group: Italitan and Il Veliero. Another large-scale tannery, also with around 100 employees, is Dolmen SpA, which is practically three businesses in one, because it handles reptiles, animals with hair and animals without hair.

Some businesses in the district do not reach a total of 100 employees as individual entities, but form part of groups with combined totals that exceed that number. One of these is the Finatan Group, made up of three tanneries that together employ a total of 160 individuals. In a few very rare cases, tanneries in Santa Croce form part of big international capital. The most widely known of these are Blutonic (15 employees) and Caravel Pelli Pregiate (76 employees), both of which form part of the luxury group Kering, the owner of brands such as Gucci. But apart from these, the majority of the tanneries in Santa Croce have histories dating to the 20th century, being founded by local families who still retain ownership.

Table 1. The main tanneries in Santa Croce District

Grup	Production plants	Employees	Main shareholders
Incas	3	190	Ceccatelli/Rovini/Rosati
Finatan	3	160	Nuti
Alba	2	120	Banti
Dolmen	1	105	Giananti/Nieri
Colonna	4	93	Montanelli/Boschi
Kering	2	90	Pinault
Superior	1	88	Stefano Caponi
Zabri	1	50	Mario Brillanti
CMC	1	65	Calvetti/Mancini/Caponi
Antiba	1	53	Fratelli Balducci
Settebello	1	47	Brogi
Camaleonte	1	46	Giananti/Nieri
Sciarada	1	44	Castellani
Miura	1	32	Bonaccorsi
Si-Fur	1	32	Bracaloni
Masoni	1	32	Fabrizio Masoni
Nuova Impala	1	32	Caponi/Vannucci
Cuoificio Bisonte	1	31	Novelli/Quirici

3.3. Diversification and international expansion

Many families who own tanneries have made their fortunes with skins and are now expanding their activities into other sectors. The Nuti family, for example, owns not just three tanneries but also various agricultural farms in Tuscany. Until June 2014, the family also had a major shareholding in the company operating Pisa Airport. They then sold this to a wider Argentinian company, Corporacion America, without saying where they invested the sum generated by that sale. Other families however, have preferred to use their profits to develop their businesses abroad. One of these

is the Balducci family, which heads the Antiba Group. This group includes the tannery of the same name in Santa Croce and has control of Prime Pv Ltd, an Indian company with an operation in Ranipet, and BCM Limitada, a Brazilian entity with an establishment in Novo Hamburgo.

There are a range of reasons why Santa Croce tanneries have decided to purchase tanneries abroad. In the case of those investing in Asia, the main reason is to obtain finished leather at low costs, to be able to sell on world markets currently teeming with highly

competitive leather produced by tanneries located in newly industrialised nations such as Brazil, India, Pakistan and China.

For those investing in Brazil and Eastern Europe, the primary reason is the need to obtain semi-finished tanned skins (wet blue) at low cost, with the objective of importing them and finishing them in Santa Croce so that they can then be sold as leather made in Italy.

One of these is Gruppo Alba, that includes two tanneries with a total of 120 employees.

In 2006, the Group acquired the Skirianik tannery in Ukraine for the stated purpose of guaranteeing its import supply of wet blue.

In other cases, the motivation can be both production-related and financial. One typical operation of this kind was completed in 2013 by Marbella Pellami (Colonna group), owned by the Montanelli and Boschi families. Taking advantage of the subsidy offered by the Serbian Government for foreign companies investing in the country, the company was

involved in the purchase of Ruma Fabrika Koze, a Serbian tannery in financial difficulty. Marbella did not take on this operation alone, but rather in cooperation with the Kering Group, and ultimately that Group, through its Dutch subsidiary G Operations BV, acquired the majority shareholding in the Serbian plant, naming it Gucci Luxury Tannery DOO. Moreover, this was not the first operation that the owners of Marbella have undertaken with Kering. In 2004, the company agreed to be involved in the creation of the Blutonic tannery as a minority shareholder.

2014 saw another joint purchase between a tannery in Santa Croce and a major brand. The parties involved were Prada and its traditional supplier, Superior, the tannery owned by Stefano Caponi (with 90 employees). Together (Prada 51% and Superior 49%) they purchased the French tannery Tannerie Mégisserie Hervy near Limoges.

3.4. Procurement, production and sales

It is estimated that the leather tanned in Santa Croce is intended to be used 70% for footwear, 20% for leather goods and 10% for clothing and furniture²³. One particular characteristic of the Santa Croce District is that it contributes 70% of all leather for soles produced in Europe and 98% of that type of leather produced in

Italy²⁴. There are about 15 tanneries within the district specialised in the production of leather for footwear soles, but only nine of these are members of the industry trade group that uses the mark 'Vero cuoio'. The tanneries that produce leather for footwear soles are all fairly large, because various technical reasons require that most, if not all, of the various

²³ Polo Tecnologico Conciario (Tanning Technology Centre), *Il Distretto del cuoio in Toscana*, 2010.

²⁴ National Monitoring Centre for Italian Districts, 2015

phases of production be performed in-house. We should also note that the leather used for soles is obtained by vegetable tanning of the rump, which is the thickest part of an animal's hide. This explains why tanneries producing leather for soles are among the largest importers of skins and, after having cut the most valued portions for themselves, sell the remaining softer stocks to other local tanneries. Within the district, vegetable tanning is not used solely by companies producing leather for soles. It is estimated that a further thirty or so tanneries have made the decision to use exclusively tanning of this kind, but only 22 are members of the industry trade group called 'Consortio vera pelle italiana conciata al vegetale' (the Consortium of Genuine Vegetable-Tanned Italian Leather). In total, it is estimated that there are about fifty companies that perform solely vegetable tanning, thus 20% of the total. All of the others tan using chromium, with some using both techniques depending on the product to be produced and the requirements of the customer. Like all companies, tanneries must address the issue of market outlets, which can be resolved using two principal strategies: sale to regular customers and supply on the open market. More generally, sale on the open market is achieved by means of trade fairs and representatives, starting with the production of samples. For new seasons, the tanneries produce samples of finished leather that are then displayed at trade fairs throughout the

world. Depending on their size, the tanneries take part using their own personnel or use external agents to run their stands.

The trade fairs are a meeting point with various entities and individuals: pure traders, wholesalers who purchase stock skins with the intention of reselling to smaller purchasers, medium-sized companies manufacturing shoes and leather goods, and even major brands.

This is where initial contacts are created, and these then lead to contracts for orders.

In the case of orders from major brands, the goods are always subject to inspection prior to delivery. They are examined either in the tannery by experts sent by the purchaser companies, referred to as 'pickers', or at the premises of the brands by their own quality control departments. In some cases, some of the goods are rejected because of defects, and the tannery must then invent a way to resell them. «Discarded items are either kept in the warehouse for resale to someone who is happy with a lower-grade product, or they are coloured black, because black covers everything. If it is not a special item, everything is coloured black. For us who work with sheep skins, this is something we do during the winter, when there's less work»²⁵.

In addition to sales through trade fairs, leathers are also sold by means of direct contact, in some cases to new customers but more often to repeat purchasers connected by ties of loyalty (see Table 2). On the other

²⁵ Interview with a worker in a tannery processing sheep hides.

hand we have already noted some economic alliances between tanneries and major brands. The most significant of these is between Gucci (Kering Group) and the owners of the Colonna Group. Together, they purchased Blutonic, which is specialised in the production of wet blue, which is probably used primarily to supply the tanneries within the Colonna Group (Marbella, Conceria 800 and Falco Pellami), for the production of finished leather intended principally for Gucci.

Table 2. Luxury brands and some of their suppliers in Santa Croce district

Buying Company	Supplying Tannery
Ferragamo	Marbella, Masoni, Camaleonte
Tod's	Zabri, Masoni
Louis Vuitton	Caravel, Antiba, Dolmen, Camaleonte
Timberland	Dallas
Prada	Superior, Camaleonte, San Lorenzo
Gucci (Kering)	Caravel, Marbella, Masoni, Camaleonte
Sergio Rossi (Kering)	Masoni
Valentino	Marbella
Chanel	Marbella, Miura, Antiba
Dolce e Gabbana	Camaleonte, Marbella, San Lorenzo
Burberry	Marbella

Source: interviews and local press

3.5. Methods of employment and illegal work

In recent years, the methods available to businesses to procure labour have multiplied, and while it was once possible only to hire workers directly under permanent contracts, companies now have access to a range of other possibilities. To begin with, in the context of direct hiring, they can also opt for part-time or fixed-term contracts. But the real innovation is that they can now use staff who they do not directly employ. As reported by Loris Mainardi, a trade union leader in Santa Croce, one possible method is by means of subcontracting of labour to external firms that bring their own personnel into the company: «Another practice that is gaining ground is use of the services of workers hired by support services cooperatives. So, within the same company,

there are workers with tannery contracts and others who, despite doing the same jobs, have support services contracts, which obviously are less costly for businesses and do not envisage any kind of specialisation: workers are not trained for the jobs they do, especially in terms of safety. Furthermore, for these workers, overtime pay is shown as travel, so companies do not need to pay PAYE or social security contributions. The system works even better if the cooperative is based in another province, as in the case we uncovered»²⁶.

But Mainardi explains that another even more convenient method is the use of labour supplied by temping companies, also referred to as employment agencies. «Temp labour is perfect

²⁶ *Troppe situazioni anomale nelle aziende del cuoio. Lavoratori senza tutele*, in 'Il Tirreno', 5 October 2011.

for tanneries. Because of the flexibility of the contracts (where individuals are sometimes taken on for a single day) and the fact that many jobs require minimal skill, businesses can constantly adapt their workforce to fluctuations in terms of slow periods and those where it is necessary to finish orders on a rush basis». Temp workers are also open to blackmail.

If a worker refuses to do what is asked, that worker is not offered any more work and will go hungry. «What's more, many are paid less than they should be because they do not know that they are entitled to production bonuses»²⁷.

27 Premio di risultato e contratti interinali, la CGIL rivendica i diritti dei lavoratori nelle conchierie, in 'Gonews.it', 13 March 2015.

Temporary work

Temporary (temp) work refers to work performed for a business that is not covered by a direct employment relationship, but is instead managed through an intermediary that sends workers for the period strictly necessary according to the requirements of the requesting company.

In Italy, temp work is regulated by Delegated Law No 30/2003, also known as the Biagi Law, which provides for the involvement of three entities:

1. **The supplier**, also referred to as the 'temp agency' or 'employment agency', which concludes an employment contract with a worker;

2. **The user**, which is the business that requires labour;

3. **The worker**.

So a temp work relationship requires the conclusion of two different contracts: the employment supply contract, concluded between the supplier and the user, and the employment contract concluded between the supplier and the worker.

The employment supply contract must be concluded in writing and can be either a fixed-term or an open-ended contract.

In the case of a fixed-term contract, which is used to cover periods of peak production or to

replace workers who are absent because of illness or vacation, the employment agency concludes a corresponding contract with the worker for the time required.

In the case of an open-ended contract, also referred to as 'staff-leasing', the agency hires the worker on an open-ended basis, but assigns him to work when required by the requesting company and pays for the time actually worked. During periods when the worker is not employed, he remains at the disposal of the supplier and is entitled to payment of availability pay, provided that the contract does not provide otherwise.

On the basis of the 2003 law, open-ended employment supply contracts were possible only for certain professional positions, but a 2015 law, also known as the Poletti decree, has removed this constraint, merely prohibiting the use of labour on a staff-leasing basis to cover more than 20% of the total number of employees hired under open-ended contracts

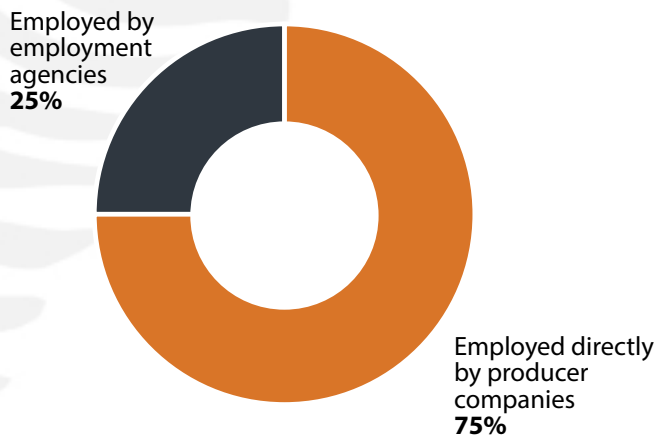
by the user company. However, if this limit is exceeded, there is no obligation to take on these workers directly, but rather only a penalty equal to 50% of the monthly remuneration.

In 2012, there were 1 733 temp workers in the Santa Croce district²⁸. In 2014, this figure had risen to 3 451, exactly double the previous number. This is an indication that employment

28 Source: Inail.

in the district has grown, but on an increasingly insecure basis. It is also proved by the fact that, in 2014, 4 650 new people found work in Santa Croce, but only 1 199 of them were directly employed by producer companies²⁹.

Graph 2. The new jobs by type in 2014 in six municipalities of the tanning district



Source: Pisa Employment Management Centre

The information available about contracts serves to confirm this insecurity. In 2014, temp workers numbered 3 451, but there were 5 021 contracts concluded: one and half times the number of workers³⁰. This indicates that many workers are employed on a stop-and-start basis for periods that can be very brief. Tania Benvenuti, another union leader of the CGIL, explains that she has in fact heard a report of a worker with a contract for four hours: hired at 8:00 am and let go at midday³¹. This was a Senegalese individual, one of the many foreigners who are joining the

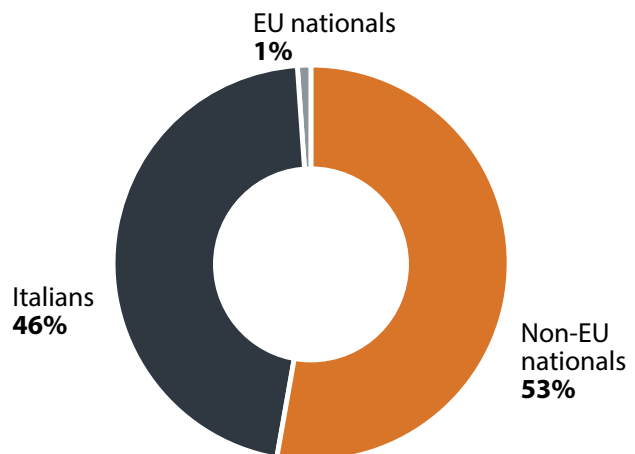
²⁹ Employment Management Centre, Pisa, *Sintesi statistica Centro impiego Santa Croce S/Arno focus Valdarno*, 2015

³⁰ Letter from the Employment Management Centre in Pisa.

³¹ Carlo Baroni, *Assunto alle 8, licenziato a mezzogiorno: contratto interinale per sole quattro ore*, in 'La Nazione', 4 March 2015.

lists of temp workers. The data provided by the Santa Croce Employment Centre confirm this: 54% of temp contracts signed in 2014 related to foreigners, almost all from outside the EU.

Graph 3. Temp contracts by nationality concluded in 2014 in six municipalities of the tanning district



Source: Pisa Employment Management Centre

Despite the vast range of hiring methods available under the law, the use of undeclared labour continues to persist in the Santa Croce District. This is the most serious form of infringement of workers' rights, because it deprives them of protection against accidents and of pension and retirement entitlements. In Italy, the task of verifying that the law in relation to employment relationships is being enforced appropriately falls to the local authorities known as the Provincial Labour Directorates. Inspectors take action either on their own initiative or following complaints. From 1 January 2011 to 31 December 2014, Santa Croce (excluding the municipality of Fucecchio) saw inspections of 181 businesses

and a total of 999 workers. Of these, 70% were Italian and 30% immigrants. In all, illegal aspects were identified in relation to 208 workers, 112 of whom were totally undeclared. 44% of the individuals working on an undeclared basis were immigrants. According to Loris Mainardi, trade union leader, «The possible forms of illegal employment include hiring workers under contracts for limited hours, or part-time,

and then making them work full-time». Half a day under contract and half a day illegally. According to the trade unions, this practice is becoming increasingly common. Mainardi continues: «The remuneration of these workers is not all recorded in the pay packet, which means substantial tax and social security savings for the companies concerned»³².

³² *Troppe situazioni anomale nelle aziende del cuoio. Lavoratori senza tutele*, in 'Il Tirreno', 5 October 2011.

Table 3. Illegal work by company

Companies inspected	Companies with illegal work	% companies with illegal work of those inspected
181	88	48,6%

Table 4. Illegal work by workers

Workers present at the time of the inspection	Workers with illegal aspects	% workers with illegal aspects of those present
999	208	20,8%

Table 5. Undeclared workers

Workers present at the time of the inspection	Undeclared workers	% undeclared workers of those present	% undeclared workers of those with illegal aspects
999	112	11,2%	53,8%

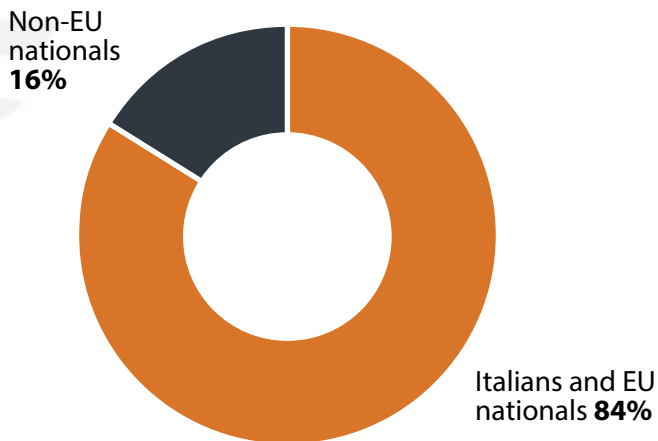
Doubts exist, however, about the accuracy of the numbers of illegal issues identified by the authorities and the number actually existing in Santa Croce, because the inspection capacity of the competent authorities is extremely limited in relation

to the vast size of the area. For example, the Pisa Provincial Labour Directorate, which has jurisdiction over the Santa Croce District, has 45 000 businesses to monitor, and only 11 full-time inspectors, 2 of whom are technical inspectors.

3.6. The lives lived by immigrants

Despite the significant degree of mechanisation, processing of skins continues to be a difficult and laborious activity because of the physical effort, noise, humidity and chemical fumes involved. This explains why 80% of persons permanently employed are males, while 16% are immigrants from non-EU nations³³.

Graph 4. Workers permanently employed in the tanning district by nationality



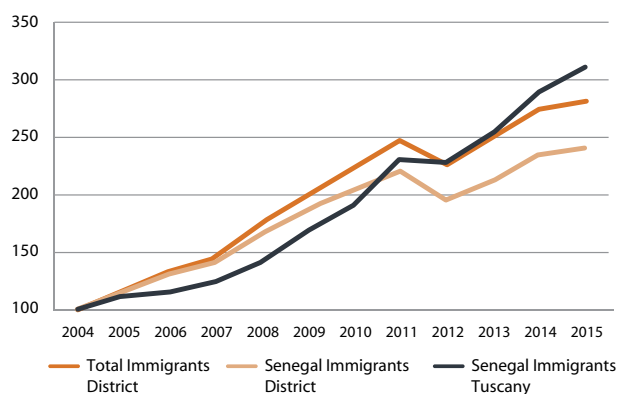
Source: Pisa Chamber of Commerce 2015

Foreign workers began to arrive in Santa Croce in the early 1990s and their numbers have steadily increased, with a slight fall in the number of residents between 2012 and 2013, probably because of the effects of the economic crisis. In the last ten years, foreign residents in the seven municipalities making up the tanning district (Bientina, Santa Croce sull'Arno, Santa Maria a Monte, Castelfranco di Sotto, San Miniato, Montopoli in Val d'Arno and

³³ Communication from the Employment Management Centre, Pisa, 2015.

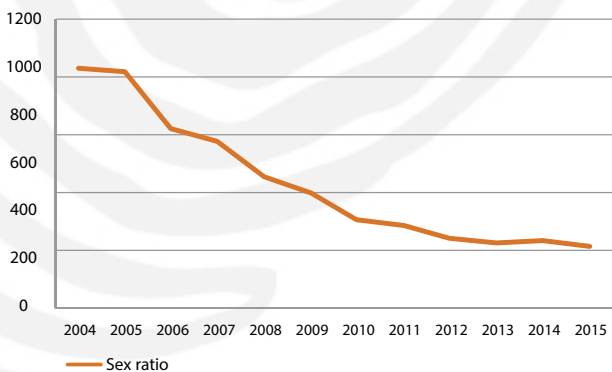
Fucecchio) have increased from 5 060 to 14 248. It is interesting to note that the increase in the number of foreign residents in the last five years within the district is greater than the total for the region (which, for Tuscany, represents an increase from 164 800 individuals in early 2004 to 395 573 in early 2015), with an even more marked increase in the number of Senegalese in the last two years. The increase in the number of Senegalese residents coincides with larger numbers of women, as a result of family reunification: when wives join their husbands in territories of emigration, it is a sign of the spread of migratory projects that are intended to achieve settlement rather than temporary residency. This is thus an indicator that they are putting down roots and no longer consider themselves migrants.

Graph 5. Change in the number of foreign residents in the tanning district and in Tuscany as at 1 January of each year, 2004-2015 (2004 = 100)



Source: Processing of ISTAT data

Graph 6: Number of males per 100 females (sex ratio) in the Senegalese population resident in the municipalities within the tanning district



Source: Processing of ISTAT data

The largest community is the Senegalese, which has grown from 654 residents in 2005 to 2034 in 2015. The first sector where immigrants found work was pre-tanning, and in particular scraping (fleshing) and splitting, which involves handling heavy, dirty skins, a task with little attraction for Italians. According to various statements, there was a handover from Southern Italian workers to immigrants. Previously, the toughest jobs were performed by Southern Italian workers, but many of those individuals then started their own businesses as subcontractors and their jobs were taken over by the Senegalese, who were also keen to advance. After years in those initial positions,

some of these workers have managed to make it to the tannery warehouses or to finishing, and thus the final phases of processing, involving quality control rather than fatigue. «I have dignity – says Amadou, who has worked in setting-out since 1994, with a short break of several years when he worked as a truck driver – if they ask me to do something that Italians don't do, I don't do it». Mario, an Italian labourer who has been progressing for years under temp contracts, admits that «the Senegalese are employed mostly in contract manufacturing, where they work under very difficult hygiene conditions: in wet conditions, with noise, in arduous operations, and with abnormal hours. But – he adds – this is also needed among the Italians». But bosses often prefer Senegalese workers over Italian. They believe they are more reliable because they are available to do overtime and to work on Saturdays, they do not complain and they can always be found. This is not, however, behaviours caused by character, but the result of specific dynamics of exploitation and blackmail. Sylla's story shows exactly what might be hidden behind companies' claims of the reliability of Senegalese labourers.

Sylla's story

Sylla was born in Senegal in 1979 and has worked in a tannery in Castelfranco di Sotto since September 2005. He has always worked as a splitter for the same firm,

but has never had a permanent contract. The most he has been offered is a contract for six months, but it is usually contracts for one month or five days. Officially, the

contracts envisage working days of six hours, but the actual length of the working day depends on the day's orders: it's usually seven and a half hours, or eight hours a

day, from 4:30 am. Other times, he works for two-three hours and is then sent home.

Scraping and splitting are operations performed on skins that have not yet been tanned, and they must be done within strict timeframes or the skins spoil. The skins usually arrive in the early morning, typically at 4:30, and are immediately placed in the drum so that they can soften and be worked with the right level of moisture. But savings can be achieved by using less water than is standard, and ultimately Sylla and his colleagues are forced to handle skins treated with excess chemical products.

The splitting machine used in the company is old and does not always work properly: customers often complain that the skins have been ruined and take their business elsewhere. So there's not much work, but the owner is retired and does not want to spend the 300 000-400 000 euros

necessary to replace the machine. The company is small, with a total of four Italian labourers working under open-ended contracts and three foreigners (two Senegalese and one Albanian) employed through an agency on fixed-term contracts. Despite the fact that Sylla has now been working for ten years for the same firm, his contracts have always been minimum term. The company does not wish to take on any responsibility for him, but insists that Sylla not work for anyone else. The owner calls him 'my guy'. When the contract ends and there is no more work, the temp agency does not offer to find him work with other firms: it only calls him when 'his' firm needs him. The agency has an agreement with the boss and does not want to risk a situation where Sylla is working for another company when that company needs him. So Sylla is forced to wait until 'his' firm calls

him. Even if other splitting companies need labourers, he would certainly not be called.

He has asked the agency many times if he can change firm, because there is not enough work and he needs to earn a living, but there is nothing he can do: it is the agency that decides who to call - take it or leave it. He has complained to the union, but nothing came of it: «they give you all the speeches— he says — make your head spin, but they don't do anything». He has protested to the company, asking for longer contracts, but the answer is always «because of the crisis, there's no work. When there is work, it will be different». But he's been hearing the same thing for ten years. The only result is that he has managed to get a promotion, from level 2 to level 3. «During this time— he says— I have withdrawn from the company: I am going to work when they call me, but my spirit and my heart are not in it, I'm not happy».

Sylla's case is not unique, and other people have confirmed that this situation exists.

Mbaye qualified as an IT technician in Senegal and has been in Italy since 2003. He works 80% of the time for a single company that performs scraping, and the agency does not call him unless it is this company that wants him. When he goes to work at 'his' firm, it's as if he's one of the permanent staff: he arrives and already knows everyone, he knows exactly what to do and doesn't waste any time. But he needs to work and cannot rely solely on the needs of a single employer.

«I'm not a spare part», he says. Once, he went to another agency and found work with a different firm. When the first agency called him to offer him a week contract from his usual firm, he said that he was already working for someone else. The agency asked who he was working for and told him that it would not be calling him again. He then went and spoke with 'his' firm - since that time, he has had an agreement. The company rings him first to see if he is available and, if he is, the agency makes the call and concludes the contract. Interviews with Senegalese workers reveal

the same main issue affecting them all: fixed-term contracts and temping agencies. We have seen numerous half-day contracts, for example from 2:00 to 6:00 pm. When workers are requested for a single day or for four hours, they are required to work harder than employees working under open-ended contracts: 'they make you work more than normal, they kill you at work and then send you away, you come home from work with a sore, aching body' (Mbaye, 41); «We're like lemons, they squeeze us and then throw us away» (Mamadou, 47). We have seen cases of people who have carried on for a year under weekly contracts: «you're practically a slave – they say – if one week you complain or mess up, they send you away, they have you by the throat. If you refuse to work as hard as they demand, they stop calling you, they use someone else». Often the day contracts are extended five times to cover one work week, or a week contract is extended four times to cover work for an entire month. Ultimately, you might have five pay packets covering one week, or four for a month. And this also happens with Italian workers.

The interviews show that undeclared work is also widespread, under several ways. For instance, a company might contact a worker for the first time through an agency, have an interview and offer a legal contract for two, three or five days. Then, if it is happy with the work, it will contact the worker a second time directly, without any intermediary, and

employ that worker on an undeclared basis for a week or even 20 days, without any contract or insurance cover. Even more widespread, however, is the practice of imposing additional hours over the number set in the contract. There are cases of work days commencing at 7:00 am and lasting until 9:00 pm with a one-hour break for lunch, and thus a total of 13 hours. «You work like a dog and you earn less, the company doesn't pay for the extra hours, it only pays what was agreed with the agency». But it is difficult for anyone to say no: «Work is like that now, if you don't agree they won't call you any more». And the need to earn a living means that you have to agree to anything. According to the interviews, temp workers also work under worse safety conditions. Diolas confirms: «For us, the firms do not buy the necessary clothing, and when they do give them to you, they are such poor quality that they're useless. If we want decent gloves, those of us who work on a daily or weekly basis need to bring them with us from home. And boots too: how can we not bring our own boots when the floor is covered with water and there is fat everywhere?».

The interviews show that other basic accessories required for the health of workers, such as earmuffs to protect against noise and masks to prevent inhalation of fumes, are almost never given to temp workers. «Where I work, there is an extraction machine– explains Amina, coating labourer aged 43, separated with four children – but it is always off because

the firm says it costs too much to keep it on». In seven years working for this firm, Amina says she has witnessed only one inspection resulting in a fine, because the dyes were not kept in the right place. This is an exception: many workers claim that, in most cases, inspections are announced and the companies know what to do to avoid being fined.

As one would expect, the economic crisis has further weakened the position of immigrants and many are losing the jobs they have managed to find. Some who managed in the past to win a permanent position have lost these jobs when they have returned to find their loved ones in Senegal: the blank resignations that they were made to sign when they were hired have been used by employers to lay off workers absent for too long. And many have had to return to the maelstrom of temp contracts, despite their length of service. In fact, their age has counted against them: if

3.7. Salaries and working hours

The salaries brought home by workers depend on the jobs they perform, the basis on which they were hired and the type of contracts applied. For temp workers, the amount depends primarily on the number of hours worked. In terms of hourly pay, few complain. A level-two labourer, which is the most common, often earns between 8.00 and 9.00 euros net, but if the number of hours is limited, the final sum is basically poverty.

companies are looking to employ people, it is young, strong twenty-year-olds, not forty-year-olds, that they are looking for.

With increasingly meagre salaries, savings need to be found everywhere. You go back to sharing a small apartment with four, five or even six other people, you ask for loans from friends who are working so you can pay bills - the objective is to send money back to the family still in Senegal. But it is not always possible. The injustice of the Italian system is clear for all to see every day. Years and years of contributions paid to the national social security system, which will be all but impossible to turn into a pension when you leave, and an unemployment benefit granted only to those who can prove the existence of an employment contract for two consecutive years. These are measures deemed to be inadequate to support those experiencing difficulty after having worked for decades in tanning businesses.

The story is different for labourers employed directly under permanent contracts, who perform the same work but can be paid up to 200 euros more each month, depending on the type of company they work for.

Salaries in the tanning sector are set on the basis of a national agreement concluded between the National Union of Tanneries (UNIC) and the relevant trade unions that are members of the CGIL, CISL and UIL

confederations³⁴. But the subcontractors considered this to be too onerous and concluded a separate agreement in 2014 with the highly accommodating union UGL³⁵. The two contracts are identical in many respects, including in terms of salaries. But the most significant difference relates to the conclusion of supplementary agreements on a company or local level. The agreement signed by the three confederations with UNIC allows this, while the agreement signed by UGL with sub-suppliers does so only in theory.

The moral of the story is that, in 2012, the confederated unions within the district of Santa Croce concluded a local supplementary agreement that provides significant benefits for workers, but applies only to tanneries and not to subcontractors. This means that, even where salary and working hours are the same, there is an average difference of 200 euros in the monthly earnings of workers in tanneries and workers in subcontractors.

Using the example of a level-two labourer, which is the level achieved by many of the labourers in the sector, gross pay is 1 686 euros per month for those employed by tanneries and 1 442 for those employed by a sub-supplier. In terms of net pay, the former earn 1 380 euro per month and the latter 1 180.

34 Valid from 1 November 2013 to 31 October 2016.

35 In actual fact, there are two national collective bargaining agreements for tanning sub-suppliers, both signed by the trade union UGL. But one is with Federterziario (http://www.federterziario.it/wp-content/uploads/2015/02/CCNL_SETTORE_CONCIA-.pdf) and the other with CEPAA (<http://www.cepaa.it/info.php?n=170>).

Obviously, we are dealing here with pay for normal working hours, and the law sets a working week of 40 hours, except in the case of more favourable provisions laid down in collective bargaining agreements. It then adds: «The average duration of the working period may not in any case exceed, for each period of seven days, a total of forty-eight hours, including overtime hours». In other words, overtime may not exceed eight hours a week or 250 hours over the entire year.

In Santa Croce, it is usual to work more than 40 hours a week, to the point that a work day of eight hours is considered to be a crisis. Use of overtime is normal practice, partly for technical reasons and partly for economic reasons. Technical reasons include the fact that the skins need to be moved from one processing phase to the next very quickly, or they will deteriorate. So, if a change of phase occurs at the end of the working day, the worker must stay on. Economic reasons include the fact that many tanneries no longer have the large warehouses they once had where they can store skins awaiting subsequent processing. This is a situation that is tacitly accepted by the employment contract governing tanneries (renewed in July 2013 and expiring on 31 October 2016), which states in Article 8 that: «During regular periodic shifts, the worker going off-shift may not cease work until he has been replaced by the worker coming on-shift, notwithstanding the application of the extra amounts established

for overtime work». It continues as follows: «No worker may refuse to perform overtime, within the conditions provided by law and this agreement, whether at night or on bank holidays, except on the basis of justified individual reasons for not working».

And Piero notes: «Here it's another world, we call it the Leather Republic. Now there is a high workload and we're doing eight hours of overtime a week, so 32 each month. On Mondays and Fridays, we do nine hours and on Tuesdays, Wednesdays and Thursdays we do ten. Obviously this is something that is happening for these months now, and then the other months of the year we work eight hours. So, yes, sometimes you're tired in the evening, you feel that it's a pace that sometimes says: we can't keep on like this».

According to the statements gathered, the average workday in tanneries is nine hours, considering that there is less work in winter (even only eight hours), but in the period from March to July, when the workload is at maximum, employees are even required to work on Saturday mornings. However, it is in subcontracted companies that employees are required to work the most. In scraping and splitting, for example, work often starts at

4:00 am. Then, if everything goes well and the workload is not excessive, the skin is ready for delivery at midday. But unexpected events always happen, the tannery has an extra and the workers are required to stay until 1:00 pm, 2:00 pm, sometimes until 6:00 pm. This means a total number of as many as 14 consecutive hours, although with a few breaks. This is a quantity of overtime that clearly is far in excess of the legal maximum. And this is where cash-in-hand comes in, with overtime being paid under the table. This is a phenomenon that is due in part to the interests of both parties, companies and workers, in earning more behind the backs of the tax and social security authorities, and in part to the need to hide the violation of the law governing overtime.

«Up to a short while ago (it does still exist but less now), there was the practice of 'ammesati'. In practice, I, the worker, make an agreement with you, the company, to get a net figure x at the end of the month and then it doesn't matter how it is given to me. Another fairly common way of getting around tax and social security is to pay the amounts owing for overtime in the form of reimbursement of costs for travel» (Tania Benvenuti – trade union leader for CGIL, Santa Croce).

3.8. Accidents

In their lengthy journey from rawhide to finished product, skins pass through many different phases and move through many different firms.

Each processing operation entails a potential risk for the health of workers, and, indeed, can become a real threat depending on the choices

made by individual operators. The actual risk depends on how modern the plant is, whether protective equipment is available, whether health and hygiene standards are met, and what kind of training is provided for employees. The actual situation in Santa Croce is too fragmented for us to gain a detailed picture of what really goes on. Modern, large-scale tanneries that comply with the applicable legislation exist alongside small tanneries and subcontractors that are reluctant to invest in health and safety and in fact seek to increase their profits by defrauding the tax authorities, using undeclared workers and violating the accident prevention laws. In this context, all we can do is describe the work phases that are objectively most hazardous and illustrate the critical issues identified in the district by the authorities.

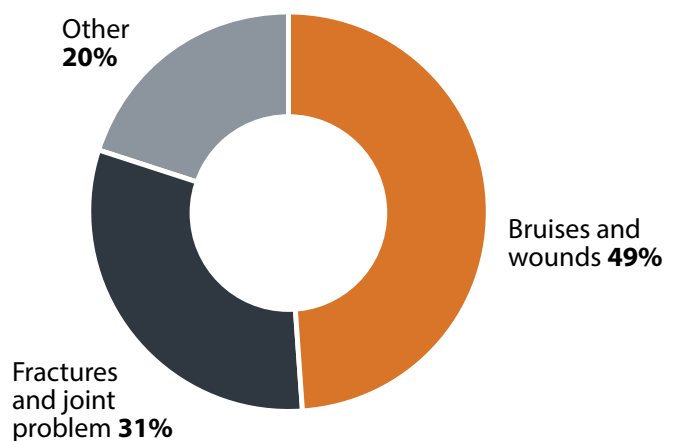
It is generally accepted that the initial phases of skin processing are the ones that expose workers to the greatest amount of fatigue and discomfort, through the manipulation of material that is heavy, dirty, and laden with meat residues and fat. Individuals working in scraping and splitting are therefore entitled to additional pay of 5.37 euros a month, but Italians generally prefer to leave these jobs to immigrants, judging them to be too unattractive.

Because of the need to lift and move very heavy skins (because of the high water content), muscular and skeletal disorders are common among individuals working on these phases. In 2011, the Occupational Health Office with jurisdiction for the Santa Croce district

conducted a study on 101 workers involved in splitting, with a mean age of 44 years, of whom 37 were foreigners. Of all workers examined, 31 tested positive for spinal problems³⁶.

If we extend the analysis to cover the entire tanning industry in Santa Croce, from 2009 to 2013, 720 accidents were recorded, with a distribution fluctuating year by year. Considering that 528 of these accidents related to Italian workers, it appears at first glance that the individuals most affected are Italians. But if we compare the number of accidents with the number of jobs held by individuals of the same nationality, we can see that the incidence of accidents among Italian workers is 7.6%, while the incidence among immigrants is 14.4%³⁷.

Graph 7. Nature of accident injuries (Tuscan tanning sector 2009-2013)



Source: Processing of INAIL data

³⁶ Occupational Health Unit 11 - Empoli, *Ergonomic risks in some tanning processes*, Report submitted to the Conference on health and safety in tanneries, 29 September 2011.

³⁷ Given there are 8 200 individuals working on skin processing in the form of direct employment and that immigrant represent 16%, this means that there are 6 888 Italians employed and 1 312 foreigners.

In total, there were 176 serious accidents (25%), including one fatal accident, in 2012. The owner of a subsupplier company was struck by a forklift and died of a brain haemorrhage. The previous death occurred

in 2004 and was the result of inhalation of hydrogen sulphide, the chemical component that can be most dangerous for anyone working in a tannery.

Hydrogen sulphide: if you breathe it in, you will die

One of the most serious risks in tanneries is poisoning by hydrogen sulphide, also known as hydro sulphuric acid (H₂S), a colourless, extremely poisonous gas with a sharp odour of rotten eggs, which can cause death if inhaled.

Hydrogen sulphide is formed from sulphur compounds, which are used in the various phases of the tanning process. But the

gas is most likely to form during deliming and pickling, and the risk is particularly high in this latter phase, because of the use of strong acids. The quantity of gas that forms inside the drum during pickling depends on various factors, including inadequate washing, which leaves a high quantity of sulphides on the skins as residues from the previous processing stage. In certain

cases, concentrations of H₂S in excess of 1 000 parts per million have been detected, levels that can cause serious harm to operators if they are inhaled. To prevent this significant risk, the drums used for pickling must be fitted with appropriate extraction and abatement systems that are able to eliminate the hydrogen sulphide that forms during processing.

The operator who died from hydrogen sulphide poisoning in June 2004 was named Thiam Mamadou Lamine. He was aged 35 years and was Senegalese. It was his first day working as a temp: he died after being assailed by a cloud of hydrogen sulphide released by a drum that he had just opened to check the skins. Thiam entered the tannery humming and exited lifeless on a stretcher. In Senegal, he left behind a wife and two children, one of whom he had not yet even met. He lived in Santa Croce with his brother, in via Sozzi, an area populated by other Senegalese, a large, well-established and integrated community. Immediately following the tragedy, the debate started: according to the owner of the company, Thiam

was wearing a protective mask, but according to the trade unions he wasn't. According to the union, «the extraction system was not operating and the young man was not wearing a mask». Thiam died during the pickling phase: acids are introduced into the drum and, when they come into contact with the sulphide residues from the previous phase, hydrogen sulphide develops. This is a gas with a characteristic odour of rotten eggs that is fatal, even at low concentrations. «To avoid risks – explained the Tanners' Association - there are extraction systems that remove the gas automatically as it forms. When the drum is opened to check on the contents, nothing should come out». But according to the union, the extraction system

was not operating. Thiam had already worked in tanneries, including the one where he lost his life. He had already performed checks during pickling, but perhaps no one had given

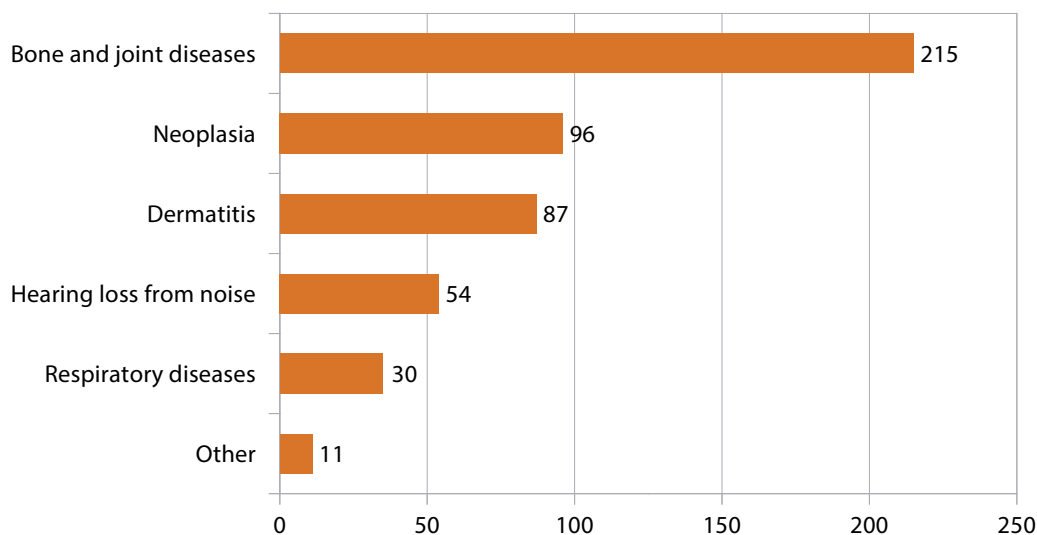
him proper training. And that time, after having climbed up the wooden steps to open the lid of the drum, his breath was cut off as if he was in a gas chamber.

3.9. Occupational diseases

In addition to accidents, tanneries also have to deal with the problem of occupational diseases, those issues that develop over time, through contact with hazardous substances, long periods spent in unhealthy

atmospheres, or performance of demanding work. There have been 493 cases of occupational illness recognised in Santa Croce between 1997 and 2014, subdivisible into five major groups.

Graph 8. Distribution of occupational diseases (Tuscan tanning sector 1997-2014)



Source: ASL 11, Empoli, 2015

Musculoskeletal disorders are the most numerous group, representing 44% of all occupational diseases recognised in the period and are caused by biomechanical overload. The most frequent conditions are shoulder injuries, carpal tunnel syndrome, and muscle and tendon injuries affecting the elbow. Cancers rank second with an incidence of

19%. The organs most frequently affected are the nasal passages and the bladder. The causes of malignant tumours affecting the nasal passages are still being studied. The following comments have been written by Dr Tonina Enza Iaia, chief of occupational medicine at Local Health Centre 11 in Empoli: «In terms of this illness, the Department has

been conducting active research for years into cases with current information sources (...). In the tanning sector, there are currently a reported 21 cases out of a total of 56 cases in the lower Valdarno area, including Santa Croce district. This statistic is extremely interesting, because, while it is a well-known fact that there is a high incidence of cancer in the footwear and wood sectors, there have been very few reports in the literature to date of cases or of deaths in the tanning sector. The finding that there are 21 observed cases merits greater attention, both because of the high relative number and because of the uniform nature of the exposure, given that all of these individuals have been employed in the production of leather intended for the manufacture of soles. Tanning of leather for soles has been performed over the years, and is still performed, using vegetable or synthetic tannins, in the form of fine powders that are tipped out of bags, generally using manual techniques, into the tanning vats. It is highly probable that all the tanners including among our list of cases have, because of their work, repeatedly inhaled tannin dusts or dusts and fibres from leather treated with tannins that, as we know, have long been identified as carcinogenic in experimental systems». But she continues: «We should note, in relation to the cases observed among workers in tanning, the recent observation of two cases in which, in addition to exposure to leather dusts, there is also reported handling of dusts

containing hexavalent chromium in relation to operations involving manual synthesis of basic chromium sulphate using sodium bichromium with the addition of sulphuric acid and glucose. The information acquired on two cases represents a novelty in terms of the tanning technology used in the area in the past that is still denied by operators»³⁸.

With regard to bladder cancers, unlike those affecting the nasal passages, these are relatively frequent among the general population and exhibit more than one cause. The Italian Workers Compensation Authority (INAIL), however, recognises the occupational illness in workers who have been exposed to carcinogenic aromatic amines used above all as colourants in many sectors. In tanning processing and in finishing of skins, there has been documented use in the past of substances evaluated by the IARC as certain or suspected carcinogens for the bladder. This includes, in particular, colourants produced from benzidine, o-toluidine, o-dianisidine, 3,3'-dichlorobenzidine and 2,2'-disulfobenzidine.

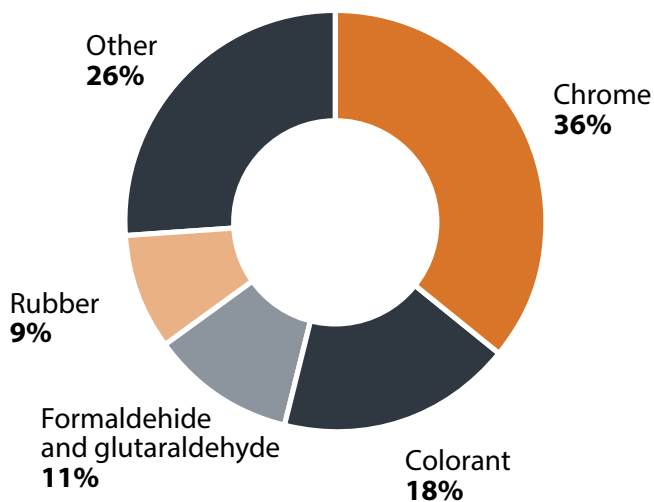
Third rank in terms of occupational illnesses is taken by contact dermatitis resulting from sensitivity developed towards one or more of the 300 chemical substances used in the animal skin processing cycle³⁹. According to Dr Iaia: «Often, chemical products are handled

³⁸ Tonina Enza Iaia, *Problemi sanitari in conceria*, June 2015

³⁹ Sensitivity means the onset of abnormal reactions in the presence of a given substance such as to induce discomfort in the individual concerned.

very casually and with little thought without any kind of precautions to limit contact with the employee's skin. [...] The cases observed show sensitisation towards chromium and its compounds (chrome trichloride and potassium dichromate, a total of 36.4%), colourants (18.2%), formaldehyde and glutaraldehyde (10.6%), and rubber compounds (9.1%)». She continues as follows: «The relative prevalence of sensitisation to chromium compounds can be interpreted as related to the use of basic chrome sulphate as a tanning agent, with sensitisation to trivalent chromium and to the presence of certain colourants made of salts of hexavalent chromium».

Graph 9. Contact dermatitis on the basis of the triggering substance (Tuscan tanning sector)



Source: ASL 11, Empoli, 2015

In her report, Dr Iaia noted that hearing problems are decreasing, thanks to the implementation of collective preventive measures (such as gradual replacement of machinery and the use of soundproofing) and personal protection (use of

items such as earmuffs and earplugs). She also noted that, because of an effective campaign to provide information and training for workers, there has been a noticeable reduction over the years in the levels of absorption of chromium and therefore renal damage. Chromium salts are nevertheless one of the listed substances that can cause bronchial asthma, along with formaldehyde, isocyanates and other chemical compounds. In addition to asthma, conditions affecting the respiratory tract include chronic pulmonary disease, which develops primarily in workers who smoke but who work in areas with high humidity and are employed in jobs that envisage the use of large quantities of chemical products with pronounced irritant properties for the skin and mucosa.

In 2009-2010, the prevention service from Local Health Centre 11 from Empoli performed a survey to verify the health risks of the chemical substances used in 21 companies during the skin finishing phases. A total of 350 preparations were examined, obtained from the mixing of various substances, including 85 with health risks. And while 58 were only allergenic by contact or inhalation, 27 were found to be genotoxic, and thus able to damage the body's cellular genetic material, with a risk of the development of cancer or negative repercussions for reproduction. It should be noted that three of the substances examined (formaldehyde, 2,4-toluene diisocyanate, and multifunctional cross-linking aziridiny) are both genotoxic and allergenic.

The chromium question

The actual tanning phase, where the skin is transformed from a perishable material into a non-perishable product, takes place towards the midpoint of the production cycle and can involve the use of two broad categories of substances: vegetable and mineral. 80% of tanning performed throughout the world is done using a specific mineral product, namely chromium.

Chromium can take numerous forms because of its chemical bonds and electrical and physical characteristics. The form of chromium usually used in tanning is trivalent chromium, which, according to current scientific knowledge, does not raise any particular concerns for human health. But

under certain conditions, particles of trivalent chromium that remain in an unbound state in the tanned skin can change form, changing into hexavalent chromium, which, unlike the trivalent form, is highly toxic. Most of the compounds of hexavalent chromium are irritant for the eyes, skin and mucosa. It is also recognised as a known carcinogenic agent for human beings (Group I according to IARC). It is no coincidence that Regulation (EU) No 301/2014 prohibits the sale of leather products that contain chromium VI in concentrations greater than 3mg/kg.

The change from trivalent chromium to hexavalent chromium can take place during the final phases of processing of the skins or after

processing has been completed, when the skins have been turned into handbags or shoes. When it occurs during processing, the mutation is encouraged by interaction with certain fatty substances used in finishing. When it takes place after the product has been finished, it is driven by high environmental temperatures.

The risk of mutation into hexavalent chromium increases with the quantity of trivalent chromium remaining in unbound form within the skin. For some tanneries, the problem can therefore be avoided if the best possible tanning procedures are correctly applied, and for others the only option is to use tanning products other than chromium.

3.10. The problem of wastes

The tanning industry has a major impact on the environment, not only because of the effects generated by the animals providing the skins, but also because of the vast consumption of water and the large quantity of biological and chemical wastes produced during the industrial phase. Tanneries in Santa Croce consume approximately 6 million cubic metres of water each year, taken mainly from the groundwater.

For each tonne of rawhide, the industry obtains 200-250 kg of leather, tanned using chromium, which require a total of 15-50 tonnes of water, 500 kg of chemical

substances and 9.3-42 GJ of energy⁴⁰.

Thus, for each tonne of skins processed, we obtain 60-250 tonnes of waste water to be purified (with 20-30 kg of chromium and 50 kg of sulphide, among others), 1800-3650 kg of solid residues, 2500 kg of sludge, 4-50 kg of solvents in emissions of air. Using these numbers, it is possible to calculate the ecological footprint of the skins.

⁴⁰ European Commission – JRC Reference Reports, *Best Available Techniques (BAT) Reference Document for the Tanning of Hides and Skins, Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control)*, edited by Michael Black, Michele Canova, Stefan Rydin, Bianca Maria Scalet, Serge Roudier and Luis Delgado Sancho, Joint Research Centre, 2013, p. 55.

The ecological footprint of 1 kg of leather, tanned using chromium

An ecological footprint represents the quantity of resources used and the quantity of wastes produced during the production process of a given good. Leaving aside the farming phase and concentrating solely on the industrial phase, the following is the environmental cost of each kilo of leather tanned using chromium.

Water used and to be purified	60-250 litres
Energy used	37.2-210 MJ
Chemical substances used and transformed into wastes to be disposed of	2-2.5 Kg
Solid wastes	4.3-6.15 kg

Until the 1970s, Santa Croce was ruled by the law of the jungle in environmental terms. The water released from tanneries flowed directly into local watercourses, the gases produced were discharged directly into the atmosphere, and organic wastes built up in the large municipal dumps. In the rivers, fish died in droves, while the inhabitants of the district were forced to breathe air full of the bitter smell of rotten eggs. The breakthrough came through popular protest, which resulted in the enacting of laws to protect the rivers and the air, which required all entities in the district to take steps to protect the environment and, therefore, the health of the people. And while tanneries were forced to make massive investments to install filters and organise initial separation of wastes, industrial figures and public local entities set up a negotiating table to develop a plan for disposal of the pollutants and agree on how costs would be divided. The final agreement

was that tanning associations would take care of the construction and management of purification plants while the public local entities would be responsible for the construction and management of the sewerage system. Subsequently, everything was transferred to the control of the tanning associations. Today, the district has two major purification plants to which the waste water from the tanneries is channelled by means of corresponding sewers, one on the left bank and one of the right bank of the River Arno. The sewer on the right bank is located in Santa Croce and is managed by a consortium, named Aquarno, which is owned 93% by companies within the district that use the plant (457 in 2010) and 7% by the Municipalities of Castelfranco, Santa Croce sull'Arno and Fucecchio. The one of the left bank is at Ponte a Egola and is managed by a consortium called Cuoioedepur, which is

almost fully owned by 130 companies that use the plant, except for a small stake owned by the Municipality of San Miniato.

Along the network connecting the tanneries to the two purification plants there are also intermediate plants, also managed by consortia owned by companies within the district. One of the principal ones is at Ponte a Cappiano, managed by the Consorzio Conciatori di Fucecchio, made up of about 40 companies.

The purification systems are designed to clean the water of chemical and organic pollutants, before releasing it into natural watercourses.

Although the district has a population of only 110,000, its actual pollutant load to be disposed of is comparable to that of a city of more than three million inhabitants.

Each year, the Cuoio depur plant treats 3 million cubic metres of water, half of which is industrial wastewater and half civilian. The Aquarno, which is larger, treats 4.5 million cubic metres each year, $\frac{3}{4}$ industrial and $\frac{1}{4}$ civilian. Using lengthy settling processes and other types of processing, the water is purified of solid and chemical substances that are harmful for living things, but a large quantity of waste accumulates in the form of sludge. Cuoio depur produces an annual quantity of 13,000-14,000 tonnes of dehydrated sludge and Aquarno 20,000 tonnes. The problem is what to do with it. The simplest method would be to throw it in the rubbish dump, but that poses huge problems for the environment. The two purification

plants have had to do everything possible to find alternative solutions.

Both have determined that the optimal solution would be to transform the sludge into reusable material, but only Cuoio depur can say that it has achieved that objective, with 100% of the sludge being used in agriculture. But this solution works for Cuoio depur because the majority of the tanneries to which it is connected perform vegetable tanning, and therefore the water purified in its plant has low levels of chromium and high percentages of organic substances. According to the information provided by Cuoio depur, 90% of the dehydrated sludge is recovered for the production of fertiliser, with the extracted sludge being mixed with other material such as crushed bones, feather meal, meat powder and blood. The other 10% is sent to composting plants, which mix the dried sludge with other green material for the production of compost. In conclusion, in 2013, 2014 and 2015, no sludge was sent to dumps, while 20% was sent in 2011 and 10% in 2012, to authorised dumps in the Apulia Region.

As an illustration of the fact that tanneries using chromium present more problems than those using vegetable-based processes, Aquarno has had to find other solutions, although it has not achieved the same success as Cuoio depur. Using a special pipeline, Aquarno pumps the sludge to an adjacent industrial plant, Eco spanso. Here, the sludge is first centrifuged and then treated

at high temperatures to eliminate the particles of carbon and recompact the remaining material into new compounds for the building sector. But ultimately only 14% of the sludge ends up as recovered material. Another 41% ends up in dumps and a good 45% is gasified. When asked about the accuracy of these data, Ecoespanso management refused to respond. In addition to the purification plants, other facilities supplement the purification and recycling activities implemented in the district, in particular three firms designed to treat specific products. The first activity is performed by the Chromium Recovery Consortium, a private company whose members are 240 tanning firms. The purpose of the company is to recover the chromium contained in tanning water brought to it by its members in tanker trucks. The plant is able to regenerate more than 21 tonnes of basic chrome sulphate each day, which the tanning companies then take back to be used in the next tanning cycle.

The second activity is performed by Consorzio S.G.S. SpA, an industrial concern owned by 230 firms from the tanning district, which is responsible for the recovery and recycling of the fleshings and other biological wastes obtained during processing of the skins. The plant treats approximately 100,000 tonnes of material each year, brought in directly by tanneries, from which it extracts fats and proteins resold in the form of products for agriculture and livestock farming. Other small

firms in the area, such as Organazoto and Ideaverde, also perform recovery of biological wastes, producing fertilisers for agriculture. The third activity is performed by Waste Recycling, a private industrial company specialised in the treatment of liquid and solid wastes, both hazardous and non-hazardous. The company claims to be equipped to handle the disposal of all major industrial wastes and if it can't, it will resolve the problem by sending the wastes to other facilities not just in Italy, but also abroad. With regard to the tanning sector, Waste Recycling receives material both directly from the tanneries and from the purification plants. As the final link in the chain, its task is to ensure the final elimination of wastes that are difficult to dispose of and, although it is equipped with a pyrogasification plant to eliminate everything that can be burned, it is nonetheless forced to send a large part of the wastes to special dumps in Tuscany and other regions of Italy. But it is impossible to know how much, because Waste Recycling has refused to provide any information on the final destination of the sludge passing through its facility. The public authorities have also been uncooperative, as if the management of wastes were a private matter that can be managed behind closed doors. It would hardly be surprising if, every so often, an illegal dump were to be discovered, like the one reported in 2014 near Florence. The tanneries in Santa Croce are also accused of practices of this type.

In addition to producing wastes and polluted water, the tanneries also generate gases and particles that pollute the air. One of these is hydrogen sulphide, which spreads the characteristic odour of rotten eggs. But many other substances that pollute the air are produced during various phases of skin processing, not only those in the drum. These include volatile organic compounds (VOC), substances released during spray-finishing of the skins, or dusts generated during certain mechanical operations such as shaving and grinding and, to a lesser degree, also during spray-finishing. The law lays down maximum emission limits for each pollutant substance, and companies are therefore required to install specific abatement and extraction systems. We do not have any accurate studies about the behaviour of the companies in Santa Croce in this regard. We can only say that many firms have modernised their operations and, according to the GreenItaly report, the incidence of environmental investments on company turnover has increased from 1.9% in 2002 to 4% in 2010⁴¹.

Monitoring of compliance with environmental requirements is performed by the health authorities and the regional environmental protection authorities (ARPAT), each within its own specific area of responsibility. In addition to readings taken using fixed air, water and soil monitoring systems, these authorities perform inspections on their own initiative or

following reports of problems from citizens and other public authorities. But how efficiently these are performed is still a big question, because these bodies do not have sufficient financial and personnel resources to perform all their required activities.

It is a fact, in any case, that in the Santa Croce District, a small purification plant, Ponte a Cappiano, has been able to discharge sludge for years directly into local watercourses without ARPAT even being aware of it. Alarmed at the large-scale death of fish, an investigation was initiated by the legal authorities, which resulted in lawsuits against certain directors, who were sentenced in July 2015 to a number of years in jail.

⁴¹ Unioncamere, *Green Italy - Report 2014*.

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