

Leather Crafting Tools and Chemicals for Nepal

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Part 1

Uses for Leather

Leather is an animal hide that has been preserved to withstand different stressors including; hot, cold, friction, chemicals and flames due to these reasons it is very useful and versatile for many situations. Leather can be used for clothes, tools, footwear, industrial processes, furniture and crafts. It can also be made from any animal hide including most commonly cow, sheep and goat and even less commonly like alligator, ostrich, and mink for example. It is often seen as a representation of success such as leather car seats, couches, ostrich skin shoes and so on.

How Leather is Made Today

Leather production is a complicated procedure involving many steps. There are also different ways leather can be processed with both different chemicals and different styles. Leather production is essentially any process that breaks down collagen fibers with chemicals to preserve the hide (EPA 1997). These chemicals could come from both natural and manufacturing sources, they could include tannins, chromium, alum, or other chemical agents (EPA 1997). The typical way leather is produced, is as followed; first there is trimming, soaking, fleshing, and un-hairing of the hide, these steps are classified as the beamhouse operations (EPA 1997). After the beamhouse operations come the tanyard processes of bating, pickling, tanning, wringing, and splitting (EPA 1997). Conditioning, staking, dry milling, buffing, spray finishing, and plating are the final steps (EPA 1997). After the pickling stage the tanning is generally done in two different ways; chrome tanning or vegetable tanning (EPA 1997). These steps can be seen in *figure 1* from the EPA. In the United States common chemicals in the tanning step include

trivalent chromium, alum, syntans, formaldehyde, glutaraldehyde, heavy oils, and vegetable tannins extracted from specific tree barks (EPA 1997)

Chemicals Available

From the Calgary based company Select Taxidermy Ltd. there are a variety of chemicals for the different steps in the leather production. The chemicals they offer for leather production are in small quantities and are oriented towards hunters wanting to preserve their animals ("Tanning Supplies and Chemicals," n.d.). They are less harmful towards human health and the environment because of this. The tanning lotion they offer can be bought in the following quantities for the respective prices; 8 oz. for \$10.95, 1 litre for \$22.95, 4 litre for \$59.95 ("Tanning Supplies and Chemicals," n.d.). This lotion can be used for the tanning step, as substitute for vegetable tanning or chrome tanning ("Tanning Supplies and Chemicals," n.d.). Some Oxalic Acid can be used in pickling process for the follow prices and amounts; 1 lb for \$8.95, 5 lbs for \$18.95, 10 lbs for \$36.95 and, 25 lbs for \$69.95 ("Tanning Supplies and Chemicals," n.d.). All that is required is two teaspoons for one gallon ("Tanning Supplies and Chemicals," n.d.). Borax is a treatment for after the tanning process to cleans and protect the hide against fungus and bacteria ("Tanning Supplies and Chemicals," n.d.). It can be bought for 1 litre for \$8.95, 4 litre for \$24.95; the respective catalogue numbers are BX1L and BX4L ("Tanning Supplies and Chemicals," n.d.). This is a small list of chemicals that select Taxidermy offers.

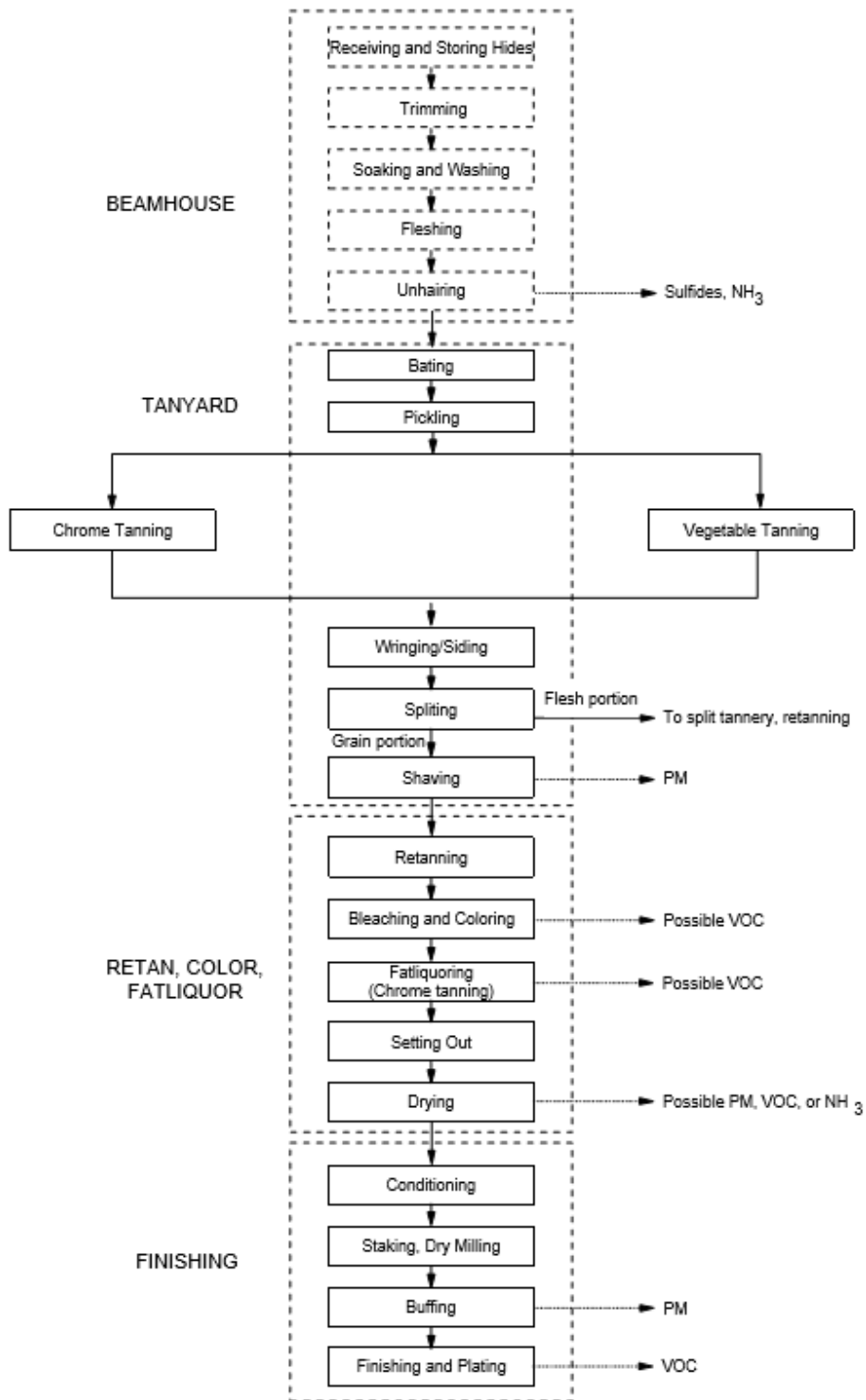


Figure 1

Specialty Tools for Handy Crafts

Specialty tools to produce leather crafts can be purchased from Tundra Leather of Hamilton. Tundra leather offers many tools to create beautifully detailed leather products. Some tools can be seen in *table 1* ("*Tundra Coustom Leather and Supply*," *n.d.*). These hand tools are relatively easy to use and with experience the operator would become an expert in creating leather (S. Dalgetty, personal communication, November 17, 2015). This is just a sample of the line of specialty tools Tundra Leather as to offer. A person with access to these tools and some knowledge could create high quality leather goods, anything from decorative cowboy gear to wallet to purses (S. Dalgetty, personal communication, November 17, 2015).

Table 1.

Tool	Description	Price and Catalogue Number
Speedy Stitcher	This stitching awl is used to sew any heavy material, including awnings, tents, upholstery, saddles, handbags, etc.	108-6610 - \$19.99
Round Point Skiving Knives	These skiving knives are round beveled, and feature hand-sharpened edges. They are available in three sizes.	108-67-0 - \$33.00 108-67-1 - \$36.00 108-67-2 - \$41.50
Pro Punch	This revolving leather punch is similar to Osborne #155. It is made from drop forged steel. It comes to six interchangeable tubes (and comes with a complete set of replacement tubes). Tube sizes: 2, 2.5, 2.8, 3.2, 4, 4.8 mm	109-6608 - \$54.95
French Edger's	These French edger's feature hardwood handles, brass ferrules, and they are drop forged. They are fully polished and available in the	#4 (1/4") - \$68.69 #6 (3/8") - \$69.95 #8 (1/2") - \$65.00 Catalogue number for this product is 108-130

	following sizes:	
Embossing Wheel Carriage	This tool allows or interchangeable embossing wheels. They are used on borders, tooling, etc. The wheels are sold separately.	108-459 - \$37.95
Creaser/Tickler	This tool is used for creasing, shaping, folding, etc. (or tickling the leather into its desired place). It features a hardwood handle, and a brass ferrule. This tool is available in two sizes.	108-12-1 or 2 - \$24.79 Sizes: - 12-1 = Small - 12-2 = Large
Modeling Tool	This is a good all-around tool. It is excellent for straight line work.	108-475 - \$17.95

Benefits to Canada

Both companies mentioned above are small Canadian companies. Tundra Leather is a two person operation that has been local to Hamilton for decades ("Tundra Coustom Leather and Supply," n.d.). The owner is Peter Grove and they are located at Tundra Leather 313 King Street East Hamilton, Ontario L8N 1C1 with a phone number of 1 (905) 527-7745 ("Tundra Coustom Leather and Supply," n.d.). Select Taxidermy Ltd. is located at Unit 109, 1829 54st SE Calgary AB, Canada T2B 1N5 and can be reached by phone by 1-877-611-0162 or 1-403-291-0162 and by email with mark@selecttaxidermy.com ("Tanning Supplies and Chemicals," n.d.). It is owned by Mark Zimmerman who has over 30 years of experience in taxidermy ("Tanning Supplies and Chemicals," n.d.).

By selling their products it would stimulate their businesses. Potentially allowing room to grow (M. Zimmerman, personal communication, November 17, 2015). Therefore providing more jobs to Canadians, therefore benefiting the Canadian economy. When supporting small Canadian businesses the money is circulated within the community, supporting the middle class (M.

Zimmerman, personal communication, November 17, 2015). Also supporting these small companies keeps the money local because they don't rely large corporate businesses, they do not have pay for franchise costs or for all the overhead a large company would have too (M. Zimmerman, personal communication, November 17, 2015). Other benefits to the economy could include the businesses involved in transportation of these products, again supporting Canadians, and the connections with Nepal for more potential international trade.

Although the companies do not get all their products from Canada they would still have an impact on the Canadian economy because they are distributing it. The chemicals from Select Taxidermy are made in the USA and then shipped to Calgary where they are divide into smaller quantities (M. Zimmerman, personal communication, November 17, 2015). The tools from Tundra Leather are generally made in the USA because of the Mennonites need for crafting tools for leather to create horse tack (S. Dalgetty, personal communication, November 17, 2015). Some tools of a lower quality are also made in China on a mass production and are a little cheaper (S. Dalgetty, personal communication, November 17, 2015). These tools disturbed from Hamilton (S. Dalgetty, personal communication, November 17, 2015). This is the sole factor benefiting the Canadian Economy only slightly but still helping small Canadian businesses.

Part 2

Nepal

Nepal is a land locked country in-between China and India with a population of about 27 million people (T. Chapagain, Dr., lecture, September 18, 2015). Nepal is host to a diverse climate because it is very mountain is with many micro climates between the elevations (T. Chapagain, Dr., lecture, September 18, 2015). The climate zones reach from tropical, to

temperate, to arctic tundra. Nepal's people are primarily involved in agriculture as 70% are employed with in it and for the most part they are subsistence farmers (T. Chapagain, Dr., lecture, September 18, 2015). Their culture is heavily Hindu influenced but there are a notable amount of Buddhists from the Tibetan cultures (T. Chapagain, Dr., lecture, September 18, 2015). There are about 11 million cows and buffalos and 8 million sheep and goats that live on their average farms of approximately one hectare (FAO, 2005). The currency in Nepal is the Nepalese rupee and the conversion rate to the Canadian dollar is about one Canadian dollar equals 80 Nepalese rupees (T. Chapagain, Dr., lecture, September 18, 2015).

Intended Purchaser

These products are intended to be purchased by a small farm holder with live stock or an entrepreneur wanting to start a leather processing business. Small farmers in Nepal waste most of the hides that are produced by their animals (FAO, 2010). Reasons why this happens is because of a lack of access to people to sell their hide to and a cultural problem that the people of Nepal enjoy meats with the flesh still attached (FAO, 2010). These animal hides could be turned into leather which the farmers could then use for many projects including turning them into a craft item to sell abroad. If there is enough hide to be processed an individual may decide to start their own business in processing leather. They could then sell this leather to another individual to further process this leather into high quality crafts or create those crafts themselves.

Transportation

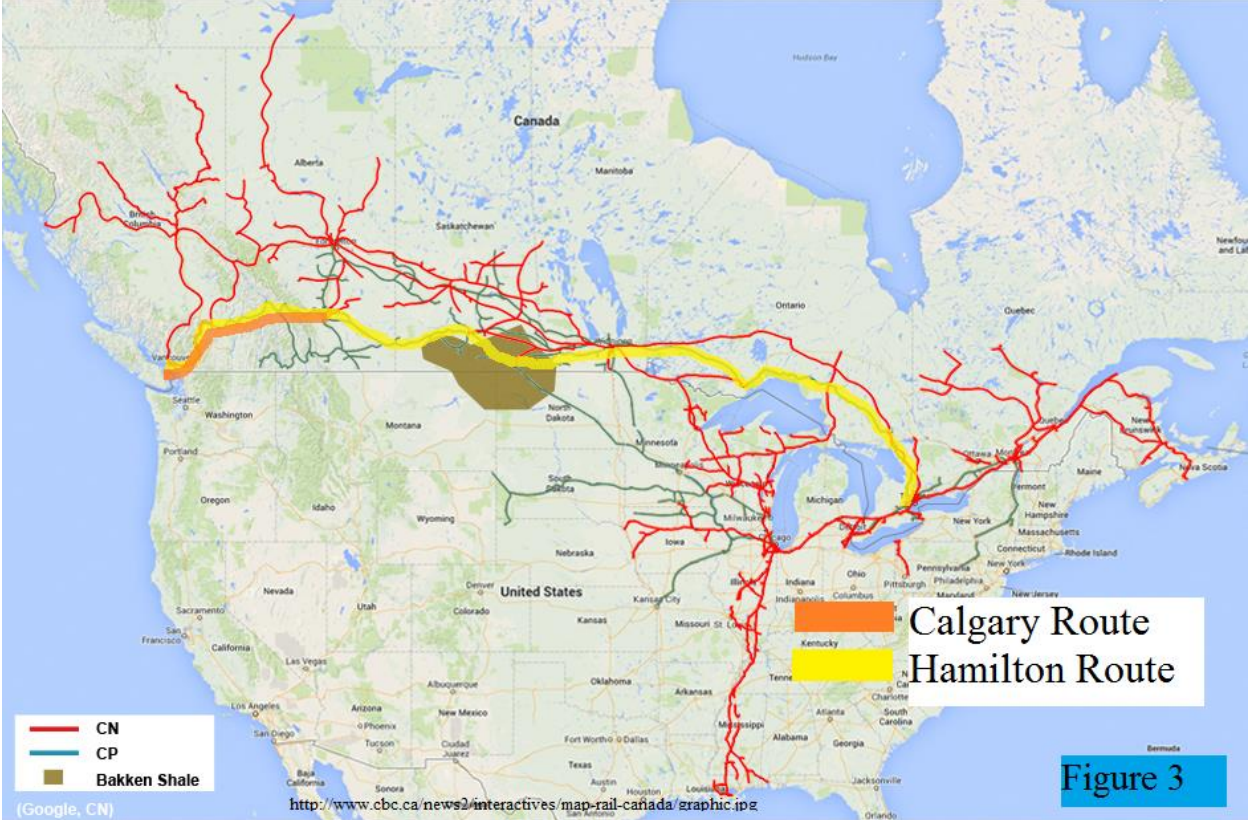
Transportation for these products begins in the stores at which they originated from. They then will be transported to the nearest train station and shipped by rail to Vancouver as seen in figure 3. The item shipped with Day Ross Transportation. It would cost about \$226.84 for 1000 lbs of the tools to be shipped from Hamilton to Vancouver ("Free Instant Quote in Three," n.d.). It would also cost about \$191.17 for 1000 lbs of chemicals to be shipped from Calgary to Vancouver ("Free Instant Quote in Three," n.d.). The shipping from Vancouver to Kolkata India would cost about \$3500 for 1500lbs of tools and chemicals to be shipped (D. Spence, personal communication, November 22, 2015). This would be done via container ship (D. Spence, personal communication, November 22, 2015). The approximate route that will be taken can be seen in figure 4. From Kolkata to Kathmandu the products would travel via a local truck company, the approximate route can be seen in figure 4. Directories can be found online for



Figure 2

these companies, further research is necessary. Please take note these are not the final costs of the transportation according to Dwayne Spence from Zim Integrated Shipping Services, there are

many other costs involved including import and export permits and taxes (D. Spence, personal communication, November 22, 2015). The transportation step can be seen in the flow chart label figure 2. According to Mark Zimmerman there is no restriction on shipping the leather production chemicals overseas, although extra taxes may be applied (M. Zimmerman, personal communication, November 17, 2015).





Distribution

Once the product gets to Kathmandu distribution will happen either via a small company or some sort of agricultural extension. This step in the process is unclear because there is no common known infrastructure for distribution of products. Kathmandu is a good place to send the products to because being the capital and largest city in Nepal there is a higher chance to find a company to act as a middle man between Canada and the farmers of Nepal. Further research is necessary.

Benefits to the Nepalese

The people of Nepal suffer from poverty because they are substance farmers (T. Chapagain, Dr., lecture, September 18, 2015). This is a problem because substance farmers only grow enough food to feed their selves and family by definition. Therefore they do not have any extra produce to sell and gain profit, and by that no additional funds to pay taxes and make further investments in their lives. If the people in Nepal had access to gain extra funds they could break out of this cycle of poverty and resolve their hunger issues. Hides of animals in Nepal go

to waste because of many reasons (FAO, 2010). Firstly there is a lack of access Tanneries in Nepal in recent year due to government policy (FAO, 2010). There inexperience in properly skinning the animal leads to poor quality of raw hide (FAO, 2010). Due to their geography their landscapes are extremely mountainous making roads very limited and inaccessible (FAO, 2010). The unavailability of chemicals and machineries in the country makes it challenging to produce good quality leather (FAO, 2010). Finally, consumers' prefer meat with the skin intact as a cultural tradition that arrived because the meat is eaten it is not being wasted (FAO, 2010).

There are traditional ways that leather is processed where the *Woodfordia fruticosa* bush is used as the tanning agent (Das et al., 2007). These methods of tanning are become less popular because the processing time of the leather is weeks and due to deforestation finding large amounts *Woodfordia fruticosa* necessary to tan leather is getting increasingly harder to find (Das et al., 2007).

These issues are multi diverse but a proposed solution would be to import leather chemicals and tools into Nepal. If the individual farmers or people had access to the necessary chemicals they could make their own hides and they would not need to rely on a large tanneries to produce their leather. Another benefit is that the profit would go straight to them and the Nepalese would be making an income from something they waste before. If farmers still attempting to make leather the traditional way had access to these chemical it could speed up the process with better results (FAO, 2010). After the leather is created by a farmer or a small second party business, it could then be processed further into high quality crafts by the farmer, a small second part business, or a small third party business that specializes in leather craft. For this step in the process the specialty tools from Tundra Leather could be used.

Turning an item that was once wasted or eaten into a higher value product could then be sold for a great profit could be enough to help Nepalese farmer get out of the cycle of poverty. With extra income farmers could invest in education for the children or even simple machinery and fertilizers for the farms allowing them to make further profit (FAO, 2010). This in turn would boost their morale because the farmer would not have to worry about their future as much, with a reasonable amount of income they would have a more secure food supply if a crops were to fail.

Another benefit to Nepal if these product were available to the people is a surplus of high quality crafts to sell to the world. These products could fill niche market in developed countries from wealthier people willing to support the people of third world countries by buying artisan products. A company in Canada that offers product like this is Ten Thousand Villages. Ten Thousand villages offers fair trade products from poor people all over the developing world ("Fair Trade," n.d.). They follow the World Fair Trade Organization principles of good working conditions, gender equality and fair payment to name a few ("Vision and Mission," n.d.). If the people of Nepal sold their newly products to places in developing nations like Ten Thousand Villages they would not only be making a profit but they would be showing the world that they are able to participate in the global economy and making a name for themselves.

Potential Drawbacks

Although this idea is filled with great potential there are some draw backs. Because the chemicals and tools are being shipped from Canada there is a large cost involved in the transaction. One shipping container could cost up to ten thousand Canadian dollars to ship to Nepal (D. Spence, personal communication, November 22, 2015). On top of the actual cost of

the products and the cost of the conversion of our dollar to the Nepal rupee has not even been considered. This could be problematic for the farmer that can barely afford to live.

Another hurdle that will have to be overcome is the education on the people going to create the leather then turn it into high quality crafts. The chemicals are potentially dangerous and tradition knowledge of who to make leather is being lost (M. Zimmerman, personal communication, November 17, 2015). Training would have to be implemented, whether by a foreigner or a local who knows the steps in making leather. Also instruction on the precaution of the chemical will need to be explained to those who are not literate.

These chemicals are potentially dangerous to the environment and human health. If the person applying these chemicals untrained in how to properly dispose of the chemicals, and what personal protection precautions are necessary these chemicals could do more harm than good. With some of the chemicals burn could occur to the skin and eyes and soil could become unproductive if exposed to them (M. Zimmerman, personal communication, November 17, 2015).

A cultural problem with making leather is that the people like to eat goat meat with the skin intact (FAO, 2010). It may be problematic convincing them it is better for them to turn the skin into leather to sell for a profit rather than eating it. Like in many cultures it is hard to convince change.

One last problem with all these other problems put aside is that these people would now be relying on Canada for a product of the chemicals. If they become completely reliant on Canada issues with transportation interruptions and politics could have devastation for the people who have become reliant on the leather for a source of income.

Competition

Being that Nepal is located between China and India two of the world biggest economies it is guaranteed that these product can be produced in those place at a fraction of the cost (World Bank, 2015). This being said the Canadian products do not have a complete edge due to the price of labor in Canada, the transportation costs and the conversion of the dollar.

Conclusion

Sending leather production chemicals and tools to Nepal is a great idea because this will allow the livestock farmers of Nepal to have some extra income when animal dies or is slaughtered. This in turn will boost their morel allowing them to live a lifestyle where they can be more comfortable. It will also help increase trade in Nepal if they decide to sell the newly made leather products overseas. Therefore boosting the overall reputation and economy in Nepal.

However it is unrealistic that these leather chemicals and tools come from Canada due to the high cost of the products to the average Nepalese and the high cost of transportation. Although if the products where from Canada it would be supporting small hard working Canadian businesses it if just not feasible for the cost to the farmers of Nepal. There are other alternatives to sell Canadian chemicals to Nepal through a company called Buckman.

Buckman is a large cooperation located all over the world, with a plant in Montreal. They create efficient leather technologies for a sustainable future ("Leather Technologies," n.d.). Further research into this company may be beneficial for creating a more feasible approach for Nepal's leather industry while supporting the Canadian economy.

Suggestions for this idea, would it to be orchestrated by a Canadian where the chemical for leather production and tools could be bought from China or India then sold to Nepalese

farmers where they would then be shown by a Canadian official how to safely make leather and dispose of the chemicals and then shown different techniques and patterns for creating high quality crafts.

References

- Chapagain, T., Dr. (Presenter). (2015, September 18). *AGRI-FOOD SYSTEMS*. Lecture presented in University of Guelph, Ontario.
- Dalgetty, S. (2015, November 17). [Telephone interview by the author].
- Das, P. K., Goswami, S., Chinniah, A., Panda, N., Banerjee, S., Sahu, N. P., & Achari, B. (2007). Woodfordia fruticosa: Traditional uses and recent findings. *Journal of Ethnopharmacology*, 110(2). <http://dx.doi.org/10.1016/j.jep.2006.12.029>
- Environmental Protection Agency. (1997). Emission factor documentation for AP-42 section 9.15leather tanning final report [PDF]. *United States Environmental Protection Agency*.
- Fair trade. (n.d.). Retrieved December 1, 2015, from <http://www.tenthousandvillages.ca/about/fair-trade>
- Food and Agriculture Organization. (2005). Livestock sector brief Nepal [PDF]. *Food and Agriculture Organization of the United Nations*.
- Food and Agriculture Organization. (2010). Study of hide and skin collection and processing [PDF]. *Food and Agriculture Organization of the United Nations*.
- Free instant quote in three steps. (n.d.). Retrieved December 1, 2015, from [http://www.freightcenter.com/canada/?utm_campaign=WithinCanada&utm_content=Rail Freight&utm_medium=cpc&utm_term=freight%20train%20shipping&utm_source=google&gclid=CNeai6mluckCFYQ6aQodwp0DOW](http://www.freightcenter.com/canada/?utm_campaign=WithinCanada&utm_content=RailFreight&utm_medium=cpc&utm_term=freight%20train%20shipping&utm_source=google&gclid=CNeai6mluckCFYQ6aQodwp0DOW)

Leather technologies. (n.d.). Retrieved December 1, 2015, from <http://buckman.com/en/core-businesses-leather/leather-technologies>

Spence, D. (2015, November 22). [Personal interview by the author].

Tanning supplies and chemicals. (n.d.). Retrieved December 1, 2015, from <http://www.selecttaxidermy.com/tanning-supplies-and-chemicals/>

Tundra custom leather and supply. (n.d.). Retrieved December 1, 2015, from <http://tundraleather.ca/index.php>

Vison and mission. (n.d.). Retrieved December 1, 2015, from <http://www.wfto.com/about-us/vision-and-mission>

World Bank. (2015). Gross domestic product 2014 [PDF]. *World Bank*.

Zimmerman, M. (2015, November 17). [Personal interview by the author].