

COFFEE & TEA

From the Perspective of Starbucks Sustainability



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STARBUCKS
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Introduction

Coffee and tea are globally omnipresent drinks that need to become sustainable. Starbucks has already taken steps towards sustainability and recently announced the goal of becoming Resource Positive by 2030. In order to understand how to be sustainable to meet this goal in a competitive market, this paper will compare Starbucks to four other coffee companies: Café Pilão in Brazil, Lavazza in Italy, Trung Nguyên in Vietnam, and Dukes Coffee Roasters in Australia; and five tea companies: Organic India in India, Lipton in US, T2 in Australia, Ajiri in Kenya, and Ito En in Japan. From this study, tea is a more sustainable product which coffee will not be able to compete with in the future unless production is reformed. It is imperative Starbucks makes coffee a sustainable product to preserve the company through growing demand and climate change against the competition of a more sustainable product, tea.

History of Coffee and Tea

The exact origin of coffee is unknown, although it was likely discovered on the Arabian Peninsula. It became available globally in 1616 when the Dutch founded the first European-owned coffee estate in Sri Lanka. By the end of the 18th century, coffee was one of the most profitable export crops (Avey, 2013). As with coffee, the exact origin of tea is unknown. Tea is most likely to have originated in India and spread to China along caravan routes. The British East India Company started trading tea in the early 1700s, eventually monopolizing the tea trade with China (*A History of Tea*, no date).

Production

The production line of coffee starts on the coffee plantation. Harvesting is usually done by hand, but the process has been mechanized in flatter landscapes. Once the cherries are stripped, the second phase of production is done in a large vat of water. The ripe cherries will

sink while the unripe cherries, sticks, and leaves will float (*Coffee Processing*, no date). To expose the bean from the cherry, coffee is processed by either the dry method or wet method. The dry method is used in countries where water is limited; the cherry is spread out and dried by the sun over several weeks. If this method is done, the bean must be separated from the dried cherry layer (parchment) by a process called milling. Alternatively, the wet method pushes the whole cherry against a mesh with pressurized water, forcing only the bean through the grate. The beans then must dry by either tumble drying in a machine or under the sun. The unroasted green beans are exported throughout the world to each companies' distribution center for roasting and packaging (*10 steps from Seed to Cup*, no date).

Tea plantations are called estates. Picking the tea is usually done by hand, since machines can easily damage the leaves. The tea leaves are withered under the sun or with a machine. The dried leaves are either rolled to release the remaining moisture or are chopped into tiny pieces by the CTC (cut, tear, curl) method. The leaves are spread out in a cool, damp area to oxidize, then dried with hot air, sorted, and distributed. For green tea, the leaves are steamed after the withering process to stop the oxidation process. Oolong tea is only partially oxidized, and white tea is picked at a specific time when the buds are not fully opened yet (Fuller, 2007).

Sustainability of Extracted Materials

A few key extracted resources for coffee and tea are water, energy and the plants. Water is used enormously for both coffee and tea, and is an exhaustible, non-renewable resource. Water is required to separate ripe cherries from unripe cherries, to remove the pulp from the coffee bean, to wash both tea and coffee, and to steam tea leaves. The wet method to process coffee requires 22,530 m³ of water per ton of coffee, and the dry method requires 22,458 m³ per ton of coffee. The two amounts are similar since washing, hulling, and polishing the green bean

requires an excessive amount of water. Tea requires 4,978 m³/tons, regardless of the type of tea produced (Chapagain and Hoekstra, 2007). Please see Appendix figure 1 and 2 for accommodating diagrams. Coffee requires exorbitant amounts of water compared to tea, despite the method of production, proving that tea is more sustainable. To reduce this amount, Starbucks could help farmers invest in drip irrigation, rainwater capture, and water-reuse in production. Energy, a non-renewable resource in this case, is used to remove the coffee cherry from the bean, cook tea leaves to stop the oxidation process, and distribute the products around the world. Coffee requires more processing and more energy, therefore is less sustainable than tea. To reduce this amount, Starbucks could help farmers invest in renewable energy.

Coffee and tea is not farmed sustainably. The majority of the plantations are rainfed, not irrigated, therefore are very susceptible to rainfall variability. Rainfall will fluctuate with climate change, which will weaken coffee plants and reduce yields. Often to make up for the lack of income from less yield, farm owners either expand their plantations or move locations, deforesting more land and decreasing biodiversity (Varcho, 2015). Climate change will also cause an increase of pests, diseases, and weeds. As a result, there will be an increased use of pesticides, fungicides, and herbicides.

There is potential for coffee to be sustainable. Historically, coffee was grown under the shade of the tree canopy. Sun grown coffee was introduced in the 1970's to increase production (*Shade grown coffee*, no date). The Smithsonian Migratory Bird Center started the shade-grown coffee movement after a notable change in the migratory pattern of birds determined to be linked to the rapid popularity of sun-grown coffee (*About Bird Friendly Coffee*, no date). Please see Appendix figure 3 for accommodating diagram. Although yield is increased for sun grown coffee, there are many benefits to growing coffee in the shade. First, shade grown coffee plants

have longer lifespans, about 30-years compared to 15-years for sun-grown coffee (Craves, 2006). Secondly, shade-grown coffee reduces the need for pesticides and fertilizers, including nitrogen. The multi-layered canopy protects the plant and soil from rain, reducing runoff and soil erosion. The forest is a natural habitat for birds, mammals, reptiles, insects, etc. There is natural pest control and improved pollination, and overall, the plant is less vulnerable to the effects of climate change (*Ecological Benefits of Shade-Grown Coffee*, no date).

The arguably most important effect of shade-grown coffee is the reduction of susceptibility to rust fungus. Coffee rust is famous for being the most economically important coffee disease. The fungus infection severely damages coffee plants. If a farm were to be infected, the farmer must replant. To prevent this issue, the coffee plant is sprayed with environmentally damaging fungicides (Arneson, 2000). Due to reduced yields and trees slowing the horizontal spread of spores, shade-grown coffee is less susceptible to the infection (*Ecological Benefits of Shade-Grown Coffee*, no date). Starbucks could switch some plantations to shade-grown, and market the environmental benefits of this coffee.

Waste Streams

There is an extraordinary amount of waste just from the cherry pulp. “Two tons of coffee pulp is obtained per 1 ton of coffee” (Aristizábal-Marulanda, Chacón-Perez and Cardona Alzate, 2017). Water with cherry pulps can be dumped back into local water streams, causing heavy pollution due to the acidity and organic matter. “The pollution load in the wastewater from the wet milling of coffee can be 30 to 40 times greater than the one found in urban sewage” (Brando, 2014). Additionally, fertilizer and pesticide runoff contaminate local water for both coffee and tea production. Excess N (calcium cyanamide) application contaminates local water with nitrate and causes nitrous oxide loss (Oh *et al.*, 2006).

Tea waste comes in two forms, tea stalks and small dust particles (caffeine dust). Tea waste can be between 1% to 3% of total tea production (Singh, 2019). One study states that “of India’s near 860,000 metric tons of production, 190,000 are waste” (Keen, 2018), and another states “in the Eastern Black Sea region, tea factories produce 30,000 tons/year of discarded tea waste” (Malkoc and Nuhoglu, 2007). Although still immense, tea produces less waste, proving the need to modify coffee production.

Social Sustainability

The social utility benefit of coffee is its historic “coffee culture.” Public coffee houses are almost as old as coffee itself (*The History of Coffee*, no date). This social tradition is kept up today. Working, meeting up, or networking is common at a local cafe. The social utility benefit of tea is its immense cultural significance. Tea is an integral part of almost every culture. For example, Chinese Teahouses have been a part of the Chinese social life since the Song Dynasty, 970-1279AD (Stoneham, 2016). Other cultures have their own versions of tea depending on the way it is fermented and prepared: Indian chai tea, Moroccan mint tea, Kenyan black tea, US sweet tea, etc. The popularity of this drink makes it the second most consumed beverage in the world after water (*Tea is the second most consumed beverage worldwide*, 2015).

Since both products are so popular, they impact many levels of sustainability across the world. Therefore, there is significant opportunity for both of these products to impact and improve most SDGs directly. Better, higher living wages; proper investments made to farming; reduce the impact of tea/coffee to climate change; and partner with the multiple organizations currently attempting to tackle these issues. Only three SDGs are not directly related to coffee or tea production: sustainable cities and communities, life below water, and peace, justice, and

strong institutions. However, by achieving the 14 other SDG goals, these three will be indirectly positively impacted.

Coffee is not economically stable, especially for farmers. Coffee is a commodity sold on the stock market through speculative futures contracts. The price-per-pound paid to coffee farmers is based on New York C Price. Futures are supposed to offer more stability with set prices for future buys, but speculation, large contracts (~37,500 pounds of coffee), and hedge funds attempting to make money off of market speculation distorts true supply and demand. As a result of C being priced in USD, the currency exchange adversely affects prices since local farmers sell in their own currency. This amount of price uncertainty makes investing for sustainable infrastructure, such as drip irrigation, impossible (Boydell, 2018a). As an example of the instability of the coffee market, in 2001 the price of coffee dropped below \$1 per pound. Farmers were not able to cover the cost of production. In Colombia, farmers switched to growing cocoa. In Mexico, farmers died trying to enter the US illegally after abandoning their farms. In order to make coffee sustainable, Starbucks should pay farmers a base price higher than the New York C price (Boydell, 2018b).

Tea is not a commodity that is sold on the futures market, rather through auction centers around the world. About 70% of the world's tea is traded through auctions. This method also does not reflect true supply and demand, since a small number of large companies dominate sales, influencing the price (*About Tea*, no date). However, the tea market is more stable and sustainable than coffee, proving the need to change the direction of the coffee market.

Economic Sustainability

Starbucks clearly understands that sustainability is necessary to sustain the company into the future; however, they do not note a bottom-line benefit of sustainability nor social benefits of

how their products enhance sustainability. Starbucks initiated their own sustainability guidelines for farmers called Coffee and Farmer Equity, or CAFÉ. The program started in 2004 and has three main operations, people, planet, and product (Rochman, 2017). Furthermore, Starbucks has arranged Farmer Support Centers around the world that aim for sustainable coffee growth.

Agronomists help farmers set up test plots, space trees correctly, manage erosion, and reduce use of pesticides (Peiper, 2019). Moreover, the Global Farmer Fund invests in farmers to facilitate sustainable farming practices. Loan recipients receive technical assistance on agronomy best practices, business planning, and risk management (*Investing in Coffee Communities*, no date). Lastly, Starbucks created the Sustainable Coffee Challenge with Conservation International during the 2015 Paris Climate meetings. The goal of this challenge is for coffee to become the world's first sustainable agriculture product (*Framework*, no date).

For every other benchmarked coffee company, the bottom-line benefits of sustainability or social benefits of how their products enhance sustainability were not mentioned. Regarding Cafe Pilão and their parent company JDE, a dearth of information is on sustainability. Only 20% of their coffee is Rainforest Alliance certified (*Corporate Responsibility Report Jacobs Douwe Egberts B.V*, 2019). Regarding Lavazza, their 2030 Agenda Goal is at the beginning stages of sustainability; there are no concrete goals with numbers. It is not even clear how many products are certified, although a third-party report from 2017 claims that Lavazza is only 3.5% certified (Panhuysen and Pierrot, 2018). Trung Nguyên does not mention any sustainability efforts. Although Dukes Coffee does ethically trade with individual farms, it does not have any sustainability reports or goals. It is obvious that Starbucks believes sustainability is necessary to lead the company into the future unlike the four other coffee companies.

The bottom line or social benefit for the benchmarked tea companies were not mentioned. Organic India, T2, and Lipton seem understand that sustainability is necessary to sustain the company into the future, while comparably, Ajiri and Ito En do not seem understand that sustainability is necessary. Organic India and T2 are certified B Corporations. Organic India focuses on the economic sustainability of their farmers and the production sustainability of the farming practices with bio-regenerative agriculture (*Our Story*, no date). T2 recently became a B Corp in 2020, through sourcing 70% of tea ingredients from certified sustainable farms with a goal for fully sustainable in 2021 (*T2 Sustainability Report*, 2019). Lipton has one estate in Kenya that is Rainforest Alliance certified (*Loving our tea farmers*, no date). Ajiri only states “sustainability,” but does not have any reports to show it (*About Us*, no date). For Ito En, the bottom-line benefit of sustainability was not mentioned, and sustainability was not a clear goal. Overall, more tea companies are focused on sustainability than coffee companies, proving the necessity of coffee reform.

Sustainable Supply Chain

Starbucks has an integrated supply chain, meaning they have control over the whole line from farmers to stores. Previous CEO Howard Shultz termed their supply chain “vertical integration to the extreme.” Their sustainability efforts for agriculture and farming includes their CAFÉ guidelines. The sustainability efforts for manufacturing and distribution centers is dearth and more information should be added to the Sustainability Reports. However, one center in York, Pennsylvania is a 100% landfill diversion facility (*Recycling in One of the World’s Largest Coffee Roasting Plants*, 2015). Their sustainability efforts for café storefronts include over 1,600 certified LEED cafés, with a goal for 10,000 greener stores by 2025 (*Starbucks Global Social Impact Report*, 2018). Dukes Coffee is the only other coffee company examined

that sources directly from farmers, and even gives the information of where their coffee is roasted (*About*, no date). Two companies, Pilão and Lavazza, do not buy coffee directly from farmers, meaning at least one third-party handled the coffee before distribution. For this reason, it is not clear how much of their coffee is ethically sourced. Pilão's goal for 100% responsibly sourced coffee will be difficult to achieve if the company does not have stricter control over the sourcing. Similarly, Lavazza's goal of "the spread of good agricultural practices that foster coffee quality and respect for the environment," will not be achieved without understanding how their coffee is sourced. About half of the manufacturing centers for JDE are ISO 14001 certified and landfill free, and all manufacturing centers for Lavazza are ISO 14001 certified (*Lavazza Sustainability Report*, 2017) (*Corporate Responsibility Report Jacobs Douwe Egberts B.V.*, 2018). Lastly, Trung Nguyên does not have information on their supply chain.

The tea companies are more conscious of their supply chain. Organic India built their company starting with the farmers, therefore has control over the production. They own a LEED certified factory in Lucknow, India, near their farms (*Organic India wins India's first LEED Platinum Certification*, 2019). Unilever, which owns both T2 and Lipton, has a full list of all of their tea suppliers, every company from every country (*Sustainable tea – leading the industry*, no date). Starbucks releasing the list of suppliers as does Unilever can improve transparency and trust between the company and the consumer. Lipton boasts of their Rainforest Alliance certified tea estate called Kericho Estate, and their tea is processed in a factory in Virginia (Selko, 2013). T2's tea is certified sustainable, but they do not state their manufacturing sites. Although Ajiri is not clear about the circumstances of their farms, the website states their tea is sourced from small-scale, cooperative farmers (*About Us*, no date). Their manufacturing site is the Rainforest

Alliance certified Nyansiongo tea factory (*PRWeb Newswire*, 2012). Ito En only states that the tea is sourced from small-scale farmers (*Tea-Producing Region Development Project*, 2017).

Risks in Extraction, Supply, and Manufacturing

There are risks all throughout the supply chain that companies should be aware of in order to properly mitigate these issues. Coffee and tea are typically picked by hand, which increases risk of diseases from sun exposure, increases risk of muscular issues from carrying baskets, and increases exposure to agro-chemicals. Farmers houses may not be sanitary, and food amount and quality is often lacking (Sahoo, Konwar and Sahoo, 2010). There are accounts of child labor, human trafficking, and slavery (Lunn, 2019). Pregnant women work for fear of losing their jobs (*Tea*, no date). Current mitigation strategies for all of these issues are to buy from certified farms. Potential supplementary strategies could be health insurance, disaster insurance, and teaching the health benefits of stretching, sun safety, and filtering drinking water. Workers should be paid enough to eat well, and maternity leave should be allowed for female workers. An additional measure tea companies could take is pressuring plantations to provide better living facilities by dropping suppliers that do not pass inspections. Even if housing is not provided for coffee farmers, coffee companies can still inspect living quarters to ensure safety and sanitation.

For local communities, natural forests are cut down for farms, and agro-chemicals and unfiltered water from production pollute freshwater. Soil depletion can increase risk of landslides, and excessive water use can reduce the amount of water available to communities (Varcho, 2015). Currently to reduce these issues, companies can buy from certified farms. Another option that should be implemented is government regulations placing boundaries on natural landscapes to prevent deforestation. Additional regulations can be placed to prevent

dumping of unfiltered water. Companies can pressure suppliers into doing better if local governments do not make the proper regulations. Farmers can practice bio-regenerative agriculture to prevent the destruction of the soil, drip irrigation to prevent excessive water use, and filtering water to prevent pollution of freshwater with the investment help of companies.

Global shipping workers face great risks as well. There are risks of “grounding and collision, ... dangerous equipment, inadequate training, long hours, noise, vibration, heat and other fatiguing working conditions, insalubrious accommodation, un-healthy food, and even abandonment.” There are a few organizations that are trying to improve these states through international regulations, The International Congress of Free Trade Unions and the International Labour Organisation (Bloor, Thomas and Lane, 2000).

Workers for manufacturing and roasting are exposed to a multitude of risks as well. Diacetyl, carbon monoxide, and carbon dioxide is naturally released during roasting (*FAQ: Diacetyl in coffee*, no date) (McCarrick *et al.*, 2019). Dust and debris from green coffee beans and tea lead to respiratory issues (Abaya *et al.*, 2018). Workers are exposed to agro-chemicals. Hearing loss can occur from excessive noise, musculoskeletal issues can occur from lifting, injuries can occur from repetitive motion, and burns can occur from heavy machinery (Weber, 2011). Currently, regulations for these issues depend on the country of the factory. International standards for better safety globally will help to universally appease these issues. Standards such as ventilation in factories, closed systems with exhaust pipes, and proper protective gear should be commonplace. Practices such as altering working position, breaks and exercises/stretchers, health screening for agro-chemical exposure, educating safety practices, and proper training for use of the machines, should be pushed at each site.

Sustainable Marketing

Coffee and tea marketing promotes overconsumption by pushing many distinct types of products to the customers. In order to market sustainably, there should be suggestions on how to recycle or reuse the tea, coffee, and packaging. The company's sustainability efforts should be clearly labeled, so consumers know which product to purchase over another.

Dukes Coffee is the only benchmarked coffee brand that educates the public through their marketing by presenting the farms and production method for each bag of coffee on their website. The other benchmarked coffee brands support overconsumption. Lavazza's main coffee products have no green marketing, although their ¡Tierra! line is marketed as sustainable. Café Pilão and Trung Nguyên have no green marketing. Starbucks green marketing is promoted through interior design elements, such as pictures of the location of coffee sources (Tsai *et al.*, 2020). This method of green marketing is not explicit.

Organic India is the only benchmarked tea brand that educates the public through their marketing. Organic India's packaging has "Certified B", "USDA Organic", and other earth-friendly logos that make this companies ethics obvious to a consumer. The packaging even has a plea to recycle. Organic India does a great job of marketing the sustainability of this brand, which can influence customers to choose this tea over another. The other benchmarked tea brands support overconsumption. Lipton's main advertising point is "supporting a healthy heart" by drinking tea every day (*Home*, no date a). The Australian brand T2 does not print sustainability efforts on the box, despite being a B Corp. Ajiri Tea's main marketing point is "creating employment for women and supporting education for orphans in Kenya," but does not emphasize sustainability (*About Us*, no date). Ito En has no green marketing and no mention of recycling their tea bottles.

To improve transparency and trust between the consumer and Starbucks, adding the information of where the coffee is produced as does Dukes would be beneficial. Adding certifications of sustainability, such as a shade-grown coffee certification, and transparent recycling options on the coffee packaging would improve transparency. Additionally, to fit with the established interior design of the cafés, Starbucks could add pictures of birds and the rainforest to promote shade-grown coffee.

Sustainable Consumption

About 353.4 million cups of coffee is made per day around the world (*Coffee market worldwide*, no date). The Netherlands consumes the most coffee, with 2 to 3 cups per day for each person. The US is 14th, with 1 to 2 cups per day for each person (Armstrong, 2020). Although per capita consumption has not increased, domestic consumption has increased due to the increase in population (Shahbandeh, 2020).

Coffee is bought by the bag and used; it is not typically thrown away since it does not spoil. Therefore, from an individual point of view, coffee is sustainable. One person will use up their bag of coffee and go buy another one. However, production will struggle to keep up if coffee consumption increases, which will naturally occur from population growth. The current answer to increase coffee production is to destroy natural forests, which is extremely deleterious and unsustainable. Long-term coffee production is dependent on better farming practices that preserves the land, which is not the commonplace. Therefore, coffee is not consumed sustainably. One cup of coffee a day per coffee consumer is significantly less damaging to the environment than current rates (in select countries- Netherlands, Canada, US, etc.).

Tea is much more heavily consumed than coffee, with about 3.4 billion cups of tea made per day around the world (Shahbandeh, 2018). Turkey consumes the most tea, 3.5 cups per day

for each person. The United States is 34th with 0.25 cups for each person (*Global per capita tea consumption as of 2016, by country*, 2016). The US per capita consumption hovers around 8 gallons (132 cups) per year (Conway, 2020).

Tea is not consumed sustainably. If a consumer does not drink tea frequently, it is likely to be thrown out since it can lose flavor after a year. Furthermore, if tea consumption increases, production will struggle to keep up. The current answer to increase tea production is to unsustainably destroy natural forests or mountaintops. Long-term sustainable tea production is dependent on preserving farmland through better farming practices, which is not commonplace.

Manufacturing Efficiency

The manufacturing of green coffee beans is typically done locally on coffee farms, and roasting and packaging is done globally in distribution centers. The manufacturing of tea is either global or local depending on the company. For example, Lipton tea is grown in Kenya and processed in Virginia, while Organic India tea is processed at smaller factories near their farms (Selko, 2013) (*Organic India wins India's first LEED Platinum Certification*, 2019). For both coffee and tea, the products typically jump around a few third parties before reaching the intended company. JDE (the parent company of Café Pilão), Lavazza, and Unilever (the parent company for Lipton and T2) are examples of this. It would be much more efficient to linearize their supply chain to have a direct relationship with the farmers, as does Starbucks. This method would also allow the companies to directly improve the farms, making them more sustainable through certifications and investments. To prove their linear supply chain and gain a market competitive advantage, Starbucks could publish the list of their suppliers and add a descriptive paragraph of where the coffee was farmed. Lastly, manufacturing can attempt to more efficiently use water through reuse, and more efficiently use of energy through energy efficient machines.

Industrial Ecology/Symbiosis

Coffee produces excessive waste from the remaining cherry pulp. This waste could instead be made into fertilizer, cascara (cherry coffee tea), or biofuel. A company called the Coffee Cherry Co. creates flour from coffee cherries (*Home*, no date b). Starbucks could partner with this company to reduce their amount of waste from production, supplementing the resource positive goals. The flour could be sold at cafés as an interesting and new commodity.

Tea waste can be used as fertilizer, fuel, or for production of chemicals (caffeine, antioxidants, catechin) (Serdar, Demir and Sökmen, 2017). Tea leaves from production can be made into products such as paper, benches, pens, etc., as demonstrated by Ito En (*Environment*, no date). Starbucks could research into these forms of recycling for wasted coffee grounds.

Industrial ecology links to other company's waste streams for coffee and tea production are a source of energy, fertilizer, and water. Energy and fertilizer could be sourced from other agricultural farms of the local area. Coffee and tea waste can be traded to receive other fertilizer materials to improve the fertilizer's effectiveness. Wastewater from a local farm or a company's building can be filtered and reused for production of coffee and tea.

Product Stewardship

For all the benchmarked companies, product stewardship information was on reducing the waste of the company's own packaging, not on reducing or recycling the waste of the actual coffee/tea. Yet there is potential for coffee grounds and tea leaves to be recycled. There could be an option for consumers to ship their used coffee or tea grounds to local farms for fertilizer. Starbucks could reduce their cafés waste by recycling coffee grounds. Starbucks already has a "Grounds for your Garden" program, where used coffee grounds will be set aside from the trash

on the customer's request (*Coffee for Your Plants?*, 2015). This program could be extended to local farmers and bio-fuel companies, like Bio-bean (*Bio-bean*, no date).

Both products should have environmentally friendly packaging, ideally with fully recyclable materials. Unbleached paper bags could be used for coffee packaging, although this would not be good for ground coffee as it would lose flavor quicker. A 'send-it-back' option would be a great idea for tins, and the company could clean and reuse the tin once again. Starbucks could have a drop-off zone for coffee/tea tins in their café.

Life Cycle Assessment

Coffee's qualitative LCA loses the most points for the waste and pollution in production, distribution, harmful packaging, and the amount of energy required to make coffee. Less impactful but still deleterious are the damaging methods of farming, paper filters, and coffee grounds. Out of a perfect sustainable score of 100, coffee is a 56. The LCA for tea loses the most points for the damaging farming methods, distribution, packaging, and the amount of energy required to make tea. Tea scores higher than coffee, with a rating of 67 out of 100. Tea has less solid residue and liquid residue in extraction, since the pollution of local water from coffee cherries is detrimental. The distribution, packaging, and energy for product use is similarly destructive. Overall, extraction, packaging, and disposal are common areas every company can improve.

Conclusion

Starbucks has the opportunity as a leading coffee café to change the production of coffee. The sustainability guidelines with CAFÉ is a good starting ground; there is plenty of opportunity to supplement this in order to reach the resource positive goals. Starbucks could sell coffee flour in stores and sell coffee bags that are marketed as shade grown. There could be a coffee tin reuse

program, where customers only have to bring the tin back to a local Starbucks. To fit with the interior design of the stores, there could be pictures of birds and the rainforest on the walls to promote shade grown coffee. Starbucks could partner with a company to collect coffee waste to make into fuel, and partner with local farms for compost. Starbucks could write about what farm the coffee is from as Dukes Coffee Roasters does. Starbucks could release a list of their coffee suppliers like Unilever. Although Starbucks does have impressive sustainability goals, there are still many actions to be taken before coffee is the first sustainable agriculture product. It is imperative Starbucks makes coffee production sustainable to preserve the company through growing demand and climate change against the competition of a more sustainable product, tea.

Appendix

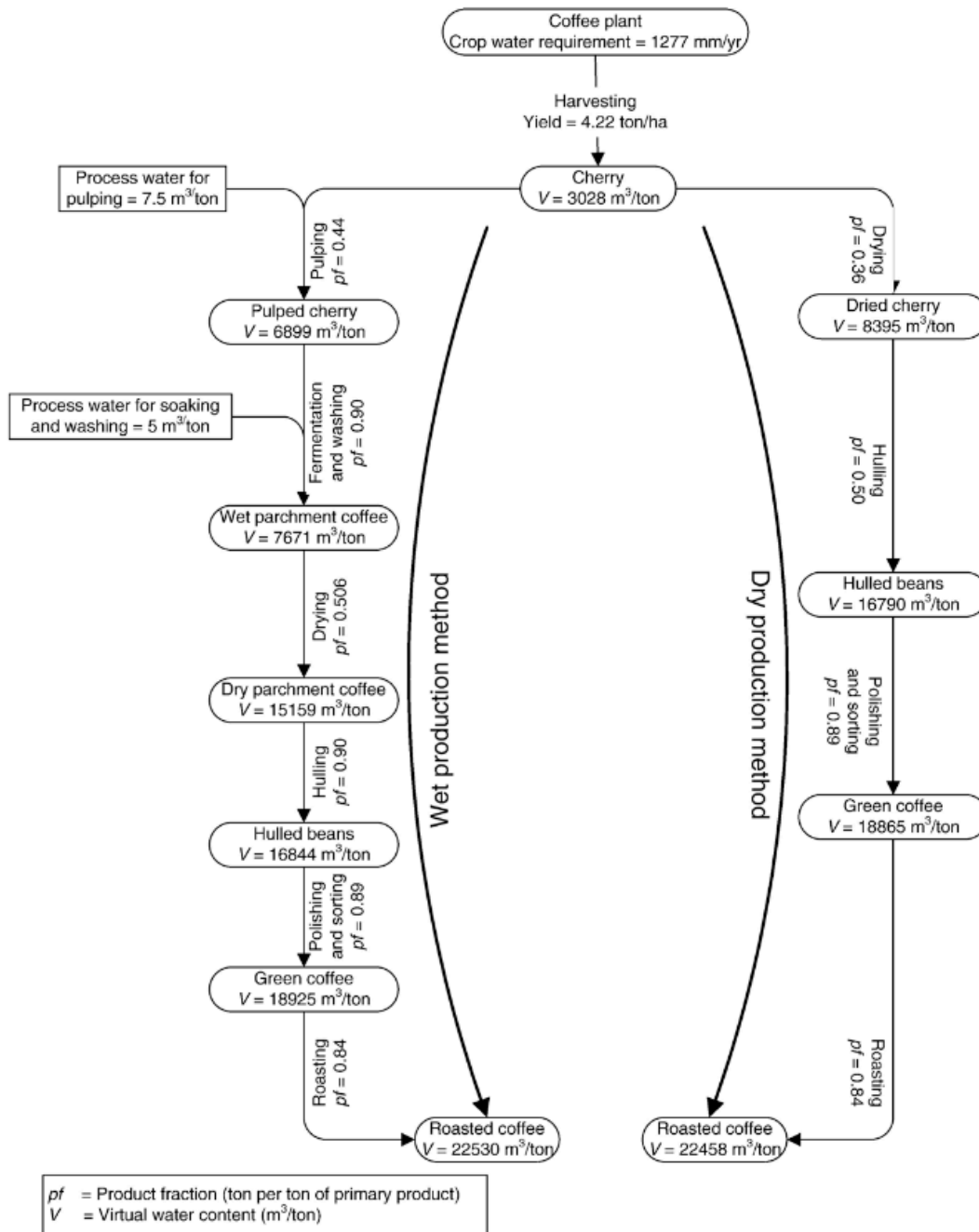


Figure 1: Steps in the calculation of the virtual water content of coffee under the different production methods. The numbers are for Brazil. (Chapagain and Hoekstra, 2007).

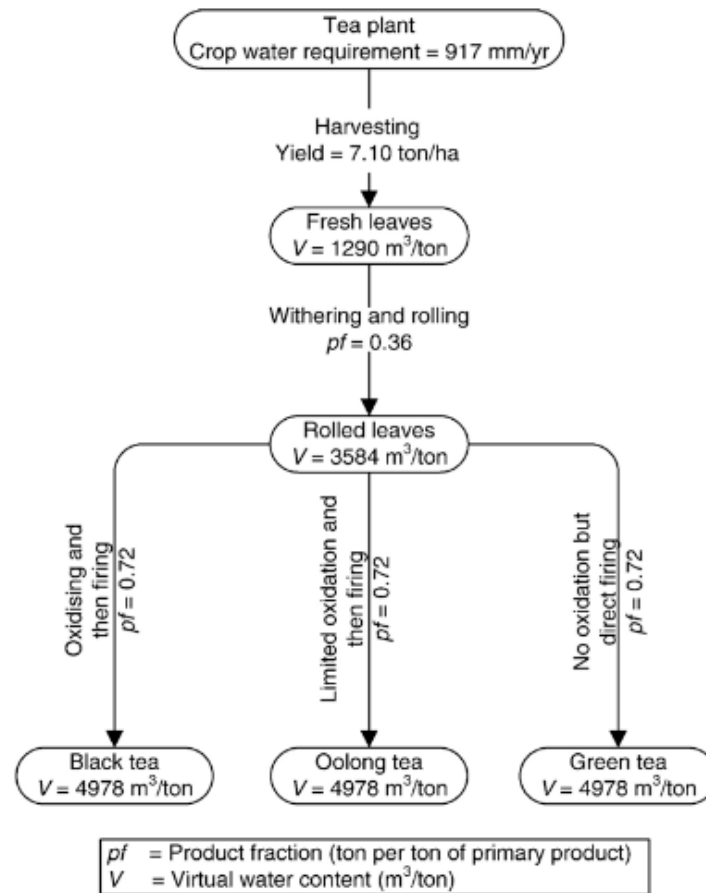


Figure 2: Steps in the calculation of the virtual water content of tea. The numbers are for India.

(Chapagain and Hoekstra, 2007).

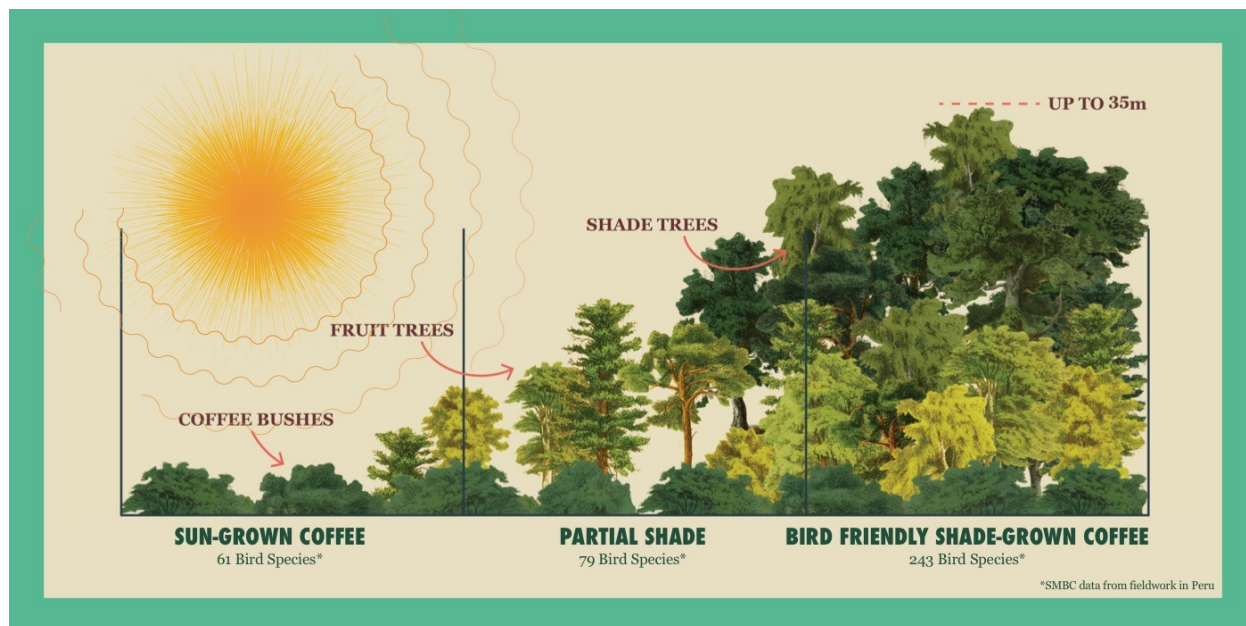


Figure 3: Tree Canopy of Bird Friendly Coffee. (*About Bird Friendly Coffee*, no date)

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