



UNIVERSITY OF
SASKATCHEWAN



Smart Purchases Big Impact

Sustainable Purchasing Guide

Coffee and Tea

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Introduction

This section provides information on currently available **coffee and tea** options that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability objectives requires us to apply two main strategies:

Dematerialization requires that we reduce the amount of materials as much as possible; and that we continually move toward the use of 100% recycled content.

Substitution requires that we find less harmful materials to replace those that currently damage and are not recyclable.

Sustainable purchasing is about including social, environmental, financial and performance factors in a systematic way. It involves thinking about the reasons for using the product (the service) and assessing how these services could be best met. If a product is needed, sustainable purchasing involves considering how products are made, what they are made of, where they come from and how they will be used and disposed.

Finally, remember that this is an evolving document – it will change with new information as our understanding of sustainability impacts and potential solutions improves.

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**Smart Purchases
Big Impact**

Wherever possible **CHOOSE** products that employ a combination of characteristics listed in the left hand column, and **AVOID** products that demonstrate characteristic in the right-hand column.

CHOOSE

- Fair-trade and Ecologo certified products
- Water or CO2 decaffeination
- Shade grown
- Organically grown

AVOID

- Excess packaging
- Chemical decaffeination

Option: EcoLogo Certified Coffee

Strategy: Substitution (SO 1, 2, 3, 4)

EcoLogo certifies coffee companies that exhibit good sustainable principles. The EcoLogo certification program compares products/services with others in the same category based on rigorous and scientifically relevant criteria that reflect the entire lifecycle of the product.

Option: Fair-trade Coffee and Tea

Strategy: Substitution (SO 4)

Choose coffee, tea and sugar products that are TransFair Canada Fair-trade Certified. TransFair Canada is Canada's only non-profit certification and public education organization. It promotes fair trade as a vehicle to improve the livelihood of farmers and workers in the developing world.

Option: Organic Coffee and Tea

Strategy: Substitution – Nature-like (SO 2, 3)

Organic farming practices reduce the reliance on synthetic crop inputs that can pose harm to human health and the environment. These synthetics often bio-accumulate in soils, waterways and in the atmosphere, giving rise to environmental and human health risks.

Purchasing organic crops ensures that synthetic chemicals were not used in the production of the coffee or tea. The Organic Crop Improvement Association (OCIA) is one of the most credible organizations that acts as a third party in verifying that organic produce meet international standards.

Option: Shade Grown Coffee

Strategy: Substitution - Nature-like (SO 2, 3)

Shade grown coffee is grown under the forest canopy. With advances in mass-harvesting technology and a soaring global demand for coffee, many farmers have shifted to open plantations with little or no surrounding vegetation. This 'open-field' concept of farming was introduced to encourage greater crop yields, and was often tied to international aid. While it maximizes production, with no canopy to protect the crop, soil erosion quickly becomes a problem. In addition, by destroying the surrounding forest to create plantations, farmers destroy the natural habitats of animals, insects and migratory birds, reducing biodiversity. This approach also dramatically increases the need for chemical fertilizers to replace the organic

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material that used to come from the natural shade canopy.

Option: Avoid Chemical Decaffeination

Strategy: Substitution – Nature-like (SO 2)

Most methods of decaffeination involve binding caffeine to a chemical or gas to allow separation from the coffee or tea.

- Conventional decaffeination uses the methylene chloride, a known carcinogen. Exposure to methylene chloride occurs mostly from breathing contaminated air, but may also occur through skin contact or by drinking contaminated water. Large amounts of methylene chloride can damage the central nervous system and contact with eyes or skin can result in burns.
- “Natural” decaffeination uses the chemical Ethyl Acetate, a naturally-occurring chemical that can be found in fruit. Ethyl acetate can enter the body through breathing contaminated air, eating or drinking contaminated materials and through skin exposure. Short-term exposure to high levels of ethyl acetate can cause irritation of the eyes, nose and throat, headache, nausea, vomiting, sleepiness, and unconsciousness. Prolonged exposures may cause clouding of the eye, damage to the lungs and heart and kidney and liver problems.
- Carbon Dioxide decaffeination is a method in which pre-steamed beans are soaked in a bath of supercritical (transition point between liquid and gas) carbon dioxide at high pressure. After a thorough soaking, the pressure is reduced and the pressurized CO₂ is run through either water or charcoal filters to remove the caffeine. The carbon dioxide is then used on another batch of beans.

- In the Swiss Water decaffeination method a batch of green (unroasted) beans is soaked in hot water for approximately 10 to 12 hours. The caffeine is released by diffusion and absorbed in a carbon filter. The resulting 99 percent caffeine-free beans are then dried and shipped for roasting.

The two chemical methods, Ethyl Acetate and Methylene Chloride, should be avoided as these chemicals cannot be completely captured and reused. When these chemicals are not recycled, they can escape into nature where they are not broken down by natural cycles and accumulate in higher concentrations up the food chain.

Preferable options are water decaffeination and carbon dioxide decaffeination. Another option is to choose species of coffee such as *Coffea arabica* which naturally contain lower levels of caffeine, as do most herbal teas.

Option: Reduce Waste Associated with Coffee Consumption

Strategy: Dematerialization (SO 3)

In addition to promoting the use of reusable mugs, attention should be paid to waste generating from brewing coffee. For instance, opt for reusable or recycled coffee filters to cut back on paper waste. Look to purchase coffee and tea in bulk, a key in waste reduction, given that many coffee containers are not recyclable. Instead of adding to the organic waste that makes up about fifty percent of our landfills, compost the nutrient-rich grounds.

Incorporating the use of loose tea, rather than individual tea-bags, can also significantly reduce waste.

Arriving at the currently preferred options

1. Identify the service

Coffee and tea, are consumed in a variety of social situations, as well as for their energizing properties.

2. Assess the need

Coffee and tea is purchased at the University of Saskatchewan by Food Services for catering and various food outlets, and by individual departments.

3. Identify the contents

Coffee berries, which contain the coffee bean, are produced by several species of small evergreen bush of the genus ***Coffea***, a plant of African origin. Coffee is brewed from the roasted and

ground beans. The two most commonly grown species are *Coffea canephora* (also known as *Coffea robusta*) and *Coffea arabica*; less popular species are *Liberica*, *Excelsa*, *Stenophylla*, *Mauritiana*, *Racemosa*.

Tea is a beverage produced by steeping in freshly boiled water the young leaves, leaf buds and internodes of the ***Camellia sinensis*** plant, prepared and cured by various methods. The four types of tea most commonly found on the market are black tea, oolong tea, green tea and white tea, all of which can be made from the same bushes, but are processed differently and, in the case of fine white tea, grown differently. Pu-erh tea is a double-fermented black tea. The term “herbal tea” usually refers to an infusion or tisane of leaves, flowers, fruit, herbs or other plant

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material that contains no *Camellia sinensis*. The term “red tea” refers to an infusion made from the South African rooibos plant, also containing no *Camellia sinensis*.

4. Identify sustainability impacts

i.systematically increasing concentrations of substances from the earth's crust?

- **Fossil fuels** are combusted to provide energy during the extraction of raw materials, transportation and the production of coffee and tea products. Most coffees and teas are shipped from other countries.

ii.systematically increasing concentrations of substances produced by society?

- The combustion of fossil fuels (see above) produces a number of **chemical compounds** (e.g. nitrogen oxides) that build up in the atmosphere.
- The process of separating the commercial product (the beans) from coffee berries generates enormous volumes of waste material in the form of pulp, residual water and parchment. This **waste material** is often released into waterways.
- Run-off from heavy use of nitrogen fertilizers in coffee plantations to surrounding waterways may lead to **eutrophication**, robbing aquatic plants and wildlife of essential oxygen.
- The production of coffee and tea generally involves the use of **crop inputs** which can bio-accumulate in the soil, waterways and atmosphere.

iii.systematically degrading nature by physical means?

- **Open plantations** for producing coffee, with little or no surrounding vegetation, leads to the degradation of soil and biodiversity.
- **Overharvesting** of coffee or tea plants can degrade the environment and damage the ecosystem to a point where it cannot rebuild.

iv. ...systematically undermining people's ability to meet their basic human needs?

- Coffee and tea production often occurs in countries where **labour laws** are lacking and workers may be underpaid, overworked, or may be children. In some cases, workers are not adequately protected from agricultural chemicals.
- **Human health concerns** are linked to the use of certain crop inputs of communities living in close proximity to coffee plantations.
- **Methylene chloride**, used for decaffeination, has been determined by The World Health Organization (WHO), the Department of Health and Human Services (U.S.A) and the Environmental Protection Agency (U.S.A) as a possible cancer-causing agent in humans.

5. Envision sustainable coffee and tea

Assuming that we aren't likely to find locally-grown replacements for coffee/tea and that we'll have to continue transporting it from elsewhere in the world, coffee will eventually have to be transported in manner that does not contribute to a net increase of carbon in the natural environment.

Sustainable coffee would have to be brought to market without dispersing persistent chemicals that are foreign to nature into the environment. This translates into agriculture, transportation, processing and packaging systems that are either free of human-made chemicals or that completely recycle them. This implies that coffee/tea should be grown organically, transported without emitting toxic pollutants, decaffeinated without the use of the harmful chemicals, and packaged using natural or recyclable materials.

Third, coffee would be grown, transported and packaged such that it doesn't contribute to the destruction of natural areas and their ecological services. For example, this would require that biodiversity and soil integrity are maintained in areas currently used to grow coffee, thereby avoiding the need for additional natural areas to be developed into new coffee plantations.

Finally, the trade of coffee would help those involved in its supply through fair wages and a healthy work environment

6. Identify and prioritize alternatives

Step 6 helps identify the product or service that offers the best pathway toward meeting all four of our Sustainability Objectives by using the following three criteria for assessment:

- a) Does the product or service move us in the right direction with regards to our four Sustainability Objectives?
- b) Does the product or service create a flexible platform for the next step toward sustainability?
- c) Is the decision financially viable?

Resources and Additional Information

1. EcoLogo Certification
http://www.ecologo.org/en/seeourcriteria/details.asp?ccd_id=356
2. What is Shade Grown Coffee?
<http://www.coffeehabitat.com/>
3. Fair Trade Certification
<http://transfair.ca/en/node>
4. Natural Resources Defence Council
<http://www.nrdc.org/health/farming/ccc/chap4.asp>



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