FOOD MATTERS

RESEARCHING THE VIABILITY OF A SUSTAINABLE FOOD SYSTEM AT THE UNIVERSITY OF CANTERBURY

A Summer sustainability scholarship supervised by
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Executive summary

This report provides an analysis of sustainable food systems that are being implemented globally in higher education facilities. This document also shows how the University of Canterbury (UC) can be more sustainable in relation to food. A sustainable food system is dissected economically, socially and environmentally. A comprehensive review of current literature and an overview of the strategies of all other New Zealand universities provide insight into the current sustainable food systems, as does a more detailed analysis of UC’s food system. It is clear from the research that UC can implement food waste reduction methods while creating a more sustainable food system.

Recommendations include:

- Making the UC’s draft Sustainable Strategy official, and including in this a food section pertaining to sustainability
- Use a food labelling system in campus cafes (page 16)
- Completely removing trays from Halls of Residence dining facilities (pages 7-8)
- Improving the recycling posters so that they are clearer (page 12)
- Further exploring the feasibility of onsite composting. (page 7-8, 13, 18)
- UC to become a Fair Trade university (page 6, 7)
Introduction

University of Canterbury, a university with more than 20,000 students and staff, has a complex food system. This system incorporates the halls of residence, various cafes, The UCSA and food brought in from off campus.

To have a clear definition of a sustainable food system, the term sustainability must be precisely defined. Simply put, sustainability consists of three parts: the environmental (the planet), the social (the people) and the economic (the profit) dimension. Bartlett and Chase (2004, p.6) elaborate on the term: “the economic aspect includes the production of goods and services to support the livelihoods of a population, while the environmental dimension includes maintenance of biodiversity and the health of biological systems in a region. The social aspect includes social justice issues, ethical procurement and in particular, broad political participation”.

A food system (Figure 1), if it is to be sustainable, is a cycle which abides by the same philosophy as sustainable development, signifying that food needs can meet the demands of the present without compromising the ability of future generations to meet their needs (Brundtland 1987).

A sustainable food cycle begins with the ethical and environmentally sound procurement of food, sourced locally where possible, whether from farmers, caterers or on campus. This sustainable food cycle is one which should have minimal food miles while reducing waste and creating recyclable or compostable food packaging. The next part of this cycle involves minimising pre and post-consumer waste through various means. Diverting food waste from landfill is an essential part of a sustainable food cycle. The main way of diverting food waste from refuse depots is to have a composting system in place to ‘recycle’ food waste. By composting and converting food waste, this significantly reduces greenhouse gas emissions while considerably reducing waste outputs into landfills. This can be turned into an economic asset which can be used either for onsite campus use, as a replacement for synthetic fertilisers, or can be utilised by selling it back to farmers or local businesses.

Figure 1. Food cycle
A sustainable food system needs to move away from being purely economically based and transition to incorporate the environment and social aspects into policies and decision making. The transition towards sustainable food development is seen as having two parts. First, research on current social processes clarifies how we produce, consume and dispose of food and how institutions such as universities affect the environment through their procurement and waste management strategies. With this understanding, the feasibility of intervention in these processes can be established. Secondly, to facilitate this intervention, more needs to be known about existing experiences of positive sustainable action in order to establish and implement a successful, financially viable, sustainable food system (Redcliff 1997).

The University of Canterbury has taken positive steps towards sustainability. In relation to a sustainable food system, however this has been one area that has been lacking. If the University of Canterbury is to develop a sustainable food system and reduce its waste outputs, changes need to be implemented. Examples of improvement are highlighted throughout the literature review as well as subsequent sections. These findings culminate in a recommendation section that the University of Canterbury can execute in order to make these sustainable changes.

Limitations of this research project have included a lack of information from University of Canterbury Students’ Association’s (UCSA) staff as well as not having total food waste numbers for the whole campus. The scope of this project has also been large and therefore going into specific detail in all of the sustainable food sections was not feasible. Time was another limiting factor, as the three sections of this report (food procurement, reducing pre-consumer food waste and composting) were big enough areas in their own right for a standalone project.
Literature review

Sustainable food procurement and onsite food production

The main sustainable food production goals for universities revolve around being more socially and environmentally responsible. Two ways in which universities are tackling these issues are by buying locally produced food and Fairtrade products. Purchasing regionally significantly reduces the impact of food sourcing on the environment, while buying locally also has an abundance of positive consequences. The journal ‘Building Local Food Programs on College Campuses’ (The Community Alliance with Family Farmers 2008, p.5) highlights this: “supporting local farmers offers both environmental and social benefits since it reduces carbon emissions by shortening distance travelled while also returning a greater percentage of the food dollar directly to local farmers ... for every dollar spent in the conventional retail system only 20% makes it back to the farmer”. In contrast, institutions buying directly from farmers or non-profit entities send 60% - 100% of each dollar to local food growers (The Community Alliance with Family Farmers 2008).

Universities worldwide are becoming more aware of the benefits of locally produced food. Many American universities, especially in California, have contracts with their food suppliers, stipulating that a certain percentage of food bought is locally produced. The ‘Real Food Challenge’ is an American initiative which targets a redirection of 20% of all food purchased by colleges and universities towards ‘real food’ by 2020. The term ‘real food’ represents a commitment towards multiple aims. Goals include: farm workers' rights, advocating for more fair trade products, going organic and forming relationships with local farmers (The Real Food Challenge 2010). The end goal of this movement is to create a just and sustainable food system. By 2010 at least 300 institutions already have college farms, fair trade initiatives, or farm-to-cafeteria programs (The Real Food Challenge 2010).

Large sized universities in the USA often incorporate food grown onsite into university halls of residence meals. Arizona State University’s (ASU) sustainable food strategy includes harvesting food from campus orchards. This harvesting program incorporates students, faculty, staff and an onsite campus health inspector. Early coordination with ASU’s dining service contractor results in much of the food being used in campus dining (Bentzin 2010). ASU is also looking into establishing revenue for harvested products; an additional benefit cited by staff (Bentzin 2010), was the educational opportunity to get involved with growing and picking food.

The Yale University Farm was set up in 2003 by a group of students. Today it is a productive and organic farm that produces a multitude of produce, mainly consisting of vegetables, fruits and herbs. One of the main beneficial aspects of the growing, distributing, and eating of campus produced food is that volunteers learn first-hand about sustainability (Yale University 2010). As Yale (2010) also points out “the Yale Farm seeks to model efficient and sustainable practices
that are economically viable and ecologically sound. It produces abundant and delicious food while engaging in agricultural practices that can be continued indefinitely without causing degradation to the biological systems on which they rely”. The farm is a place where students, faculty and staff can come together to learn about the connection between land and food. The Yale farm also hosts workshops and tours for local schools amongst other events.

The Green League is the only league showing the environmental performance of Britain’s universities. The judging criterion is based on eight environmental management factors including a comprehensive section on sustainable food and Fairtrade (People and Planet 2011b). In 2010, 133 universities entered into the League (People and Planet 2011a).

The University of Gloucestershire, a Fairtrade university and one of the top five in the UK University Green League, has set clear guidelines to actively become sustainable. This is not only through its sustainability strategy but also through its sustainable procurement strategy and sustainable food policy. This sustainable food strategy includes building a relationship with a caterer who will embrace sustainability while also having sustainable measures that the caterers are expected to meet (University of Gloucestershire 2010). This resulted in a recent contract tender with the University awarding the catering contract to BaxterStorey. This Company impressed the selection panel with their passion and desire to deliver fresh, local, good quality food, and their ability to meet requirements set out in the University's Sustainable Food Policy (Sustainable Procurement 2008). This is just one example of universities actively becoming more environmentally aware. University dining services in many US higher education facilities are meeting and exceeding sustainable food standards set by themselves or by such non-governmental, third party organisations such as the Food Alliance.

The Ramapo College in New Jersey, USA, after being petitioned by students, gave consent for a block of land to be used to build an alternative energy centre. After an initial glasshouse was built, students, faculty and alumni “grew seedlings and winter crops in the passive solar greenhouse; produced compost and raised enough vegetable and fruit in the intensive organic gardens to supply area soup kitchens; practised permaculture and sustainable tree planting on the grounds; and pioneered techniques for source-separated recycling in a state-of-the-art recycling shed, that before New Jersey’s comprehensive recycling law, served the larger community and earned money to support the centre” (Edelstein 2004 p.273).

Spending more on a locally produced system is an ideal way to address many issues at once. It is widely considered, amongst literature reviewed, to be a more equitable, better tasting and healthier food system, which also boosts the local economy and reduces fossil fuel and petroleum consumption by vastly reducing food miles.

For food that cannot be sourced locally, many universities are increasingly buying fair trade and Fairtrade certified products. This is a result of universities across the world becoming more ethically and socially responsible. Fairtrade is one such means to effectively implement these agendas. The difference between fair trade and Fairtrade is that the latter is an accreditation and
labelling system which certifies that products bearing the Fairtrade mark meet a range of specific criteria. "Fair trade" expresses a rather wider vision of development, covering a much wider range of products than can be certified. Fairtrade is an independent non-governmental organisation that provides guidelines and certification for procuring ethically produced food. In 2003 Oxford Brookes University became the world’s first Fairtrade University. Since then the number of universities signing up has grown rapidly, and by 2010 there are 120 in the United Kingdom alone (The Fairtrade Foundation 2010). This includes prestigious universities such as Edinburgh (The University of Edinburgh 2008) and St Andrews (The University of St Andrews 2010). To become a Fairtrade university, five steps must be undertaken (Appendix 1). What Kent University discovered when becoming a Fairtrade university, was that it was an integrated effort between students, staff with support from The Students’ Union and the University’s senior management (Kent University 2008).

Reducing plastic waste and implementing tray-less dining

Higher education facilities around the world are implementing ways to minimise food and its related refuse. A way in which hundreds of universities are cutting down food consumption waste is to introduce tray-less dining. Simply put, tray-less dining is an initiative which removes large size food trays from ‘all you can eat’ dining halls and halls of residence and replaces them with much smaller plates. With large trays and big plates there is a tendency to take additional food items as this carries no extra cost to the student. Therefore the incentive is to put more on the plate than necessary and thus over-consume, creating excess waste. The result is that exorbitant quantities of food ends up in landfill and recycle bins. Universities which have implemented tray free dining have not only noted a significant reduction in food waste but also reduced water usage. There has also been a marked decline in carbon dioxide emissions while also noting that money was saved on food costs. As the University of California, Santa Cruz (UCSC) (2008) posit ‘after conducting several waste audits (before and after tray-less dining was implemented) there was indisputable evidence that UCSC can reduce its food waste by 18 tons a year, now that it has tray-free dining. It was also calculated that there was reduced energy consumption while over 1.3 million litres of water was being saved annually’ (University of California, Santa Cruz 2008). Similarly Princeton University dining services estimated that it could save over 200,000 litres of water per year while reducing food waste by 30% and avoiding 23 metric tons of carbon dioxide (Aronson 2010). Misericodia University comparably reported a 31% reduction in food waste once switching over to using plates. Other universities, having switched to tray-less dining have reported:

- **Williams College** – has saved 52,950 litres of water a year by taking away the trays (Foderaro 2009).
• **Rochester Institute of Technology** – has dramatically reduced waste and has saved 10% on food spending (Foderaro 2009).

• **University of Alabama** – one of its halls of residence saves: over 45,000 litres of water per week, 2.7 tons of solid waste per week, has a 25-30% reduction in energy use and has noted a major reduction in the use of chemical cleaning agents. (University of Alabama 2009)

• **University of California, Davis** – 30% reduction in food waste and in June 2008 saved more than 189,270 litres of water (University of California, Davis 2009).

Sustainable food initiatives, and subsequently tray-less dining schemes, are becoming more common in universities especially in the United States. The Sustainable Endowment Institute, a USA research organisation that tracks environmental practises at 300 universities and colleges, reported that 126 of the 300 had either reduced or removed trays from service (Foderaro 2009). Foderaro (2009) also highlights that this was part of a larger push to embrace environmentalism that included hiring sustainability coordinators, introduced solar panels and composting dining hall waste. There are many other enterprises being undertaken to reduce food waste. An educational initiative at Arizona State University is to raise awareness. ‘Weigh your waste’ is an annual campaign to educate students about the amount and extent of food refuse.

While tray-less dining is the most prominent food consumer waste reduction initiative currently employed, other sustainable food measures are being widely implemented. These include reducing plastic waste (e.g. plastic bags, food packaging and disposable cups) and switching to Fairtrade, Community Agroecology Network (CAN) or similarly certified food products.

**Food waste diversion**

One of the most widely used, and successful methods to reduce food waste content in landfills is to divert it and turn it into compost. Composting is a process that takes organic waste such as food scraps and, over time, turns it into nutrient rich soil. One widely used method is to mix food waste with other organic waste such as manure, plant trimmings and grass clippings. The material is formed into long piles (windrows) and turned periodically so that moisture and air can circulate through each windrow. As the compost naturally heats up, the organic matter is broken down into nutrient rich soil. The end product is valuable in commercial and private agriculture and horticulture.

Many universities that employ food waste diversion strategies have implemented this in a simple yet effective way. Receptacles are put in kitchens for pre-cooked food scraps (pre-consumer waste) while bins are also put in dining areas and halls of residence for students to put their uneaten food (post-consumer waste) in. The University of Vermont has taken this a step further, providing their halls of residence students with containers for their living space in which food
Organic waste that is put into landfills has a major environmental impact. Methane, a greenhouse gas, occurs in landfill when organic matter breaks down in an anaerobic environment common in refuse sites. Landfills are the third largest source of man-made greenhouse gases, due directly to the fact that methane is twenty times more damaging to the environment than carbon dioxide (University of California, Davis 2008). By diverting organic waste from landfills, this not only provides major environmental benefits but also, potentially, creates an economic asset in the form of composting while also saving on waste removal costs and dumping fees.

Other types of onsite composting facilities are also being implemented. A Bokashi composting system was set up at the Charles Sturt University in 2007. This form of composting is a technique which adds fermented wheat, allowing for meats, fish and certain types of dairy products to be broken down. A big benefit of a Bokashi unit is that it does not produce any odours and the liquid produced is a high quality liquid fertilizer. At the Charles Sturt University, 100kg of staff room food waste is collected weekly from around the campus via the Bokashi bucket system and then mixed with other organic wastes from the winery, equine centre, catering and grounds (Charles Sturt University n.d.).

In 2007 the University of California, Davis (UC Davis), in conjunction with its student association, developed assertive waste reduction goals. These aims (50% less by 2008, 75% by 2010 and zero waste by 2020) have paved the way for innovative, cost effective enforcement strategies for the reduction of food waste. In 2008-2009 UC Davis exceeded the target it set, recycling or composting 76% of campus waste (UC Davis 2010). This included nearly 98% of all organic matter including pre-consumer waste and post-consumer waste. To date this has resulted in 881 tons of organic waste being diverted from landfill to composting facilities (UC, Davis 2008). After implementing these sustainable changes, UC Davis’s dining service noted that no financial impact had been attributed to these waste diversion practises (UC, Davis 2008). A good example of what composting can achieve is from Middlebury University. In 1994 the assistant director of management facilities started a small pilot composting scheme. Currently Middlebury diverts 300 tons from landfill through composting annually (Middlebury College n.d.). Middlebury University has taken composting a step further; it is used as a nutrient rich soil amendment in the campus hothouse, helping provide nutrients for greens which are used in the dining halls, with the resulting waste being composted and reused in the hothouses, completing the sustainable cycle (Jenks-Jay 2004).

The Allegheny College (AC), Pennsylvania, have used the compost from their onsite composting facility for use as fertilisers on their campus. This has helped make the composting financially viable. The use of compost as a fertiliser saves Allegheny College approximately $20,000/ year on topdressing, topsoil and mulch, with AC also manufacturing compost tea to use as an organic fertilizer (Spencer 2008).
The Arizona State University also has an effective composting setup. This program diverts, on average, 12 tons of food waste monthly to a local farmer, where the waste is deposited for free; it is then composted and subsequently purchased by ASU to replace the synthetic fertilizer that was previously used (Bentzin 2010). While composting is a popular and widely used method to divert food from landfill, there are different ways being employed to do so.

Texas Christian University (TCU) reduces food waste by using a pulper. This machine cuts up food finely and then processes it through a dehydrator that removes most of the moisture. This has directly resulted in reducing TCU’s food waste output from 40 bags to two (Lilly 2010).

In 2008 a survey of 1068 USA higher education facilities, around 27% of the total number of Universities in the USA, found that 50% (532) collect food scraps or landscape trimmings for composting or mulch (National Wildlife Federation 2008).

A model university
There are many universities that can be deemed to be a ‘model’ sustainable university. One such higher education facility is the University of British Columbia (UBC), Canada. This institution is not only thriving academically, it was placed 36th on the Academic Ranking of World Universities 2010 (Academic Ranking of World Universities 2010), but is also leading the way in sustainability. This was highlighted by the “$3.8 million in energy costs that UBC has saved over the last three years by completing the largest energy retrofit in Canadian history. Called ecotrek, the project will mean an additional savings of $2.6 million annually. In addition, ecotrek is reducing UBC’s CO2 emissions by 15,000 tonnes annually, while also reducing campus water use by 30 percent annually” (Ezarik 2006). In terms of sustainable food advancements, UBC’s sustainability strategy (University of British Columbia 2006), on its Vancouver campus, is looking to implement a purchasing policy to guide its Food Services in the procurement of sustainable fish and seafood and offer Fairtrade coffee at all eligible Food Service units. It is also actively looking at increasing Food Services purchases from local Producers. One additional strategy is expanding organics collection to the on-site composter to include all Food Services retail outlets. UBC, additionally, was Canada’s first university to launch an in-vessel compost system which digests waste from campus food outlets and residences (University of British Columbia 2006).

From evidence and examples given in the literature review, this highlights that there are major sustainable food system advances being undertaken globally by higher education institutions. These developments are crucial for the University of Canterbury as they show that implementing a sustainable food system is not only viable financially but potentially can save UC money and build their international profile.
Food sustainability at the University of Canterbury

Sustainable food procurement

Despite the University of Canterbury (UC) and Canterbury Students’ Associations (UCSA) actively becoming more sustainable, building a more sustainable food system is one area that has been neglected. The University of Canterbury Students’ Association’s (UCSA) policies and constitution, on sustainability and Fairtrade, and what they implement are two different things. This is highlighted in a few management decisions. Recently the UCSA owned cafes (The Mix, Brasilia, ThreeSixty, Engineering, Alibi and Collective) have signed a coffee deal which has seen Fairtrade certified coffee switched to Utz certified coffee. Utz certification aims to implement the worldwide standard for socially and environmentally responsible coffee production and sourcing (Utz certified 2006) while Fairtrade aims for more ethical standards. This deal directly contradicts the UCSA’s constitution which states that “[The UCSA] support Fairtrade products on Campus” (University Of Canterbury Students' Association 2009a). This is also contradictory to their sustainability policy which states “Fairtrade goods are made available for sale in all campus shops and are used in all cafes/restaurants and bars” (University Of Canterbury Students' Association 2009b). This is also a step-backwards for sustainability, which the UCSA claim is one of their eight values (University Of Canterbury Students' Association 2010).

Utz is seen to have the least stringent environmental and sustainable criteria of any of the major certification programs (Coffee Habitat 2007 & Cooperative coffees 2008), it also, unlike Fairtrade, offers no minimum or guaranteed price for farmers for their coffee crops. Also, the Utz standards in its Code of Conduct that deal with the environment, “Natural Resources and Biodiversity” (Utz certified 2010) are quite general and lacks specificity. Because of these ‘loose’ criteria, Utz is one of the fastest-growing certification programs in the world. Others have criticised Utz because it easily and cheaply allows corporations to exploit the ethical coffee market (Cooperative coffees 2008). The UCSA now sources its Utz coffee from a multinational company, Sara Lee. Sara Lee is a convicted corporate criminal with one of the worst environmental, social and food safety standards on record (Climate Counts 2007, Cornucopia Institute n.d.) and is responsible for selling hot dogs contaminated with Listeria bacteria that caused 15 deaths, six miscarriages and over 100 illnesses in 22 states in 1999 in the USA (Coalition For Consumer Rights n.d.).

This is a big step backwards for the sustainability on Campus. However, it should be noted that the privately owned cafes in campus (Cafe 101 and Reboot) still offer Fairtrade coffee as an option for customers. This coffee is roasted locally by a Christchurch owned company.

In terms of food sourcing, the UCSA have recently stopped food production onsite, having outsourced to local companies. This has potentially, resulted in food being less healthy and fresh, as it is subjected to increased packaging and transportation. Cafe 101 and Reboot, however,
continue to make a majority of their food from scratch onsite.

Alliance catering (who are the food providers for Rochester and Rutherford halls), source their meat and fresh produce from Raewood Fresh. This local, predominantly fresh produce, food chain, source the majority of their produce from in and around the Canterbury region.

In 2002, the UC established the Okeover community garden. This was formed with a collaborative effort from the Kakariki environmental club, the sustainability office, students and staff. Currently the garden is thriving and helps not only to provide UC students and staff with free organic vegetables and fruit, but also acts as a valuable educational tool while providing a sense of community. In 2010 a second community garden, Dovedale, was established at the College of Education, with the view of providing fresh produce, educational benefits and a place where staff and students can come and enjoy its aesthetic value. Currently the food produced by the gardens is given solely to volunteers who attend the working bees.

Recycling and reducing packaging

Over 2008-09 the University of Canterbury distributed recycling and food waste bins around the campus and halls of residence. These food bins provide a means of disposal for all food waste (raw and cooked), tea and coffee waste and any plant material. Posters were also widely circulated to raise awareness and educate staff and students about waste disposal. This has been relatively successful in diverting food packaging and food waste from the landfill. Much of the success was due to the smaller, more widely dispersed bin locations. Confusing posters which accompanied the bins and ambiguous waste packaging however have hindered the food recycling bin’s effectiveness. This exacerbated the levels of recyclables being placed in the wrong bins. For example the UCSA’s sandwich packaging which contains plastic and cardboard are routinely put into the wrong recycling bins. Food packaging waste amounts to a significant problem in terms of being put in the wrong disposal receptacle. This is highlighted in a recent waste audit which showed that 80% of the UCSA sandwich packages where mistakenly put into the landfill while 79% if sushi containers are incorrectly put in to the landfill bins (McIver 2011). McIver's (2011) report gives more comprehensive waste and recycling figures while also providing detailed practical solutions.

The privately run cafes on campus have taken steps to reducing food waste. This change involves using recyclable paper plates made from recycled material, while also offering discounts to customers who bring in their own cups for hot beverages. Similarly, the UCSA cafes have a scheme in place for customers who bring in their cups.

While policies and resolutions have been passed by the UCSA to become more sustainable, in practice their changes in terms of a sustainable food system, have been minimal. For example,
instead of having contracts with their food suppliers stipulating that a percentage of their produce is packaged in recycled, recyclable and/or compostable material, it is up to the discretion of the food suppliers to use a form of sustainable food packaging.

The halls of residence, which are responsible for a large percentage of UC’s food waste, have taken positive steps to reducing their environmental impact Ilam. University Hall, which caters for 550 students, has partially removed trays from dining while The Rochester and Rutherford (R & R) hall (150 students) has completely removed them. Collage House have also made small yet significant changes. For example, they have switched from plastic to paper bags for lunches while also removing polystyrene cups and replace them with glass.

The Canterbury region has an abundance of quality locally available produce. A good example of this was highlighted in a recent Symposium held at The Hotel Grand Chancellor Christchurch in 2009 where all food was sourced from within 100 km from Christchurch. The dinner menu included lamb, pork, beef, chicken, turkey, salmon, seafood, seasonal vegetables and wine while dessert incorporated freshly picked berries, apples and lemons (Sustainable food is the way forward 2009).

**Composting**

Food waste has previously been composted onsite at the UC’s community garden. By 2009 however, due to large food waste volumes, the organic rubbish was taken offsite to be composted at the main Christchurch plant in Bromley.

Cafe 101, Reboot and College House have implemented a successful way of disposing of a percentage of their food waste. This is by giving some of their organic rubbish to farmers for consumption by pigs and chickens.

In 2010 Rochester and Rutherford halls of residence students trialled a bokashi composting scheme. The trial was a relative success with 3,000 litres of food refuse being converted into 7 cubic metres of compost. This has resulted in an economic, education and environmental resource as it has educated students on the benefits of composting, saved UC money in transportation and waste removal costs and will help provide the Dovedale community garden with nutrient rich organic fertiliser. There were downsides, however, to this project. Due to its nature of being a trial, and the first of its kind at a university in New Zealand, problems were encountered. These issues included the bokashi being too wet, due to an unseasonably wet winter, which resulted in strongly unpleasant smells coming from the compost heap. This smell led to complaints from the grounds keepers.

Campus Living Villages, which consists of the three larger halls of residence (University Hall, Sonada and Ilam Village) provides accommodation for 1500 students, and ranges from fully
catered (University Hall), semi catered (Sonada) to self-catered apartments (Illam Village). An October 2010 waste report showed that more waste was recycled (246 m³) than sent to the landfill (233 m³), significantly including 4m³ of food waste being composted offsite. The total waste figures from 2009 compared with 2010 are also positive. These figures shows that Campus Living reduced their total waste output by 20% from 5880 m³ to 4723 m³ while increasing the amount recycled from 32% in 2009 to 45% in 2010. This is a positive step as it shows that Campus Living is committed to reducing their environmental impact through becoming more sustainable.

Comparing UC to other New Zealand universities, their benchmarked universities

New Zealand universities such as Waikato, Massey, Victoria, and Auckland all have environmental policies which place emphasis on sustainably and sustainable use of resources. This does not extend to food sustainability, with no New Zealand university having a specific policy relating to food, let alone food sustainability.

Universities around the country however, have taken steps to developing a more sustainable food system. The University of Auckland has made steps towards this through promoting a new food labelling system to allow consumers to make clearer purchasing decisions (University of Auckland 2010), while Massey University has committed to the use of biodegradable food packaging at food outlets (Packard 2010). The University of Otago has a Centre for the Study of Agriculture, Food and Environment (CSAFE) which is a trans-disciplinary research centre which aims to ‘to discover and promote effective, practical pathways to sustainable land use, food and fibre production, and wild food harvesting’ (University of Otago 2010). The various sustainable food issues research and publications which have come out of CSAFE, however, have not resulted in the implementation of a food or sustainability policy at the University of Otago. One higher education institute in New Zealand has committed to bokashi recycling.

The Eastern Institute of Technology (EIT), which has a roll of 10,000 full-time and part-time students, has a waste minimization strategy that sees all organic waste being composted on-site. This is through large-scale bokashi bins. Their bokashi composting system, which involves four steps (Appendix 3), once ready, is either used on campus gardens or sold (Packard 2010).

In 2011 the Rochester and Rutherford halls of residence plan on reducing waste through a dual approach. This is through tracking food waste outputs weekly, with the aim of educating halls of residence students to reduce pre-consumer waste, as well as continuing the bokashi project, with the goal of having a permanent set up in place. This sustainable change, potentially, is going to be implemented by a student with a financial incentive to be offered.
While the UC has no official environmental sustainable policy, it does have an unofficial sustainability policy ‘A proposed strategy for a sustainable University 2008 – 2020’ which has been used as a reference in official University documents. This document, which states that the strategy the University is committed to, includes five high level sustainability goals (Appendix 2), also points out that “by becoming an exemplar “sustainable university” the University of Canterbury will set an example to other institutions in connection with research and teaching and learning as well as demonstrating leadership in sustainability within its local and regional communities” (University of Canterbury 2008). The UC Charter 2003-2010 (2003) also stipulates that the University of Canterbury will “pursue equity and environmental sustainability in all of the University’s activities”. One such way to demonstrate the aforementioned leadership and sustainable development ‘within its local and regional communities’ is to actively initiate the partial procurement of locally produced food while reducing waste. An ideal way to achieve this would be through policies and plans. This would help reach the standard stipulated by the Brundtland Report which in 1987 defined sustainable development as “meeting the needs of the present without compromising the ability of future generations to meet their needs” (Brundtland 1987). This is also the definition of sustainable development which is used in the UC Charter.

In July 2008, the University of Adelaide and the University of Canterbury entered into a Memorandum of Understanding to facilitate collaboration between the two universities (The University of Adelaide 2011). This strategic, performance, functional and process based benchmarking program includes a series of projects, one of which is initiated around sustainability. In 2006 Adelaide University also implemented a sustainability policy. It states that the university will minimise their generation of wastes. While this is a big step to reducing their environmental impact, it does not stipulate food or its associated packaging which would be a sizable percentage of their total waste output.
Traceability and transparency

Consumers and consumer group interest in food safety, animal welfare, and the environmental and ecological impact of food production and processing have become increasingly important and become more documented in different forms of the media. Transparency in food refers to the public disclosure of information on all of the procedures and practices used to produce a food product. Wognum et al (2010 p.66) points out that “stakeholders and consumers need to be informed about sustainability of the companies, products, and processes. In other words: food supply chains need to be transparent.

Food traceability is the process that allows consumers to trace and identify food production and the location from start to finish. The two central methods for accessing traceability information for consumers are QR codes (a two-dimensional barcode) and website access. Traceability and transparency help ensure food quality and safety and play a part in sustainability. This is because it shows where products such as seafood and meat are sourced and allows consumers to avoid overfished seafood stocks and unethical and inhumanely produced meats. Transparency and traceability also helps show if food producers are using sustainable methods to source and produce their food products.

Transparent food information is one important step to a sustainable food system. A growing way in which supermarkets and food manufacturers are being transparent is through the traffic light food labelling system. This labelling is separated into four sections (figure 2): fats, saturated fats, sugar and salt. These four sections show percentages for each of these ingredients in the product: high (red), medium (orange) and low (green). This health identifying classification system helps consumers make purchasing healthier food choices, quicker and easier. It also helps cut through the marketing spin used by manufacturers to confuse consumers about the true nutrition content of foods. The UK Food Standards Agency already requires companies to give products the red, orange or green stickers. the trans-Tasman Food Regulation Ministerial Council recommended for its implementation while in New Zealand the Health Select Committee has recommended 'that a traffic light or comparable system for food labelling be developed' (New Zealand Food Safety Authority 2008).

Figure 2. Traffic light food labelling
UC cafeterias

The University of Canterbury cafes which are open over summer (Brasilia, Cafe 101, ThreeSixty and Reboot) showed no clearly visible signage pertaining to source locally or ethically produced food. With the privately owned cafes on campus having made the effort to be more sustainable and source more sustainable and ethically produced products, it seems strange from a business sense not to highlight to the customer that their practices are ethical and sustainable.

Brasilia was the only cafe to have a clearly visible sign about their reusable coffee cup scheme, but even then it was small and located on the wall behind the counter. With the UCSA cafes having switched from Fairtrade to Utz, the Fairtrade posters have been taken down, but surprisingly no information about the benefits of Utz or notification of the switch have been put up in their place.

Sustainable networking and cooperation between universities

The Talloires Declaration (TD) is a ten-point action plan (Appendix 4) for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities (University Leaders for a Sustainable Future 2001). As of January 2010, 430 higher education institutes have signed on (University Leaders for a Sustainable Future 2010). The TD is the most widely recognised declaration and is the first official statement made by university administrators to a commitment to environmental sustainability in higher education (University Leaders for a Sustainable Future 2001). In 2003, UC’s Vice Chancellor Roy Sharp rejected the proposal which was presented to him by the university’s student environmental group despite a recommendation to join from the University’s Environment and Resource Use Committee (unpublished letter from The Kakariki Environmental Group to Roy Sharp 10th March 2003). This letter was accompanied by a petition signed by 750 university staff and students.
Current sustainability issues at UC

To implement more sustainable food and food waste measures, not only do ways of thinking and mindsets need to be changed but current practical issues need to be resolved. For example, the Bokashi trial that was run by the Rochester and Rutherford halls, which is to be continued in 2011, needs better planning and implementation. Alternative times of year and closer monitoring need to looked into and enforced, to avoid the problems encountered in 2010.

Composting has previously been looked into at the University. R5 Solutions Ltd wrote a detailed report for a composting facility on campus. This report (R5 Solutions Ltd, 2007) highlighted that the halls of residence and UC campus combined to have 315 tons of food waste, costing $42,500 in removal annually. Adding in the disposal costs for green waste and the cost that the Grounds Department spend on landscaping mulch, this shows that UC has the potential to make gross annual savings of $96,275; Utilising ‘option one’ provided by R5 (2007, p.5), they posit that the instillation of onsite composting has the potential to save the University significant costs and provide a return on initial capital of 7.5-12.8%. The failure to implement this system was due to several reasons. One centred on the initial cost of an in-vessel centralised composting plant (over $500,000) with another issue revolving around the usage, maintenance costs and ways of selling or using the compost. Another concern was the financial viability of running a large size composting onsite. The selling of the compost would help offset initial and maintenance costs and help make any onsite composting facility economically feasible. This is something that would need to be investigated before further development on a composting structure is considered. A way in which the Christchurch City Council removes their compost from their Bromley plant is to have the compost screened and blended into different products which is sold to the rural sector as fertiliser to enrich the soil for cropping or grazing or to help rehabilitate forestry blocks (Christchurch City Council 2010).

There was previous research looking into worm farms on campus. The intention was to wait until reliable weekly food-waste volumes/weights could be collected by Mastagaard, and then sent to a local worm farm company for a proposal for starting with those amounts and options for scaling up as more food waste is collected from across campus.

An issue that has been raised by students is the removal of drinking fountains. This was put into effect, coincidentally just before the contract between Cola-Cola and the UCSA was signed. This deal has given Coca-Cola a virtual monopoly on cold beverages at the UCSA, including bottled water. This has been negative for students as water is no longer free, while potentially showing that the UCSA has placed money over the wellbeing of the students it represents. This has clearly been economically beneficial from the Cola-Cola company as it effectively forces students to buy bottled water or other Coca-Cola products.

Other current issues include a lack of affordable, healthy food options on campus, the over packaging of food on campus and the lack of support to ethically produced food (e.g. free range eggs or fair trade)
Recommendations

The following recommendations are based on findings which universities worldwide have successfully implemented to become more sustainable. Sustainable food measures that would increase the University of Canterbury’s sustainable profile and show that they are committed to sustainable development while helping create a sustainable food system.

**Recommended short term initiatives:**

- Formally adopt the University of Canterbury’s draft Sustainable Strategy
- Incorporate a sustainable food policy into the Sustainable Strategy
- As part of the food policy, when tenders are put for food contracts, have specific guidelines for companies and caterers to source locally produced food and use sustainable practises where possible.
- Implement a clearer food labelling system, e.g. a traffic light labelling system
- Ensure that the UCSA has increased transparency when signing contracts with food and beverage suppliers
- Put further research into the possibility and financial viability of increasing the amount of recyclable and compostable food and beverage packaging
- Have the University of Canterbury become Fairtrade, including an agreement with the UCSA to switch back from Utz to Fairtrade
- Improve existing educational posters to highlight food waste and clearly show what waste goes in each recycle receptacle
- Completely remove trays from halls of residence dining areas and replace them with small sized plates
- Investigate the possibility of local council rebates for recycling food waste.
- Further explore the possibility of onsite composting and what can be done with the compost
- Monitor food and green waste outputs from the entire campus (Halls of residence, UC’s campuses, and the UCSA).
- Track and document UC’s sustainability progress
Recommended long term initiatives:

- Create and implement a comprehensive University food policy
- Underline the University’s commitment to sustainability by joining the Talloires Declaration
- Explore the feasibility of an onsite orchard.
References


Mclver, SL 2011. *The Revelations of Rubbish: Monitoring and Improving the University of Canterbury’s Waste System*


R5 Solutions Ltd 2007, *Supply of HotRot In-vessel Composting Facility for University of Canterbury*

Spencer, R 2008, *Composting Helps Anchor University’s Climate Commitment*, BioCycle, Vol. 49, No. 5, p. 28


Appendix

Appendix one: The five goals to become a Fairtrade University:

- The Student Union (or equivalent) and the university or college authorities both create a Fairtrade policy incorporating these five goals.
- Fairtrade foods are made available for sale in all campus shops. Fairtrade foods are used in all cafés/restaurants/bars on campus. Where this is not possible, there is a commitment to begin to use Fairtrade foods in these establishments as soon as it becomes possible to do so.
- Fairtrade foods (for example, coffee and tea) are served at all meetings hosted by the university or college and the Student Union (or equivalent), and are served in all university or college and Student Union management offices.
- There is a commitment to campaign for increased Fairtrade consumption on campus.
- A Fairtrade Steering Group is established.

(http://www.fairtrade.org.uk/get_involved/campaigns/fairtrade_universities/the_5_goals.aspx)

Appendix two: University of Canterbury proposed strategy for a sustainable University 2008 – 2020

In this Strategy the University is committed to five high level sustainability goals:

- sustainability shall become a key value of the University. Staff should reflect upon the impact of their activities on the natural environment. Collectively, the University, its staff and students will strive to reduce their negative impacts on the environment and to balance this against the business of the University.

- The University shall develop management and operational strategies that are proactive rather than reactive in responding to sustainability challenges.

- The University shall respond to sustainability challenges in a holistic and integrated fashion.

- The University shall take a long-term view when addressing sustainability matters.

- Sustainability shall be better understood through multidisciplinary research and teaching within the University.

(http://intranet.canterbury.ac.nz/piru/documents/sustainability_strategy_final.pdf)
Appendix three: Sustainability in the NZ Tertiary Sector: A Short Report (Packard 2010)

A bokashi composting system, implemented by EIT, used the following steps:
1. Food and organic waste is discarded into compost bins around campus, bokashi powder is added regularly to start fermentation/decomposition.
2. Once full, the waste is left to ferment for a month or so in a 20-litre bucket, excess fluid that flows out is bottled and sold or used as liquid fertiliser.
3. Then it is mixed into the first stage of the three large compost pile, where grass clippings etc are added, and it is moved along as it composts.
4. Once compost is ready, it is either used on campus gardens or sold.


Appendix four: The Talloires Declaration:

- Use every opportunity to raise public, government, industry, foundation, and university awareness by publicly addressing the urgent need to move toward an environmentally sustainable future.

- Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward a sustainable future.

- Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and responsible citizens.

- Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional school students.

- Set an example of environmental responsibility by establishing programs of resource conservation, recycling, and waste reduction at the universities.

- Encourage the involvement of government (at all levels), foundations, and industry in supporting university research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with nongovernmental organizations to assist in finding solutions to environmental problems.
● Convene school deans and environmental practitioners to develop research, policy, information exchange programs, and curricula for an environmentally sustainable future.

● Establish partnerships with primary and secondary schools to help develop the capability of their faculty to teach about population, environment, and sustainable development issues.

● Work with the UN Conference on Environmental and Development, the UN Environment Programme, and other national and international organizations to promote a worldwide university effort toward a sustainable future.

● Establish a steering committee and a secretariat to continue this momentum and inform and support each other's efforts in carrying out this declaration.

(http://www.ulsf.org/programs_talloires.html)