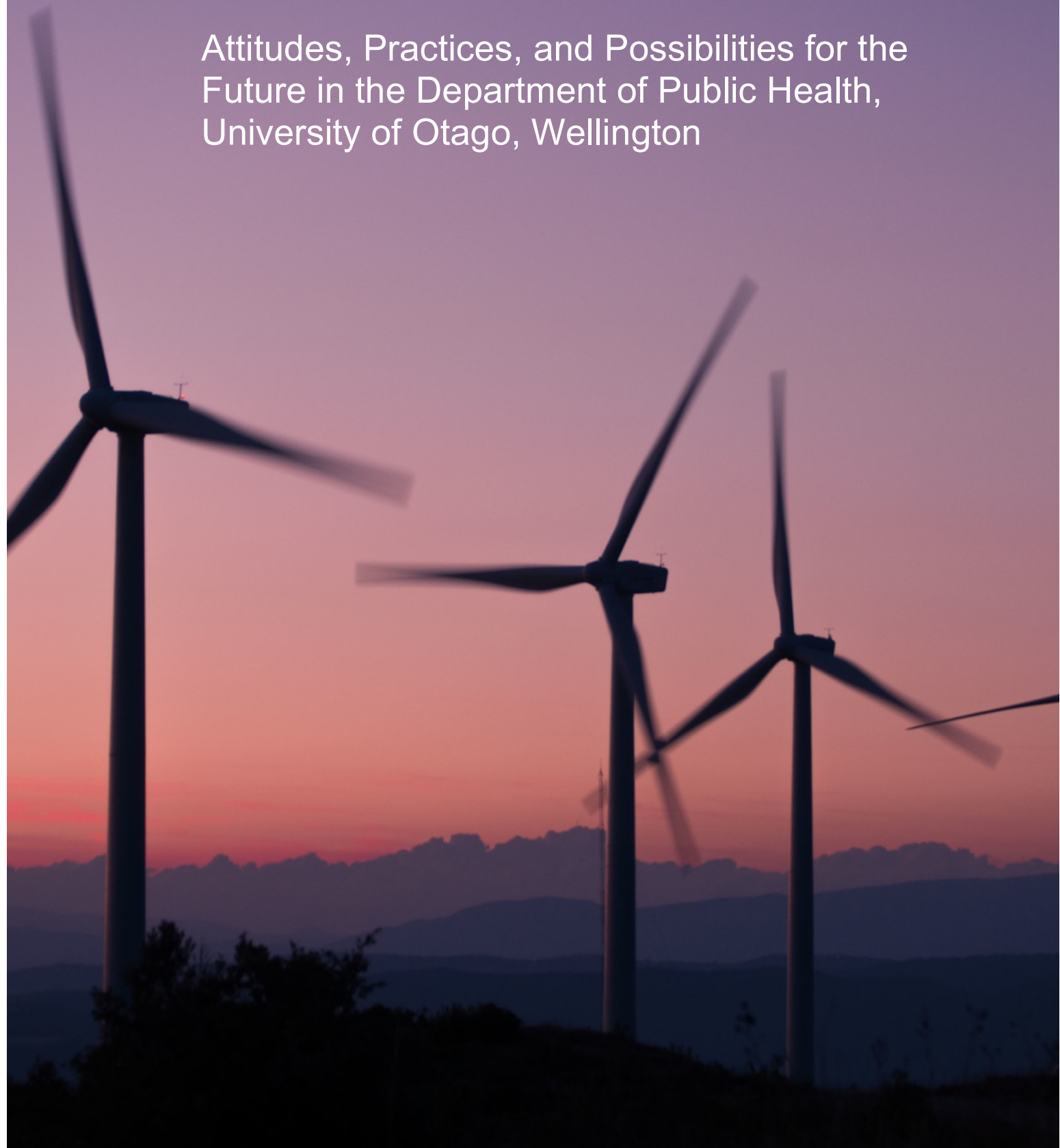


# Towards Environmental Sustainability

Attitudes, Practices, and Possibilities for the Future in the Department of Public Health,  
University of Otago, Wellington





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## Competing Interests

All authors are students of the client  
(Department of Public Health, University of Otago, Wellington)

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# 1. Abstract

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## 1.1 Introduction

Sustainability is defined as the ability to continue a defined behaviour indefinitely. A process is sustainable if it continues into the future without exhausting finances, damaging vulnerable ecosystems or depleting natural resources. Globally, over 1 billion people are living in extreme poverty, with income inequalities increasing, whilst at the same time unsustainable consumption and patterns have led to huge economic and social costs. (1)

This report is aimed at assessing environmental sustainability on a commercial departmental basis. By focussing on current environmental sustainability practices within the Department of Public Health University of Otago, Wellington. A model with recommendations will be provided to further strengthen their current actions. Adequate change at a commercial level can ensure that global environmental sustainability goals are supported and subsequently achieved.

## 1.2 Aims

- Assess the attitude of individuals towards environmental sustainability.
- Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.
- Propose and describe interventions that can help the environment at both the individual and group level.
- Recommend interventions for the Department of Public Health (DPH) to implement based on source population attitudes and practices
- Design simple practical data collection methods that are able to be taken post implementation.
- Collect baseline data on sustainability practices
- Identify the additional opportunities for supporting sustainability actions outside the workplace.

## 1.3 Methods

A review of the literature on the impact of environmental sustainability, and interventions that have been successful in combating it was undertaken. Interviews were conducted to obtain information on sustainability attitudes and practices currently within the DPH. In conjunction to this a survey was sent out to 101 staff and students within the Department and baseline data was collected regarding resource allocation.

## 1.4 Results

A total of 53 of 101 people responded to the survey and 5 key informant interviews were conducted in order to provide baseline data and results pertaining to the aims of the project. It was found that the DPH's biggest impacts on the environment were travel, energy use and waste production. Results from the survey suggested members of the DPH were highly aware of the impact and importance of implementing sustainability measures with 98% of survey respondents believing environmental sustainability was highly important, and 100% of respondents believing they were responsible in making New Zealand more environmentally sustainable.

It was found that most respondents in the DPH survey had already taken steps towards becoming more environmentally sustainable and thus provided a platform for further change within the Department.

## 1.5 Conclusions

Recommendations have been developed for the Department of Public Health. The recommendations are based on the results gathered through the different method mediums, taking into account the attitudes and current sustainability practices within the Department.

- Turn off power when not required
- Supplying reusable cups for coffee and encouraging their use
- Department catering to use reusable plates and cups
- Catering vegetarian or vegan food for events
- Provide recycling bin/box in each room beside rubbish bin
- Set paper allowance within the Department
- Advertise shared Snapper card within the Department
- Promoting stair use to decrease energy expenditure on lifts.
- Encourage video conferencing to reduce domestic/international travel
- Central carbon offset fund
- Incentive for most logged active journeys per week
- Setting up a departmental carbon offset fund

Possible sustainable move that may require support from the University of Otago or Wellington Hospital:

- Increase numbers of secure bike rack
- Use environmental friendly power company
- Create a subcommittee within the University of Otago, Wellington

## 2. Introduction

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### 2.1 The Importance of Sustainability

The world is faced with challenges in all three dimensions of sustainable development - environmental, social and economic. Globally, over 1 billion people are living in extreme poverty, with income inequalities increasing, whilst at the same time unsustainable consumption and patterns have led to huge economic and social costs that endanger life for humans, animals and planets on planet Earth. (1) In order to achieve sustainable practices globally, actions need to lead to further economic and social progress through economic growth and employment, however at the same time strengthening and prioritising environmental protection.

Sustainability is defined as the ability to continue a defined behaviour indefinitely. A process is sustainable if it continues into the future without exhausting finances, damaging vulnerable ecosystems or depleting natural resources. Furthermore, environmental sustainability refers to the rates of renewable resource harvesting, pollution creation and non-renewable resource depletion that can be continued. Current environmental sustainability practices around the world are uncertain, and are often mistaken for global economic growth. Efforts to make human practices sustainable are ongoing. (1) However, no form of economic growth can be continuing indefinitely. The current global challenge is how the modern economic growth today is degrading the environment severely. Strategies need to be ambitious, action-oriented and collaborative in order to tackle this global crisis.

In an ideal world, large organisations that hold influence and power on a global scale would be fiercely protecting the environment through implementation of holistic sustainability frameworks. These are inclusive of governments, large scale organisations and even universities. Thus, those in power model sustainable practices to the public and other smaller organisations. Those modelling sustainable practices will inherently lead to social change and changes in behaviours at a global level and encourages the acceptance of these practices into everyday routines.

One of the key issues in environmental sustainability is climate change. With increasing sea levels, animal extinction and dangers to human health, discussion into environmental sustainability is well overdue. In order to protect our planet Earth from the dreadful impacts of climate change, we need to recognise that it is the duty of each and every one of us to take steps to protect our environment. We can do this by living an eco-friendly lifestyle every day. This may sound simple, but changing long-standing wasteful habits can be hard as individuals. Creating a supportive environment and having a community of like-minded individuals may help greatly in this cause. Adequate changes need to be made both at the household level, but more importantly at the commercial level to ensure goals are met for environmental sustainability.

### 2.2 The Importance of our Report

This report is aimed at assessing environmental sustainability on a commercial departmental basis. By focussing on current environmental sustainability practices within the Department of Public Health University of Otago, Wellington, a model with recommendations can be provided to further strengthen their current actions. As stated earlier, an adequate change at a

commercial level can ensure that global environmental sustainability goals are supported and subsequently achieved.

## 2.3 Aims

This report, which analyses the source population, the staff and students of the Department of Public Health (DPH) at the University of Otago, Wellington (UOW), aims to:

1. Assess the attitude of individuals towards environmental sustainability.
2. Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.
3. Propose and describe interventions that can help the environment at both the individual and group level.
4. Recommend interventions for the DPH to implement based on source population attitudes and practices
5. Design simple practical data collection methods that are able to be taken post implementation.
6. Collect baseline data on sustainability practices
7. Identify the additional opportunities for supporting sustainability actions outside the workplace.

Completion of the above aims will help assess the current attitudes of the staff and students of the DPH, and guide the formulation of further recommendations to the DPH to improve their current environmental sustainability practices. Furthermore, the data obtained can be used to compare the efficacy of the implementation of these recommendations and assess the progress of the DPH's environmental sustainability practices.

In a wider context, we want to use the outcomes of this project to develop the DPH as a testing ground for positive change in the realm of sustainable practices. Paired with this idea we seek to ultimately create a realistic framework that could then influence changes in other departments within the University, and potentially the greater hospital environment.



## 3. Methodology

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### 3.1 Methods

A comprehensive literature review on environmental sustainability was undertaken as a way to identify potential interventions and inform the project aims and conclusions. An online survey and key informant interviews were used to investigate the Department's thoughts on the importance of the recommended interventions, ease of implementation and their willingness to further implement the suggested recommendations.

Figure 1 outlines the overall aims and the methods used to achieve of them.

Aims	Methods used to achieve aims
Assess the attitude of individuals towards environmental sustainability.	<ul style="list-style-type: none"><li>• Interviews</li><li>• Survey</li></ul>
Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.	<ul style="list-style-type: none"><li>• Interviews</li><li>• Survey</li><li>• Literature review</li></ul>
Propose and describe interventions that can help the environment at both the individual and group level.	<ul style="list-style-type: none"><li>• Survey</li><li>• Literature review</li><li>• Resource collection:<ul style="list-style-type: none"><li>○ Travel and paper usage data</li><li>○ Elevator and stairwell observations</li><li>○ Recycling bin audit</li></ul></li></ul>
Recommend interventions for the DPH to implement based on source population attitudes and practices.	
Design simple practical data collection methods that are able to be taken post implementation.	<ul style="list-style-type: none"><li>• Literature review</li></ul>
Collect baseline data on sustainability practices.	<ul style="list-style-type: none"><li>• Survey</li><li>• Resource collection:<ul style="list-style-type: none"><li>○ Travel and paper usage data</li><li>○ Elevator and stairwell observations</li><li>○ Recycling bin audit</li></ul></li></ul>
Identify the additional opportunities for supporting sustainability actions outside the workplace.	<ul style="list-style-type: none"><li>• Survey</li><li>• Literature review</li></ul>

Fig 1. Overview of Aims and Methods

## 3.2 Literature Review

### 3.2.1 Search Strategy and Selection Criteria

A comprehensive literature review was undertaken to help achieve the following aims:

- Propose and describe interventions that can help the environment at both the individual and group level.
- Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.
- Recommend interventions for the DPH to implement based on source population attitudes and practices
- Design simple practical data collection methods that are able to be taken post implementation.
- Identify the additional opportunities for supporting sustainability actions outside the workplace.

Pre-existing guidelines or protocols for similar literature reviews were not identified. Hence, a novel protocol was designed specifically for this report.

Robust literature searches were conducted using the Otago University Library Search, Google Scholar and PubMed in order to identify publications that discuss the following themes:

- The biggest contributors to climate change
- Implementation of, and the success of, sustainability measures at other institutions
- Sustainability policies at the University of Otago and their efficacy
- Sustainability policies at other universities
- How to promote a pro-environmental culture in the workplace.
- Promotion of individual behavioural changes
- Health co-benefits associated with sustainable lifestyles

Search terms included the keywords: 'climate change', 'global warming', 'Otago University', 'sustainability', 'business initiatives', 'institutional changes', 'individual behaviour change', 'climate change culture', 'health impacts' and 'health co-benefits'. Search findings were mostly limited to papers published after 1998. Older papers were used only if they were assessed to be current and relevant to this report based on our predetermined eligibility criteria, which specified that that literature sources needed to contain applicable information about any of the topics listed above.

Potentially eligible literature sources were identified by screening titles, descriptions and abstracts. Thereafter, the 10 members of the literature review team held group discussions regarding these publications, which enabled a consensus to be reached about the suitability and selection of eligible publications. In total, 38 publications were assessed to be eligible by the team.

### 3.2.2 Data Abstraction

The literature team catalogued the publications using Microsoft Excel. Each publication was summarised and categorised under the following headings: Title, Aims, Objectives, Method, Results, Discussion and Conclusion.

Data extracted from the 38 articles covered the range of themes defined above regarding sustainability and successful interventions to target unsustainable practices. This data was used to inform our study methods, formulation of interventions, analysis of results and final discussion.

### 3.3 Interviews

Interviews were used to help us achieve the following aims:

- Assess the attitude of individuals towards environmental sustainability.
- Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.

The interviews were conducted with 5 staff members of the UOW Department of Public Health and from Wellington Regional Hospital. Interviewees were recruited by telephone or email. A total of 7 staff members were contacted, 5 of whom responded and consented to participate in the interview. Each of the potential interviewees were given up to 3 weeks to respond. 2 of the approached staff members did not participate in the interviews and this was due to lack of response and are not included in the results section.

We sought permission via telephone or email from each staff member prior to being interviewed for this report. Once agreed, we set a meeting time and date to carry out the interview. Interviewees were chosen based on their involvement with environmental sustainability or leadership within UOW or the hospital. Below details the staff members chosen, their roles and their involvement in environmental sustainability.

#### Responders:

- Dr Caroline Shaw
  - Role: Senior lecturer in public health, sustainable transport researcher in DPH
  - Involvement: Following her PHD in looking at the health benefits of decarbonising the transport sector
- Professor Diana Sarfati
  - Role: Head of Department (HOD), DPH
  - Involvement: Perspective of the DPH as HOD
- Dr Nick Preval
  - Role: Research fellow
  - Involvement: Has done work on cost-benefit analysis looking at various health and energy benefits on housing interventions.
- Philip Kane
  - Role: Senior manager client services, business and operations manager (UOW)
  - Involvement: Business and operations manager looking after non-academic portion of the University
- Valentino Luna Hernandez
  - Role: Sustainability Manager, Wellington Regional Hospital
  - Involvement: Current sustainability manager of the hospital

#### Non-Responders:

- Dr Hilary Phipps

- Environmental Sustainability Coordinator at UOW
- Dr Gay Keating
  - Public health physician and PhD candidate at the DPH at UOW
  - PhD project on scaling up climate action in the health sector

All key informant interviews were undertaken by the same three medical students and the nominated staff members. An unstructured interview technique was utilised and verbal consent for recording of the interview was obtained prior to commencing each interview. Each person was asked a generalised set of questions regarding environmental sustainability. Later, more specific questions pertaining to sustainability were asked and tailored to their roles within the DPH. All interviews were tape recorded and transcribed. Information from the interviews was used to develop themes for the report and inform and provide direction to the survey questions. Relevant quotes were isolated to illustrate themes that ran throughout the report as well as quotes relevant to the specific interviewee roles.

### 3.4 Baseline Data Collection

Our baseline data collection consisted of a survey and an assessment of resource usage and behaviour within the DPH.

#### 3.4.1 Survey

In order for any sustainable intervention to work practically, data assessing the DPH's baseline attitudes towards sustainability and their opinions about the feasibility of our proposed interventions needed to be obtained.

To collect this data, an online survey was formulated and was distributed to staff and students of the DPH forming our source population. A team worked at collecting baseline data on resource allocation within the Department and looked specifically at annual expenditure on printing, taxi usage and conference travel. Thereafter, elevator/stairwell observations and paper recycling bin audits were performed to complete the data set.

The survey was intended to help achieve the following aims:

- Collect baseline data on sustainability practices
- Assess the attitude of individuals towards environmental sustainability.
- Propose and describe interventions that can help the environment at both the individual and group level
- Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability
- Recommend interventions for the Department of Public Health to implement based on source population attitudes and practices
- Identify any additional opportunities for supporting sustainability actions outside the workplace.

### 3.4.2 Resource Use Baseline Data Collection

Data regarding the Department's usage of resources, elevator/stairwell observations and recycling bin audits were intended to help achieve the following aims of the report:

- Collect baseline data on sustainability practices
- Propose and describe interventions that can help the environment at both the individual and group level.
- Recommend interventions for the DPH to implement based on source population attitudes and practices

These methods were designed based on background information obtained during the literature review and interview processes, which enabled identification of the main office practices that have significant environmental impacts. These practices include using excessive amounts of paper and unsustainable travel methods. Data about travel and paper usage is routinely collected by the DPH for administrative purposes and therefore allowed insight into current expenditure and an understanding of the DPH's environmental impact with regard to these key factors. One important method of travel that did not have readily available data was the method by which DPH staff and students ascend to and descend from Level J, where the majority of the department is based. To gather information pertaining to this, simultaneous elevator and stairwell observations on Level J were undertaken on 3 weekdays over the period of one week in April 2018.

The use of unsustainable energy sources is another important factor sought to identify by the resource allocation collection team. Details on the DPH energy supplier was not readily available as the main power supply is managed by the Capital and Coast District Health Board (CCDHB). However, upon further investigation, it was found that the power company used for the DPH under CCDHB was Contact Energy NZ. Contact Energy sources its power through hydro generation, geothermal generation, and thermal generation, with 80% its total power supply from renewable sources.

The administrator for the DPH, Shirlee Wilton, was approached to obtain raw data regarding printing costs, taxi usage and overseas conference travel. This data came in the form of Microsoft Excel spreadsheets.

The raw data provided supplied the total cost of printing for the year 2017 (1st December 2016 to 30th November 2017). The exact number of pieces of paper used by the Department was unable to be determined.

The total cost for taxi usage was provided directly via the Excel spreadsheet.

Conference travel data was processed manually to obtain estimates for the Department's total carbon footprint accumulated via overseas conference travel in 2016 and 2017. Furthermore, the data allowed for the determination of the annual allocation of money required to offset this large carbon footprint.

The details of our data processing methods are as follows:



Fig. 2 Data Processing methods

- Carbon footprint calculator: [https://co2.myclimate.org/en/flight\\_calculators/new](https://co2.myclimate.org/en/flight_calculators/new)
- Carbon offset calculator: <https://climatecare.org/calculator/>

### 3.4.3 Departmental Stair Use

An estimate of the Department's use of the stairs compared to the lifts were obtained by simultaneous elevator and stairwell observations on Level J.

At 9am on 3 weekdays over a week (23rd - 29th April 2018), a team member sat in the Level J lobby for half an hour, counting and recording how many people:

- Arrived by elevator
- Arrived by stairs
- Left by elevator
- Left by stairs

The results were tallied and combined to produce a total number of people who took the stairs and the total number of people who took the elevator over this three-day period.

#### 3.4.4 Paper Recycling Bin Audit

Plastic is a common contaminant in paper recycling bins. A paper recycling bin audit was undertaken in order to assess the quality of current recycling practices in the office. All three main paper recycling bins belonging to the DPH were rummaged with a pair of long poles until any plastic was found on Monday 23rd April 2018 at 4.30pm.

The locations of the paper recycling bins were as follows:

- Level J, DPH Main Office Printing Room
- Level J, outside the Eru Pōmare Māori Health Research Centre
- Level 8 (Ward Support Block, Wellington Hospital), corridor of Health Inequalities Research Programme (HIRP) Office.

If any plastic was found in each particular bin, the type of plastic and the location of the bin was recorded. Discovered plastic was not removed due to the health and safety risks posed by deep, heavy bins.

#### 3.4.5 Survey

The survey team worked closely alongside supervisors, Dr Cristina Cleghorn and Dr Nick Preval, the project supervisors, to formulate a survey that studied baseline attitudes towards sustainability and the feasibility of our proposed interventions. The final survey was created using Google Forms.

Baseline attitudes and current daily practices regarding sustainability were assessed using multiple-choice questions. Where appropriate, an 'others' option with an accompanying blank field was included to get a better understanding of survey participants' views, activities and suggestions.

The survey also included questions about the ease, importance and likelihood of individuals implementing our initial draft recommendations in their daily lives and whether any could be carried over into their personal lives. These recommendations included both individual and systems level interventions. The interventions were designed to increase the sustainability of various activities of daily living like food and travel. For example, using reusable coffee cups was an individual level intervention and departmental policies limiting international conference travel was a systems level intervention. These questions about intervention feasibility were assessed on a sliding scale from 1 to 5, with 1 being very hard and 5 being very easy. This scale was chosen in order to enable easy interpretation of the results as they can be displayed visually in graphical form.

A copy of the full survey can be found in Appendix A.

The survey was sent out via mass email to approximately 100 staff and students from the DPH on Thursday, 26th April 2018. It closed at 5pm on the 30th of April.

## 4. Literature Review

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This literature review was undertaken to help achieve the following aims:

- Propose and describe interventions that can help the environment at both the individual and group level.
- Explore the feasibility and effectiveness of these sustainable practices in a real setting to achieve a high level of environmental sustainability.
- Recommend interventions for the DPH to implement based on source population attitudes and practices
- Design simple practical data collection methods that are able to be taken post implementation.
- Identify the additional opportunities for supporting sustainability actions outside the workplace.

Information obtained from the literature review process was synthesised and divided up into the following sections:

- Climate Change and the Future Impacts
- Current Unsustainable Practices in Similar Organisations
- Possible Sustainability Approaches
- Energy Usage
- Current University Policies
- Individual Behaviour Change in the Workplace
- Ethical Issues
- The Treaty of Waitangi

### 4.1 Climate Change and the Impacts

This section provides a summary about the effects of greenhouse gas (GHG) emissions. There is overwhelming evidence that an increase in GHG emissions is one of the main contributors towards global warming (2,3). When carbon dioxide is released into the atmosphere, the amount of insulation surrounding our planet resulting in an overall rise in the average temperature. Even a small rise can have a large impact on the Earth. Global GHG emissions have increased 51% from 1990 to 2013 and they continue to increase. This is largely caused by energy combustion. (3)

If GHG production continues to increase at these astounding rates, a large global response will be required in order to minimise the impacts. This is summarised by Watts N, Adger WN, Agnolucci P, et al. in their article '*Health and climate change: policy responses to protect public health*'. They state that carbon emissions need to decrease drastically in order to keep "the global average temperature rise to less than 2°C to avoid the risk of potentially catastrophic climate change impacts". (4)

Climate change is not just a rise in the Earth's temperature. In fact, it is "the biggest global health threat of the 21st century". (5) This is because each environmental change is strongly linked to home environments, food sources and has a direct impact on the physical health of populations. A visual representation of this impact was created in 2015 by the Lancet commission. (Fig 3)



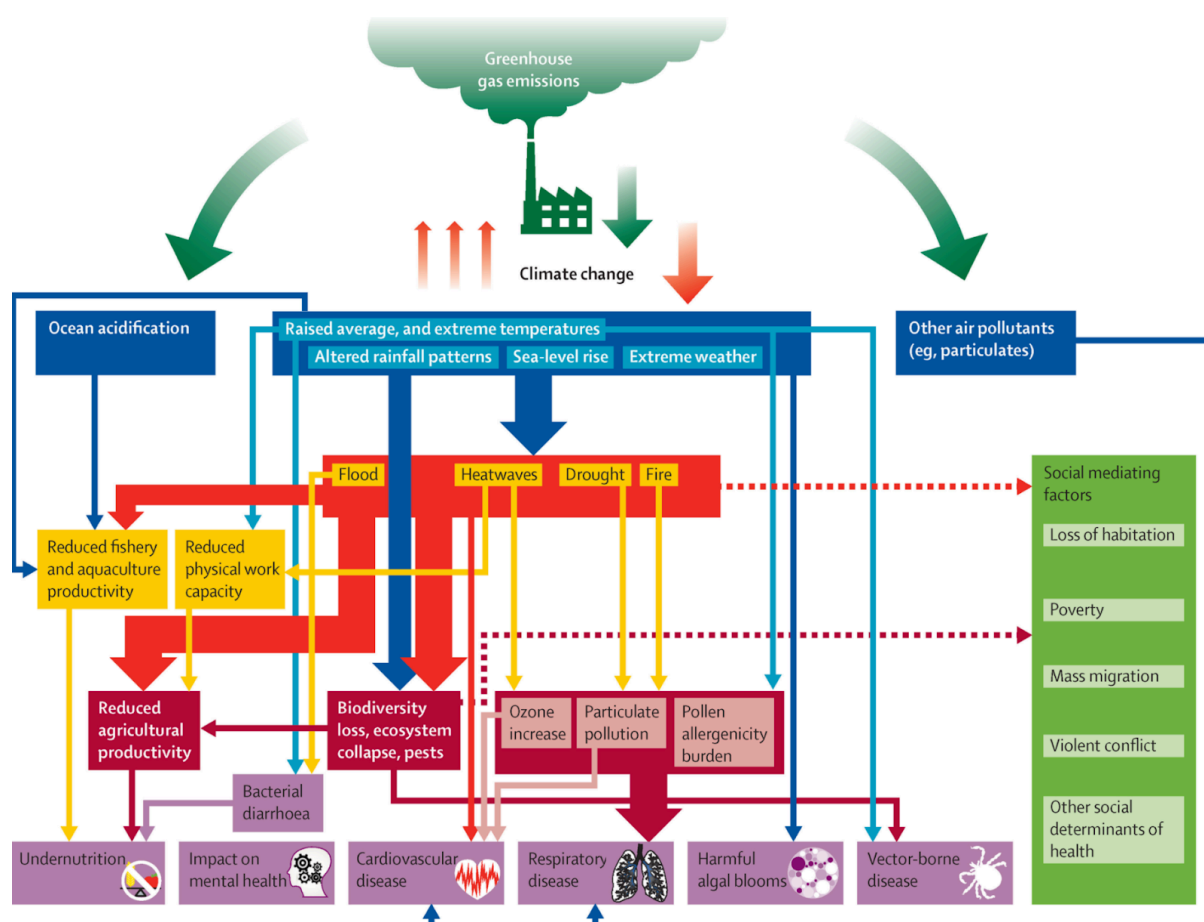


Figure 3: An overview of the links between greenhouse gas emissions, climate change, and health (3)

Figure 1 links GHG emissions with changes in the environment such as pollution, reduction in agricultural production, and extreme weather conditions. These environmental changes have many negative effects on health. Also, climate change has a negative impact on the social determinants of health. Examples of these impacts include the loss of habitation, poverty, reduced ability to work and forced migration. (3) These underpin many public health issues, further highlighting the importance of addressing climate change before the situation progresses further.

## 4.2 Contributors to Climate Change

Research looking into the unsustainable practices of organisations similar to the DPH was undertaken in order to ensure that the recommendations proposed will have significant impacts on the department's sustainability profile.

Currently, the most commonly emitted GHGs worldwide include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases. (3) Carbon dioxide is emitted in the largest quantity. (4) The sources of these gases have been mapped out by Watts, Adger, Agnolucci et al. (Fig. 4) so recommendations to political policies could be made in order to enhance the current global response against climate change. (4)

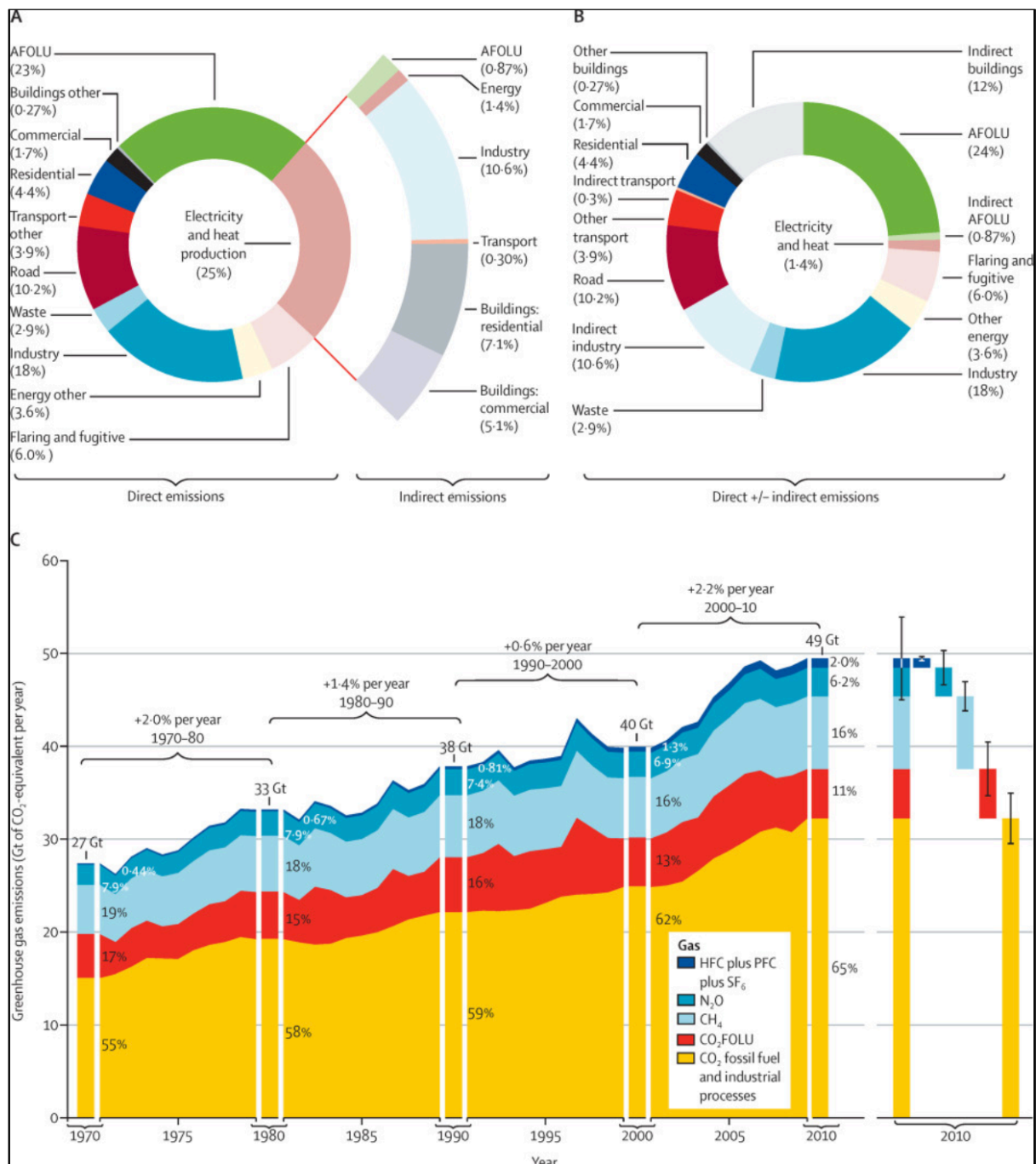


Figure 4: Sources of greenhouse gas emissions (source: IPCC, 2014/202)

This graph shows that worldwide, the largest sources of GHG emissions are electricity and heat production at 25%, and agriculture, forestry and other land usages at 23%. (4)

New Zealand possesses a slightly different GHG emission profile due to its large agricultural industry. 49% of New Zealand's CO<sub>2</sub> emissions comes from agriculture, and 40% comes from energy usage. (6)

Three major sources of GHG emissions from the Department were identified to be energy usage, travel and waste production. (4,7-10)

These results were used to direct the formulation of recommendations that the DPH could utilise in order to have the largest positive impact on the environment. (7-10) The DPH can consider reducing its usage of electrical appliances like computers and lifts, limit work-related travel and produce less waste in order to protect the environment. Although agriculture is unlikely to be a significant contributor to the Department's GHG emissions profile, this may be an area that still can be targeted by the department. The department can work to reduce GHG emissions from agriculture by choosing vegetarian or vegan options when ordering catered food.

### 4.3 Possible Sustainability Approaches

#### 4.3.1 Travel

The University of Otago sustainability framework has a focus on transportation, specifically encouraging sustainable transport. (11) It doesn't specify how this would occur, however it does mention an annual review and update on current initiatives. There have been no reports released since the creation of this framework, however with this report and gathering of baseline data, specifically around transport, it could allow for a review to occur. This graph from the Ministry for the Environment shows that transport is the largest producer of CO<sub>2</sub> emissions due to energy usage: (12,13)

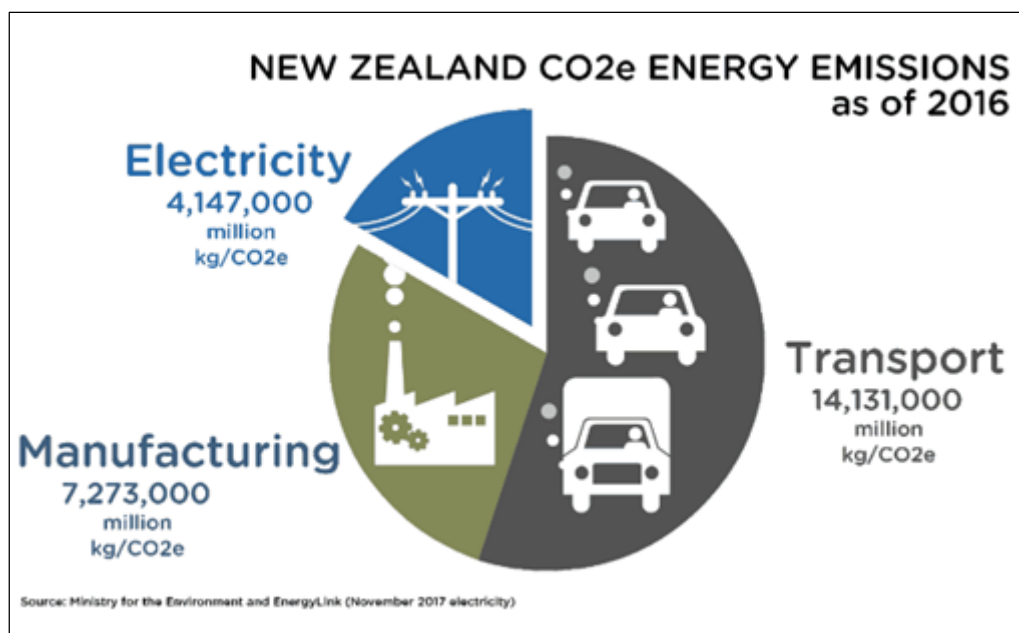


Figure 5: Transport as a Contributor of Carbon Emissions

#### 4.3.2 Domestic and International Travel

Travel related to core business processes that broaden an individual's knowledge, qualifications and social networks are highly costly when considering them in relation to their associated carbon emissions. A recent study that found that business travel contributes the highest carbon footprint out of all the core activities that businesses partake in. (16) It also found that while physical interaction allows for more effective education and innovation, it can be substituted for virtual communication if the relationships fostered are strong enough. (16) This study supports the suggestion that virtual communication platforms such as Zoom should be used to hold domestic meetings. If physical presence is required, carbon offsetting

can be used when booking flight tickets and electric based vehicles (EBV) can be used for ground transportation. (16)

#### 4.3.3 Cycle Pathways and Storage

Numerous papers discussed the utility of active transport in helping to reduce carbon emissions. The first paper was a hospital based study, looking at multiple ways to reduce their carbon footprint. It concluded that hospitals are in a good position to advocate for sustainable practices in order to combat climate change, and can influence communities to do the same. (9) The second paper looked at campus sustainability within universities. It suggested that an integrated systematic management plan should be implemented. For example, a University Environmental Management System (UEMS), which aims to create a 'green campus' with green buildings and transportation systems like cycle ways, can be developed. (17) This would be beneficial for the university to implement in order to encourage active transport among staff members. A key aspect of creating this environment would be providing more space to store bicycles. Follow up investigations will then occur to see if staff members are interested in these interventions.

#### 4.3.4 Electricity Source

Ecotricity is a power company recommended by the Ministry for the Environment. Ecotricity is a New Zealand owned provider that uses 100% renewable energy, in the form of wind, hydro and solar energy. These three forms of energy produce no carbon emissions, which can be seen in below in Fig 6. (16)

Figure 5 indicates that switching from unsustainable power companies to a sustainable power company like Ecotricity has the potential to create a great positive impact on the environment. For example, if the university's current energy provider uses gas as fuel, switching to Ecotricity can reduce carbon emissions by up to 2069 million kg/ CO<sub>2</sub>e per annum. (12)

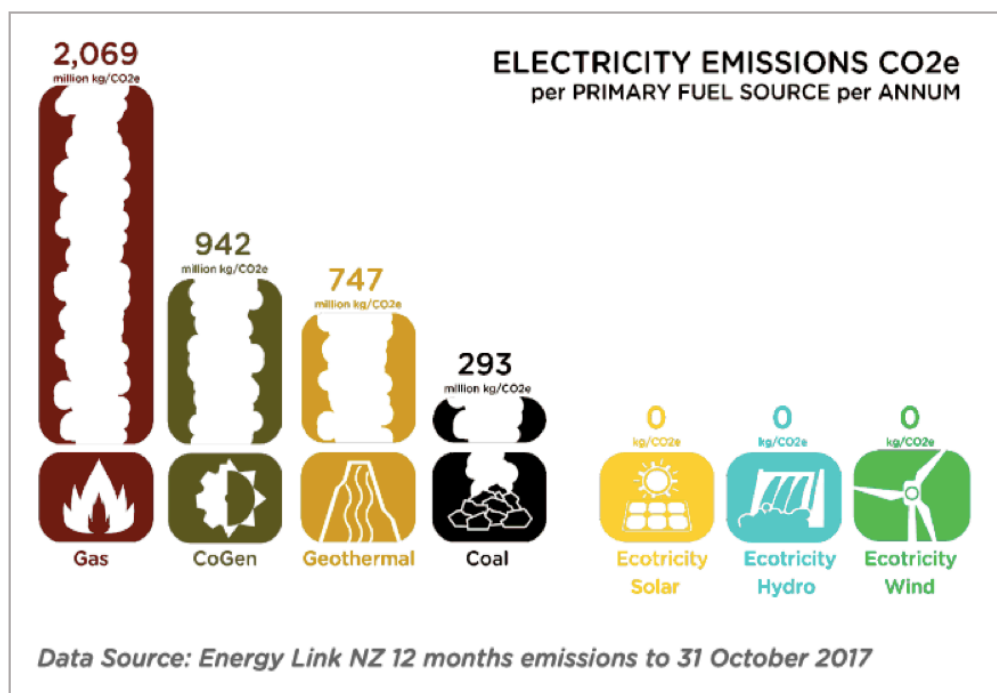


Figure 6: CO<sub>2</sub> Emissions Per Energy Source

#### 4.3.5 Waste

The reduction of waste is a standard and straightforward intervention to improve the environmental sustainability of an institution. Multiple papers have suggested that improving recycling practices, for example, by making it simpler and an easier practice to follow, and switching to renewable materials is a key initiative in this area. (8,9,17,18)

#### 4.3.6 Agriculture

Vegetarian catering within the Department is another possible intervention backed by the literature. (19) Ruminant meat has much higher GHG emissions even when compared to poultry, eggs and seafood, although a vegetarian sourced diet is possibly best practice. (19) Switching to a vegetarian diet also has health co-benefits, in reducing incidence rates of Type 2 Diabetes, Cancer and relative mortality rates of Coronary artery disease. (19)

#### 4.3.7 Overall

Increased monitoring of waste disposal and usage of resources has been shown to encourage the adoption of sustainable practices by individuals in institutions. (20) One barrier to this approach is that currently, there is no simple approach to monitor a buildings or department's energy consumption. An integrated and leadership-supported approach could take advantage of this avenue for improving an institution's sustainability practices. One possible approach is creating a mobile phone application that can monitor both individual and departmental energy usage, motivating both individuals and organisations to develop sustainable habits. (20)

### 4.4 Current University Policies

Regarding environmental sustainability, the University of Otago operates under the University of Otago Sustainability Strategic Framework 2017–2021. (11) The report describes how the University aspires to build sustainability into the core of the organisation, whilst challenging others to do the same. The strategies and their effectiveness have not yet been reviewed, but some of the strategies currently being used include: actively pursuing a low carbon future, minimising GHG emissions, becoming a zero-waste institution, encouraging sustainable transport, minimising water consumption and supporting sustainability research and teaching. (11)

A few sustainability efforts that align with these strategies have begun. The University is currently in the process of negotiating the details of their transition from coal to locally sourced wood for the boiler that heats about 40% of the Dunedin campus, in line with the aim of reducing the University's total GHG emissions by 33% by 2020. (14) The University actively supports video conferencing and holds regular discussions with the Dunedin City Council about creating cycle pathways. Also, it has already completed several environmentally-friendly building projects recently, such as the Hunter Centre, the Robertson Library and the William James Building, which was awarded a 5 Star Green Star rating by the New Zealand Green Building Council. (15)

Upcoming initiatives include creating Green Building Standards for the University, achieving Certified Emissions Management and Reduction Scheme (CEMARS) accreditation and launching Green Impact, a programme that will recognise the efforts taken by individuals and departments to promote social responsibility and environmental sustainability. (14)

All other New Zealand universities recognise the importance of sustainability and have specified obligations to sustainable research, teaching and operating practices similar to the University of Otago. Some environmental policies are based on international guidelines or agreements. For example, the University of Auckland's sustainability policy is based upon the "Universitas 21 Statement on Sustainability", and Auckland University of Technology's policy is guided by World Commission on Environment and Development guidelines. (21-22) Some universities have set up university departments which focus on sustainability within the university, such as Victoria University, which has established a Sustainability Office headed by the Assistant Vice-Chancellor (Sustainability). (23)

#### 4.5 Individual Behaviour Change in the Workplace

Review of the literature showed that there is widespread awareness of the importance of environmental sustainability. Yet, these beliefs do not correlate with behaviour. (24) It was found that interventions targeted purely at the individual level proved ineffective in the long run. (25) Reasons cited for this lack of effectiveness included a lack of motivation and inconvenience. (23) The direct engagement of management was widely discussed in the literature and was found to be the most important factor regarding environmental sustainability. (24, 26, 27, 33, 35) Managers need to lead by example by promoting the vision of sustainability through good leadership and including the topic of sustainability in organisational mission statements. (33)

Five fundamental steps to encouraging change are: (27)

1. Spelling out the impact of change.
2. Building the emotional and rational case for change.
3. Role modelling the change as a leadership team.
4. Mobilising your people to own and accelerate the change.
5. Embedding the change in the fabric of organisation.

Hence, change should start from the top and lead to a shift in social norms. This may act to encourage the development of a workplace culture that is pro-sustainability. (27)

It was not possible for a proper comparison of environmental practices at work and at home to be done due to a lack of research on the topic. (24-35) Only one article addressed this, briefly commenting that sustainability at home is more dependent on personal values, whereas in the workplace commercial demands and workplace norms are more important. (22) This review of the literature revealed a gap in the current knowledge base regarding this particular area of sustainability. Hence, more research about this topic should be done through observational data collection, interviews and surveys.

#### 4.6 Ethical Issues

Climate change and other environmental sustainability issues do not impact different populations equally. They impact the most disadvantaged populations, such as indigenous people, the most. In New Zealand, increased global food prices will affect Māori more than non-Māori given there is a higher burden of food insecurity for Māori. Climate change exacerbates injury caused by social, economic and political marginalisation. What this implies is that when responding to the threat of climate change and making policy recommendations, it is crucial to consider the inequality that exists and ensure that this inequality is not made worse. (36)

It is also interesting to consider the reason why environmental sustainability is important. Environmental ethics involves both utilitarian concepts and the idea that certain acts are

inherently right or wrong. According to an anthropocentric viewpoint, environmental sustainability is important because of its value to humans. From a non-anthropocentric viewpoint, however, the environment itself has intrinsic value. Human beings are not inherently different or superior to natural objects like rivers, mountains and ecosystems. (37)

#### 4.7 The Treaty of Waitangi

The Treaty of Waitangi is the founding document of New Zealand establishing sovereignty of the British Crown. Principles of the treaty today include the active protection and autonomy of Māori over their land, culture and taonga. The natural environment is fundamental to the culture and identity of Māori. For Māori, all living entities have 'mauri', or life force; this means that the environment is not only a resource but is interconnected to all living beings. Environmental sustainability is therefore vital to Māori culture. Protection of the environment can be summarised by the concept of kaitiakitanga, or guardianship of natural resources and the environment. Kaitiakitanga is important for Māori because of their relationship to the natural world which must be preserved for future generations. Because the environment is integral to Māori identity, there is a responsibility for New Zealand to actively protect it. This is currently reflected in legislation such as the Resource Management Act of 1991. (38) However, with respect to the Treaty, much more should be done.



## 5. Results from Key Informant Interviews

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Interviews were conducted with key informants from the UOW DPH and Wellington Hospital. Key informant interviews provided information on the current environmental sustainability practices within the Department and on their own individual ideas on sustainability.

Through these interviews, five key themes were identified which focus on different aspects of environmental sustainability:

1. Current environmental sustainable practices
2. Thought and attitudes towards environmental sustainability
3. Travel and environmental sustainability
4. Potential health co-benefits
5. Recommendations for improved sustainable practice

### 5.1 Thoughts & Attitudes Toward Environmental Sustainability within the Department of Public Health

All participants had a thorough understanding of the importance of environmental sustainability. Many of the participants had perspectives of population health and how environmental health affect this. One person said that is they're not thinking about sustainability they were not doing their job. The idea of responsibility was raised and discussed by a few participants.

Key Informant	Relevant Quote
Dr Caroline Shaw	<i>"I wish the school would be more active in this space (environmental sustainability) in terms of lobbying the council and stuff like that. And link up with the DHB and do that. I feel like there is an opportunity to exert some influence here that we are just kind of ignoring. We have a got a whole lot of people who work and study here that we could be speaking out a bit more loudly about, not to mention the health benefits."</i>
Professor Diana Sarfati	<i>"I think we do have a responsibility for sustainability I think that's perhaps particularly important in a university and that we are focused on training people for the future if we want to have a future, so we have to think about that."</i>
	<i>"I like to keep it really simple which is really making sure that we have a world where at least we have a good of shape in terms of where you know where were looking after the planet now for future generations, so we want to look after it and preferably make it healthier if we can"</i>

### 5.2 Current Environmental Sustainability Practices within the Department of Public Health

When asked about current sustainable practices the individual or the Department did, Interviewees most commonly answered that they recycled. The Officer of Sustainability



Valentino Hernandez broadly answered about how Wellington Hospital manages environmental sustainability.

Key Informant	Relevant Quote
Professor Diana Sarfati	<i>"I do the usual things - like recycling...and I sometimes carbon offset when I travel but not always -and that's just a money thing."</i>
	<i>"(With regards to recycling) Yeah we do that so we do have a big paper bin because we obviously go through a lot of paper. We actually only relatively recently started recycling because the processes in the school were not conducive to recycling and even now they're not that great."</i>
Valentino Hernandez	<i>"We currently manage by following 5 pillars: Healthy buildings, good neighbours and be more efficient with the resources we bring over. Be more resourceful and the fifth pillar is monitor and manage"</i>
Phillip Kane	<i>"There is recycling in every department. And also there is a central one here."</i>

With regards to recycling, Head of Department Diana Sarfati stated it was implemented in the workplace but not executed well. This is supported by the recycling audit that was carried out that found 67% of paper recycling bins contained one or more plastic items. We also received an email that was sent to Department members by administration stating that the recycling bins were not being emptied by individuals who insisted they would take responsibility for the recycling. These findings contrast to the survey where 94.3% of responders said they utilised recycling. From this we believe the department knows the importance of recycling and says that they are interested in utilising it; yet when it comes down to it does not follow through. One suggestion to improve recycling habits is to make the recycling bins more accessible and easier to use. The Officer of Sustainability Valentino Hernandez suggested having uniformly coloured bins so that people always know to associate one colour with paper, one with plastic and so on.

### 5.3 Travel and Sustainability within the Department of Public Health

Travel was another area focused on by our key informants. When the key informants were asked what they thought the largest contributors were towards the Department's carbon footprint, and all informants believed air travel was the area where most improvement could be made. Department members regularly fly domestically and internationally for conferences, and these flights emit large amounts carbon that contribute to climate change.

Key Informant	Relevant Quote
Philip Kane	<i>"But the other side of that coin is, why are we getting on the plane in the first place? I do go to Dunedin quite a bit but I'm doing Zoom conferencing all the time now."</i>
	<i>"Its reduced in domestic but international is still pretty high and it's all around academic basically. Conferences are always in nice places."</i>
Dr Nick Preval	<i>"Zoom seems pretty good. I suppose there are benefits of meeting people face-to-face that you would have to give up."</i>
	<i>"In at an informal level just when we have a conference in downtown we try and taxi-pool. The Department does provide Snapper cards as well, people use public transport to get to some events as well."</i>

## 5.4 Potential Health Co-Benefits

The theme of health co-benefits was discussed by a number of interviewees and how individuals can benefit from sustainable practice. This can be used to incentivise behaviour such as active transport, vegetarian diet and stair usage.

Key Informant	Relevant Quote
Dr Caroline Shaw	<i>"...if you take public transport you're also get more physical activity."</i>
Professor Diana Sarfati	<i>"Cycling is great for the environment it's also great for your health and there are quite a few examples like that."</i>

Phillip Kane said lift usage was one of the largest energy consumers in the hospital. It was suggested that encouraging consistent stair use was a great way to lower energy usage and increase physical activity during the day. "Steptember" was an incentive used to get University staff using the stairs. This was a competition lasting a month where people's steps were measured using a pedometer, and the individual with the most steps by the end of the month wins a prize. An incentive like this could be tried in the DPH to encourage stair use.

When discussing possible limitations to people using active transport, the issue of inadequate bike shelters/parking was raised. Phillip Kane stated, "Every year I put in a request to the University property services for the money to build a proper bike pod/safe and every year it gets turned down, because there is something else." This was also raised by respondents to the survey, who thought improved bike storage would increase the amount of people who biked to work. This is an area that could be negotiated with the Wellington Hospital and University of Otago management.

## 5.5 Recommendations for Improved Sustainable Practice within the Department of Public Health

As the Department's carbon footprint in regards to air travel was seen as an issue, the participants were asked their opinion on how to reduce and implement this. Phillip Kane commented on the unnecessary use of planes for conferencing, stating that there were alternative ways to attend conferences, such as Zoom. There are limitations to using Zoom, so we understand not all travel can be stopped, but perhaps having tighter monitoring of why people need to travel as opposed to using Zoom could help reduce unnecessary flying. Another option is carbon offsetting all flights.

Key Informant	Relevant Quote
Dr Caroline Shaw	<i>"I think that as a university we should be requiring people to offset their flights as a minimum, so when you go overseas or just within the country you have to offset your flights."</i>

This will be hard to encourage, as not all individuals would be willing to pay the money to offset their flights. However, if the Department wants to make a significant change this is an area they should invest time into working out a way this could become feasible. With regards to getting more money for the Department to use on sustainable practices, some suggestions were:

Key Informant	Relevant Quote
Professor Diana Sarfati	<i>"Identify businesses that have sustainability as one of their overarching goals and to try and get them engaged and building up from there."</i>
	<i>"Perhaps having to have monthly meetings at the school level to think of approaches to sustainability school wide"</i>

Incentivising sustainable practice was also mentioned as a way to improve behaviour.

Key Informant	Relevant Quote
Dr Caroline Shaw	<i>"They could do workplace travel planning, that is something that can be sensible. So you basically stocktake what everyone does who comes to the campus, so all the staff and all the students and you find out where they live and then you start putting incentives in place so they can change their travel habits"</i>

With regards to active transport mentioned above, another suggestion to increase active transport was to encourage the use of electric bikes. If purchasing the bikes became more affordable for the staff this would encourage them to use active transport.

Key Informant	Relevant Quote
Phillip Kane	<i>"We could for instance negotiate with a cycle supplier to get cheap bikes or electrical bikes. One thing I've learnt is you can't make someone do what they don't want to do, but you can encourage them."</i>
Dr Caroline Shaw	<i>"Trying e-bikes... providing them with better bike security... lobbying the council to put in place better biking infrastructure?"</i>
Professor Diana Sarfati	<i>"If there is a really safe bike lanes and it is really easy to get around on a bike then people will start using bikes regardless of any messages, so it's changing the transport system which makes that choice a really easy choice"</i>
Valentino Hernandez	<i>"We could use magazine promotion or staff magazines to keep people aware"</i>

## 6. Baseline Data Collection on Current Practices within the Department

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Information was collected on various contributors to environmental sustainability. By gathering baseline data on these aspects, there is the potential to find interventions to decrease their contribution to the DPH's overall carbon footprint. From the data, it will also be possible to monitor the interventions and decide whether they are having the desired impact.

Data was collected on the following aspects:

- International travel
- Paper usage
- Paper recycling
- Taxi usage
- Building stair use

### 6.1 International Travel

*Carbon offsetting can be calculated with the total economy air flight travel kilometres. The offsetting cost is the estimated cost that will be required to be paid to an online 3rd party company to offset the carbon emissions by possibly planting trees.*

- In 2016, 278.2 metric tonnes of carbon equivalents was emitted. An offsetting cost of NZD\$4130 was calculated.
- In 2017, 256.5 metric tonnes of carbon equivalents was emitted, with an offsetting cost of NZD\$3806.

### 6.2 Paper Usage

*Based on cost from Departmental Financial Reports, including all printers in the DPH, Office Canon Printers, and Main Printers including others on Level G.*

- Printing was charged at 2 cents per side for black and white printing and 9 cents per side for colour printing.
- From 1st December 2016 to 30th November 2017, the total cost of printing was NZD\$11,664.

### 6.3 Paper Recycling Bin Audit

*This involved the physical examination of paper recycling bins.*

- On examination, a plastic bag and aluminium were found in 1st paper recycling bin (Level J printing room. Positively, the 2nd bin on Level J (outside Eru Pōmare) was plastic-free. However, of note is the 3rd bin examined in the HIRP office had plastic binder, plastic booklet cover and a plastic covered paperclip. Thus, in conclusion, 67% of bins surveyed randomly had one or more plastic item.

### 6.4 Taxi Usage

*This usage is based on cost from Departmental Financial Reports.*

- From 1st December 2016 to 30th November 2017, the total cost was NZD\$2,220. The Department has taxi cards for the company Blue Bubbles Taxis, who are a *carbon-zero* taxi company, though the use of these cards is not a requisite and only for use in the Wellington region.

## 6.5 Building Stair Usage

*Three 30 minute (0900-0930) observations were conducted on weekdays over one week, while sitting in Level J. Results are totals.*

- In terms of the stairs, 1 person took the stairs up, and 1 person took the stairs down. In comparison to lift usage, 35 people took the lift to enter Level J, and 4 people took the lift to exit level J. Thus, in conclusion, the greatest preference was using the lift with only 4.9% of people having used the stairs in or out of Level J.

## 7. Results from the Survey

### 7.1 The Participants

The survey was made available to all 101 staff and students of the DPH at the University of Otago, Wellington. We had 53 respondents that make up our overall data set, producing a 52.4% response rate. Of the 53 respondents, 24 were senior academic staff including professors, associate professors, or senior lecturers. 15 of the respondents were other academic staff, 6 respondents were departmental support staff, and 8 of the respondents were PhD students. Over two thirds of the respondents were female, with just 30.2% of respondents being male. The age group with the highest response rate among the Department were those in the 45-64 age range. Of the staff, 17% had been in the Department for less than 1 year, 28% had been there for 1-5 years, 22% for 6-10 years, 18% for 11-15 years, 12% for 16-20 years and 2% had worked for the Department for >20 years.

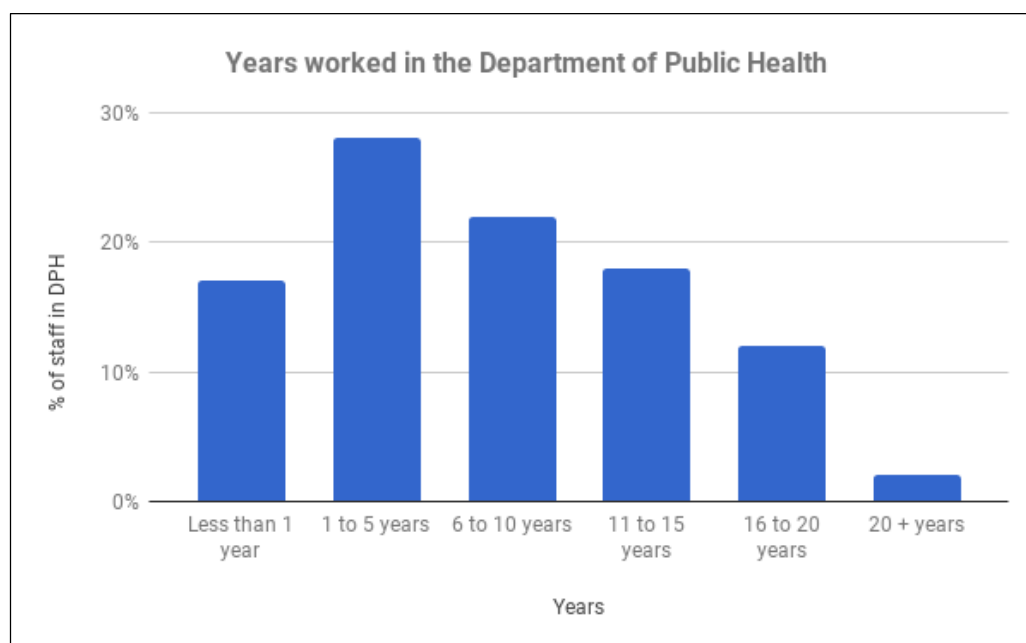


Figure 7: Participants Years Worked in the Department

The ethnicity of the 53 respondents were as follows, 77.4% identify as New Zealand European, 13.2% as New Zealand Māori, 7.6% as Other European, 1.9% as Chinese.

### 7.2 Thoughts & Attitudes toward Environmental Sustainability within the Department of Public Health

98.1% of respondents admitted that environmental sustainability was highly important. All respondents agreed that they were responsible for making New Zealand more sustainable, as 47.2% believed they were somewhat responsible and 52.8% believed they were very responsible.

We asked participants how accurate the following statement is: Climate change is the number one threat to sustainable development. Respondents rated this statement on a scale of 1-5

with 1 being very inaccurate, and 5 being very accurate. 58.5% of respondents believed it was very accurate that climate change is the number one threat to sustainable development.

### 7.3 Current Environmental Sustainability Practices within the Department of Public Health

When asked about current sustainability practices within the DPH, 94.3% of participants indicated that recycling was utilised, 92.5% turned off lights when no longer in the room, 81% aimed to reduce their printing, 73.6% turned off computers when not required and 66% turned heaters off when not required.

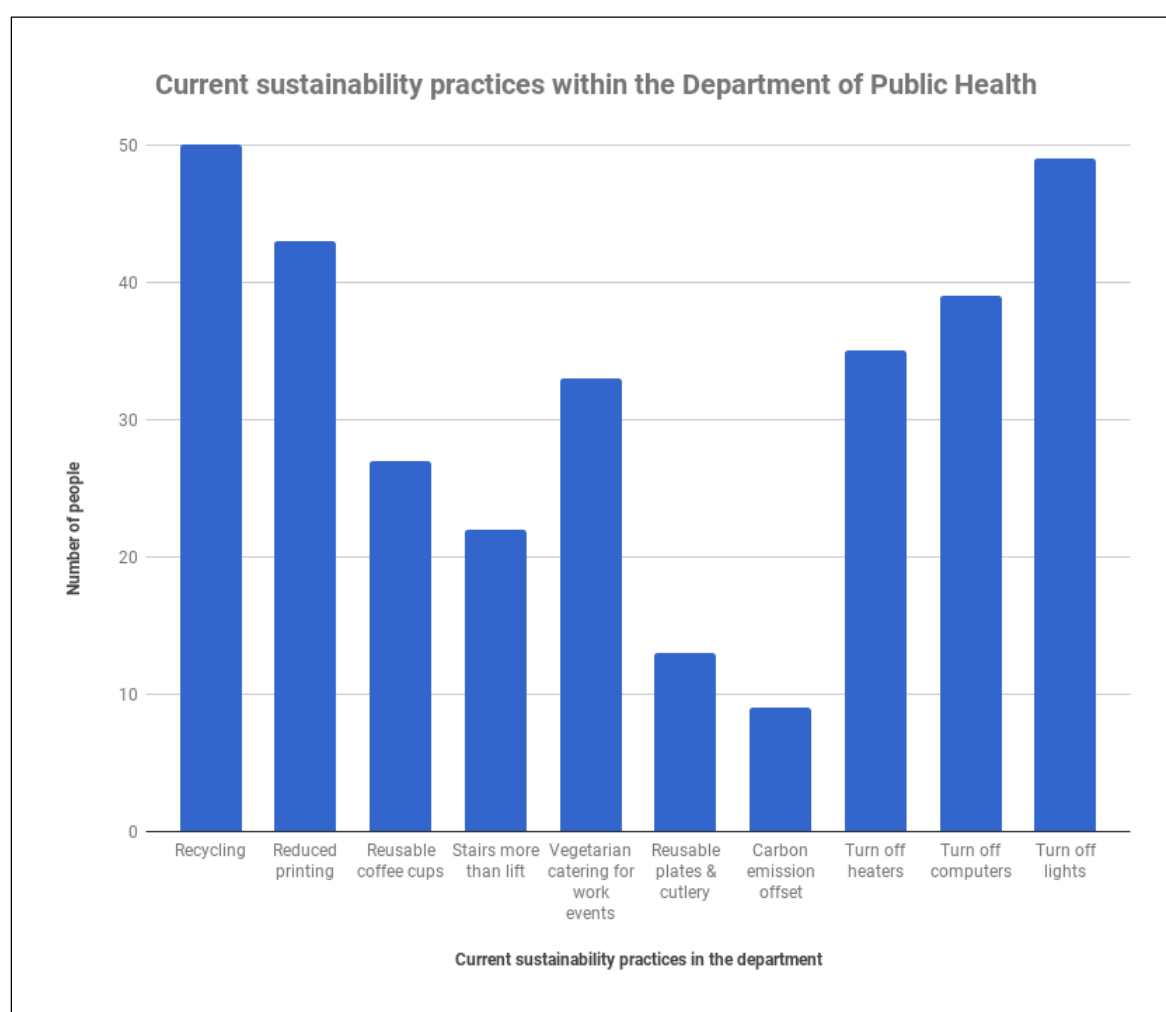


Figure 8: Current Sustainability Practices in the Department

In addition to this, 62.3% of participants employed a vegetarian-only menu when catering work functions, 50.9% used reusable coffee cups for take away coffees, 41.5% aimed to take the stairs more than the lift, 24.5% use reusable plates and cutlery when catering events and 17% pay for carbon offset when organising work place travel. On top of the generic answers, some participants also ticked “other” as an option for baseline measures. These included video conferencing as a travel alternative, walking or biking to work, biking to work meetings, carpooling, wearing warm clothing instead of utilising heaters and aiming to not over cater for events.

When respondents were asked the most effective way to reduce their impact on the environment the top suggestion was directed toward a reduction in air travel followed by waste reduction, energy efficiency, education and advocacy, sustainable diets and sustainable transport measures. The following areas were assessed:

- **Reduction in air travel** included suggestions such as video conferencing and carbon offset.
- **Waste reduction** included increasing recycling measures, reducing printing and paper use, decreasing food scraps or including composting facilities, reducing consumption and utilisation of packaged goods and decreasing waste to landfill.
- **Energy efficiency** included focussing on use of green energy companies, decreasing power usage by turning off lighting and unused appliances/electronics.
- **Education and advocacy** included focussing research on benefits of sustainability measures, education across the Department regarding sustainability impacts and lobbying the university for improved energy efficiency in terms of heating and cooling.
- **Sustainable diet** included reduced meat consumption and focussing on vegetarian/meat free diet.
- **Sustainable transport measures** included increased active journeys, utilisation of electric bicycles and carbon offsetting all travel

**Respondent 4** suggested that it would require many small changes alongside promotion of wider institutional changes and a linking of initiatives with other goals such as active transportation with the goal of reducing carbon emissions but also increasing physical activity and cardiovascular health.

**Respondent 22** suggested that individual change is insignificant and that systemic change is required in order to significantly reduce their impact on the environment. On an individual level they suggest a decrease in resource use through implementation of reusable cups (KeepCups or the likes) and recycling, but also systematically through campaigning for university leadership for initiation and implementation of sustainable energy and minimisation of air travel.

When asked about opinions on how highly the DPH at the University of Otago, Wellington values sustainability, 41.5% of respondents agreed the Department values sustainability highly, and 17% of respondents agreed that the Department values sustainability very highly. The remaining 41.6% of respondents were either indifferent or did not believe sustainability practices were valued in the Department. Furthermore, when asked if they actively attempt to reduce paper use, 30.2% claimed they do it all the time, 43.4% claimed most of the time, and 22.6% claimed some of the time. It was not specified what “actively attempting to reduce paper use” entailed. Also, when asked about lift use, 18.9% of participants said they used the lift all of the time, 24.5% stated they used the lift most of the time and 11.3% used the stairs and the lift equally. 13.2% of participants stated they used the stairs all of the time, 11.3% used the stairs most of the time and 20.8% walked down the stairs but caught the lift back up to the Department.

Participants also stated that in most instances, when they only needed to travel between a few floors they opted to take the stairs most of the time.



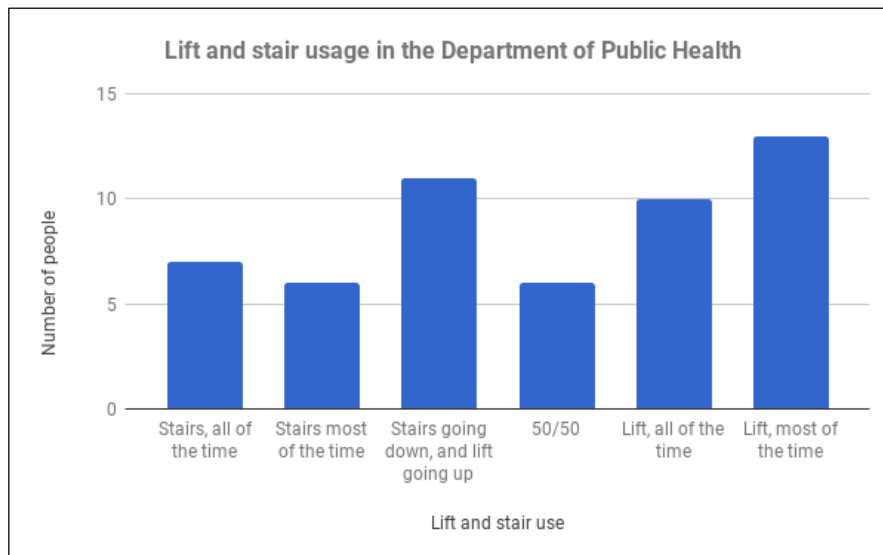


Figure 9: Lift & Stair Use in the DPH

When asked about plastic and paper cup use, only 11.3% indicated they always avoid plastic and paper cup use at work. However, 60.4% indicated they do most of the time. No respondents stated they only used plastic and paper cups.

## 7.4 Travel and Sustainability within the Department of Public Health

56% of respondents take an active journey to work. This was defined as either cycling or walking. A further 17% of respondents take some form of public transport, either bus, train or carpool. We asked what barriers exist for those not taking an active form of transport and they replied with the following:

- Time (15%)
- Weather (13%)
- Distance (9%)
- Safety (6%)
- Accessibility (15%)
- Parenting responsibilities (11%)

The respondents were asked the question: "Can you think of any ways to increase the number of people taking active journeys to work?". The responses obtained were qualitative, and the responses below range are arranged in order of prevalence.

### 7.4.1 Incentives

Seventeen respondents suggested incentives that would encourage the use of active transport. The suggestions mentioned financial incentives such as subsidised bus passes, pay per kilometre of active travel, and subsidies to purchase bicycles. Social incentives were mentioned as well, such as competitions, and one respondent mentioned "*walking/cycling groups to encourage socialising.*"

### 7.4.2 Cycle Ways

There were fifteen respondents who suggested an increase in cycle ways around the city and towards the hospital, in order to allow safe and efficient travel through biking. Within this, there

were suggestions of better and safer cycle ways or routes, an increased amount of bike storage facilities, and creating a cycle friendly culture within the city. Respondent 45 said: *"Culture shift and more improved cycle lanes will help normalise cycling"*

#### 7.4.3 Restricted Parking

This included removal of car parks, and increasing parking costs to encourage the use of public or active transport. There were six respondents who suggested this.

#### 7.4.4 Behaviour

This includes culture shift among the Department towards the use of active transport, role models and advocates for active transport, as well as individual behaviour change. There were six respondents who suggested this. Respondent 16 suggested: *"To make a behaviour change people need three things - opportunity, capability and motivation. Opportunities are both physical and social - put financial in there as well. You have to be capable both physically and psychologically - eg the cognitive demands of successfully planning and managing a low potassium, low fluid, dialysis diet are substantial. And motivation can be based on reflection, or derive from peer norms and the like"*

#### 7.4.5 Flexible Hours

There were four respondents that suggested this, and this was interpreted as reducing the workload to free up time to use in active transport, and/or changing the scheduled hours to suit the use of active transport. Respondent 2 said: *"Consider the timetables and whether they meet the demands of students/occupants using the public health site"*. Other suggestions from remaining respondents included increased shower facilities, carpooling, better public transport and policy changes to include carbon taxes on vehicles.

#### 7.4.6 Shared Cars

When asked about carpooling systems for work events inclusive of shared taxis, 49.1% of respondents stated that they aim to fill most cars, 32.1% aimed to fill all cars and 18.9% said they travel in pairs or separately.

#### 7.4.7 Snapper Card

The DPH has a shared Snapper card available for staff members to use when needing to get around the Wellington region via public transport. We found 43.4% of respondents did not know that this was an available option for travel. 58% of those that were not aware of the shared Snapper card indicated they would be willing to take the bus more often for work related trips, however only 16% people of those that knew the Snapper card was available indicated that they use it all the time, and another 33% of those people said they only use it most of the time or half the time. 11% of respondents said they use their own Snapper card when using work-related public transport instead of the departmental Snapper card.

#### 7.4.8 Air Travel

Air travel has been indicated by participants as imperative to reducing their impact on climate change and improving sustainability. When asked about conference attendance 86.8% of participants indicated they attend at least 1 conference annually with 7.5% attending 5 or more conferences annually. Of these, 32% attend annual overseas conferences, 9.4% indicated

they attend 3-5 overseas conferences annually, 15%, attend once every 2 years and 7.5% indicated they attended once every 4 years. 30% of participants indicated they do not attend overseas conferences.

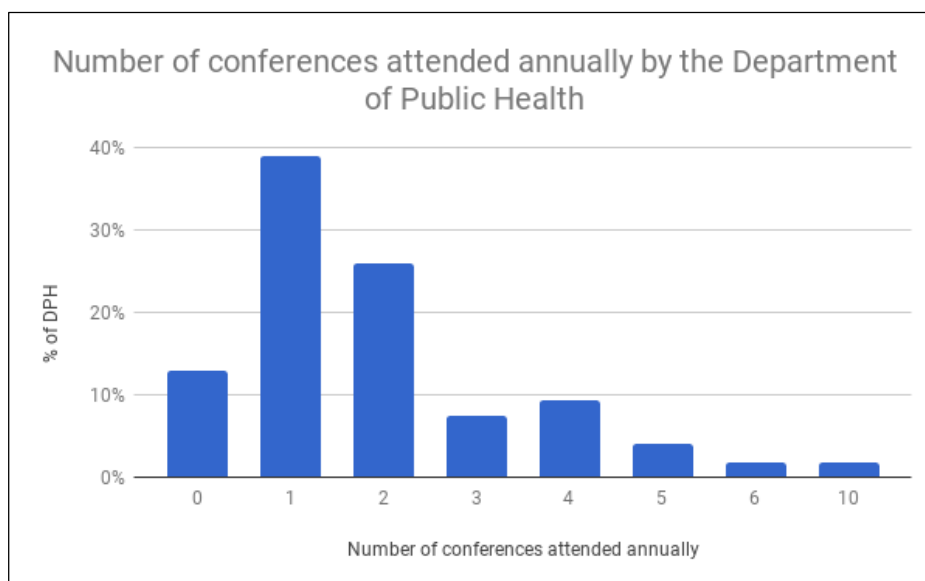


Figure 10: Annual Conference Attendance by Members of the DPH

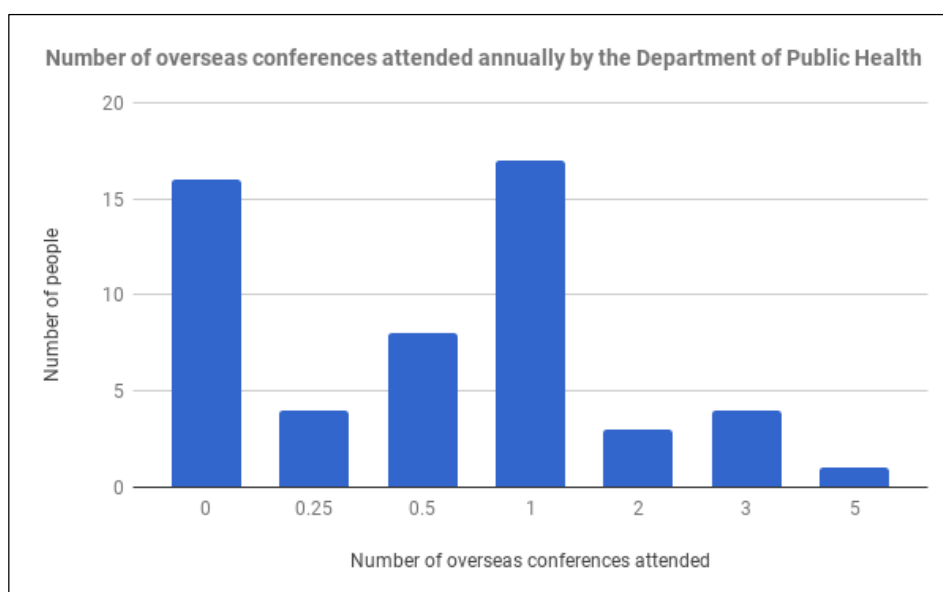


Figure 11: Annual Overseas Conference Attendance by Members of the DPH

Regarding national conferences, only 9.4% of respondents indicated they prefer not to travel to conferences and use video conferencing instead. 64.2% of respondents confirmed that they would consider limiting the number of conferences attended to reduce carbon footprint. For those that attend national conferences, 71.7% indicated that by plane was their preferred mode of transport. When booking airfares through the UOW, there is an option to pay for carbon offsetting in relation to your travel emissions. 56.6% of respondents were aware of this option, and 52.8% of respondents were willing to select this option if paid for by the university. 32.1% were willing if it was paid for by their continuing Education leave and 15.1% were willing to use their own research funding.

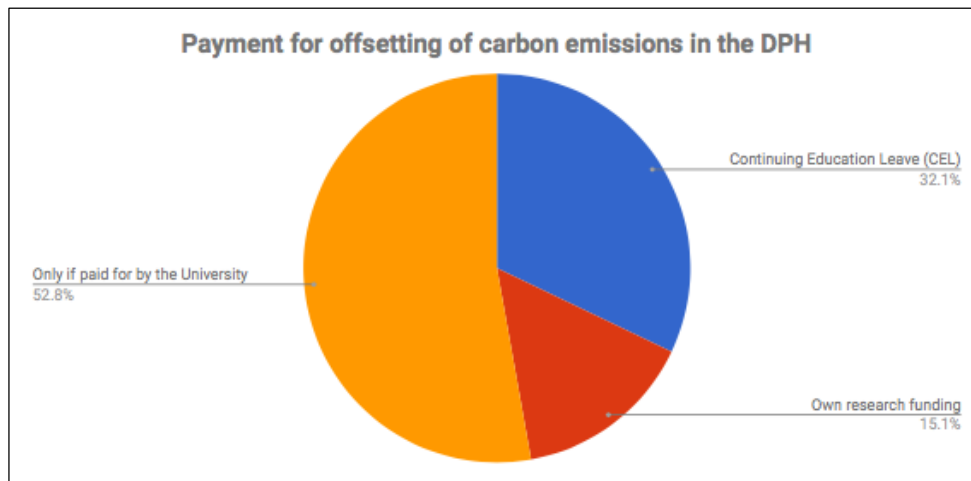


Figure 12: Payment of Offsetting Carbon Emissions

When asked whether participants would limit air travel and reduce conference attendance to improve their carbon footprint, 64.2% said they would, whereas 7.5% said no, and the remaining 28.3% were unsure.

## 7.5 Environmental Sustainable Practices Outside of the Department of Public Health

When asked about the sustainability practices outside of work 98% of the DPH implement recycling and turning heaters and lights off when not required. 92.5% use reusable shopping bags, with 45% using KeepCups and eating a vegetarian diet. Interestingly, 28.3% stated that they carbon offset when booking travel. 34.8% stated that they also implement other sustainable practices, which included active travel, reduced plastic use and composting.

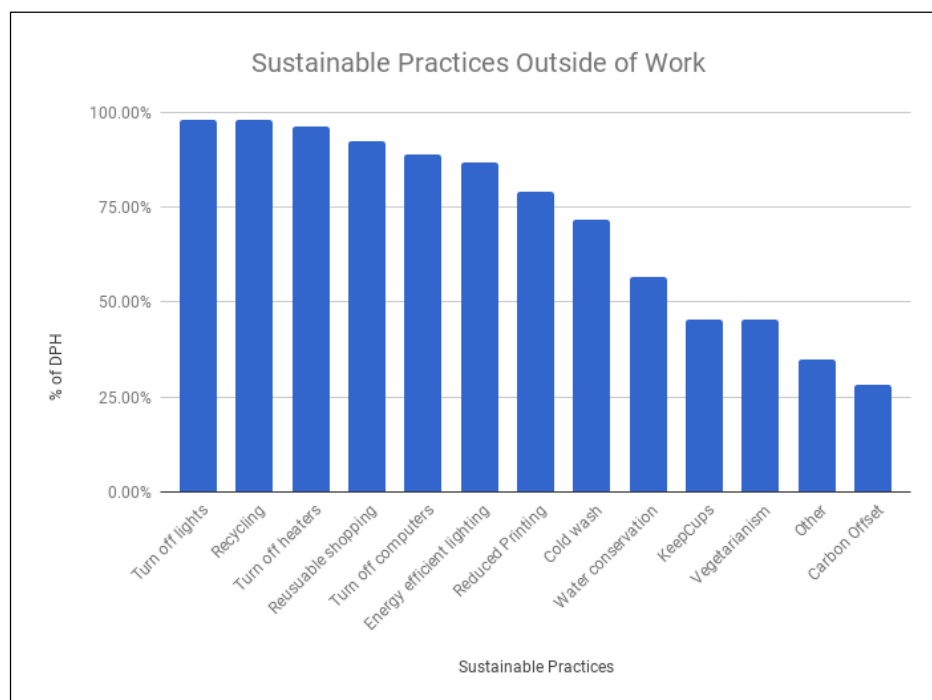


Figure 13: Environmental Sustainable Practices Outside the DPH

## 7.6 Potential Health Co-Benefits

We asked the staff if they expected to see any health benefits from implementing the suggested sustainable practices. 32% stated that they expected no benefit, with 21% expecting improved fitness/cardiovascular health. 23% linked having a vegetable based diet with improved health benefits and 11% believed that their mental health would improve. Less pollution (air/landfills) was a health benefit identified by 19% of the Department, with 8% linking this to improved statistics on respiratory disease.

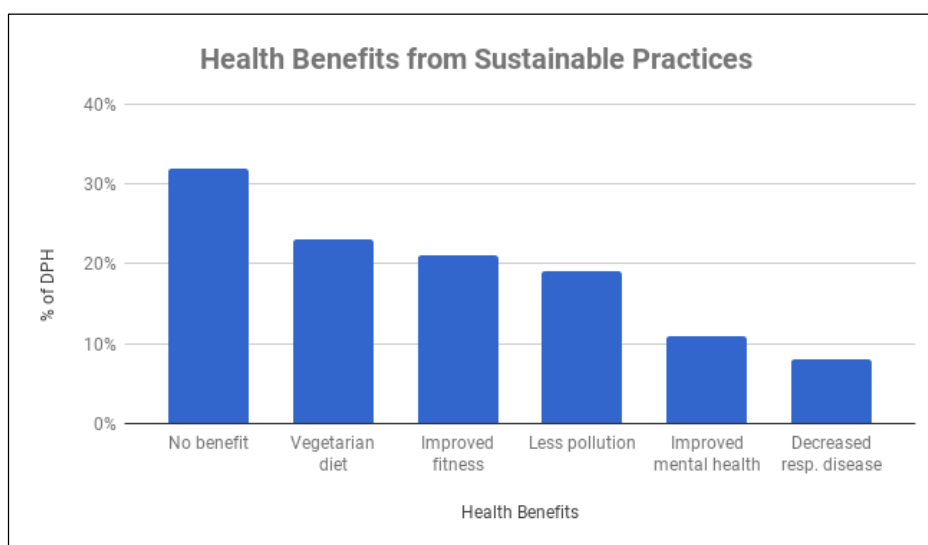


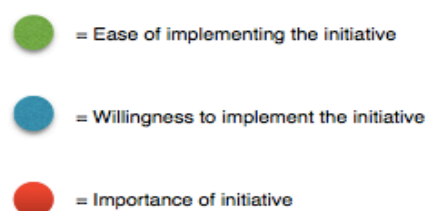
Figure 14: Health Co-Benefits from Sustainable Practice

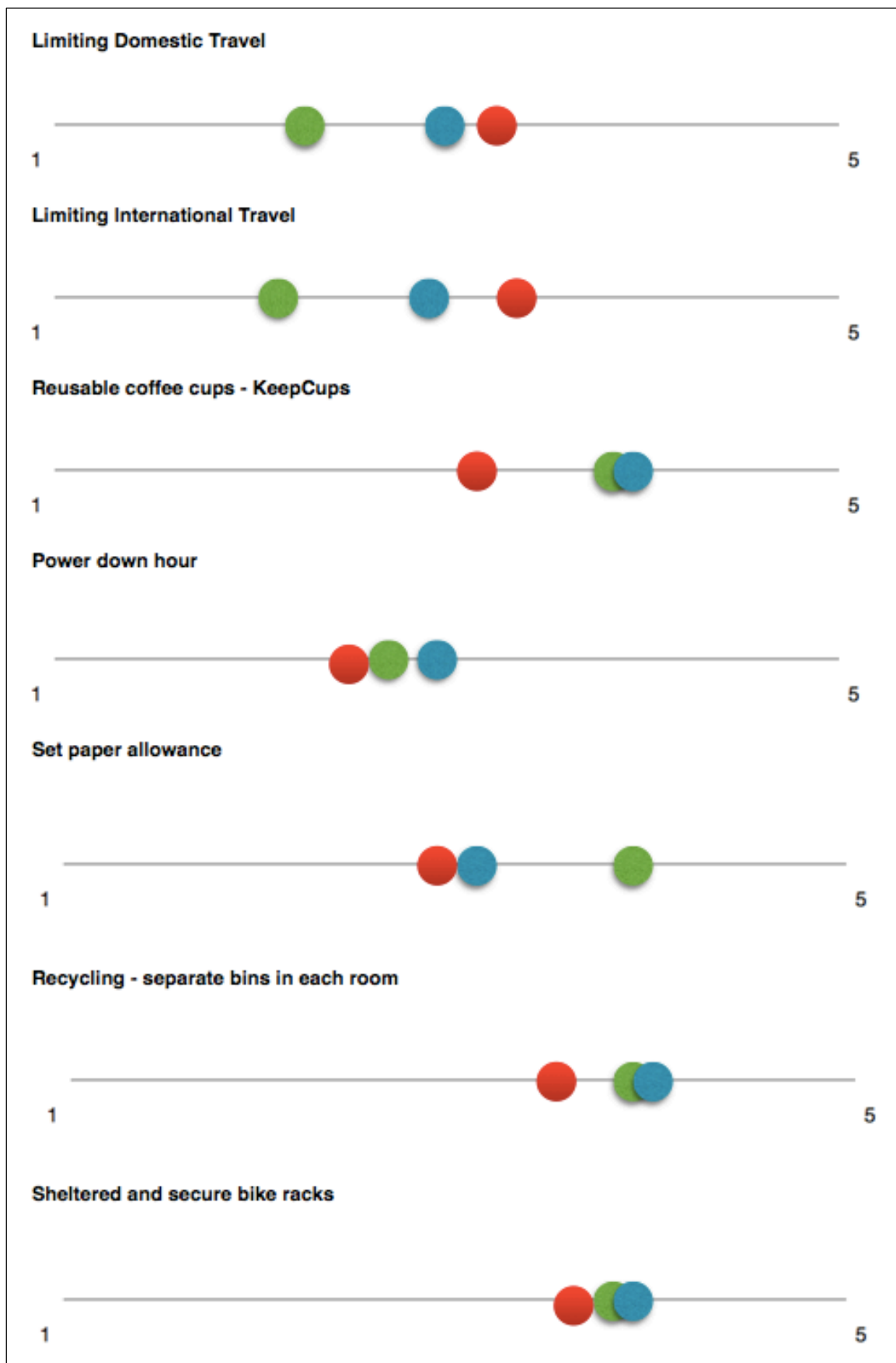
## 7.7 Recommendations for Improved Sustainable Practice within the Department of Public Health

Recommendations for improved sustainable practices within the Department were listed, and the importance, ease and willingness to implement the initiatives were asked of the staff. 13 of the 16 suggestions were considered moderate to easy to implement, with the power down hour and limiting domestic/international travel being seen as a more difficult task. The suggestions in which members of the Department were more willing to implement were KeepCups, separate recycling bins in each room, sheltered and secure bike racks, turning off electronics when leaving work, increased video conferencing, central carbon offsetting fund, automatic light switches and vegetarian catering. Limiting domestic/international travel and the power down were ones which members of staff are less willing to implement. In terms of importance limiting domestic/international travel, recycling bins in each room, sheltered bike racks, turning off electronics when leaving work, increased video conferencing and a central carbon offsetting fund were considered the most important to implement by the Department

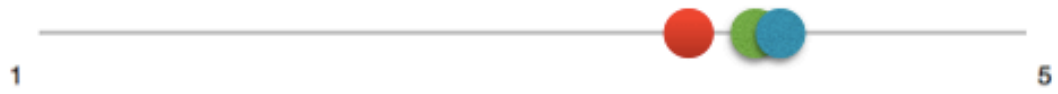
This is the legend for the below diagrams detailing the ease of implementation, the value of importance each participant placed on the interventions and recommendations and their willingness to implement.

1 = Not important/ not willing /very hard  
5 = Very important /very willing / very easy





**Turning off electronics when leaving work**



**Increased video conferencing**



**Active Journey - paid incentives**



**Carbon Offsetting Fund**



**Automatic Light Switches**



**Computer Program Installed on Desktop**





Figure 15: Recommendations with Ease of Implementation, Importance & Willingness

When asked about their thoughts on use of software which would allow for the shutting down of their computers via remote access in order to save power, 49.1% would consider the implementation of this tool, 22.6% said they would not consider it, and the remaining 28.3% were unsure.

From the above recommendations, participants believed some could be translated across into their own home life. 94.7% believed recycling and composting could be implemented, 90.6% said the use of eco-friendly lighting and 86.7% turning off electronics when not required. Furthermore, 54.7% would consider offsetting carbon emission for personal travel and 32.1% thought a power down hour could be applicable to their family or personal life. It wasn't specified whether this was in a flatting or own home environment.



## 8. Discussion

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### 8.1 Attitudes Towards Sustainability

Results from the survey were overwhelmingly positive towards being more environmentally sustainable. 98% of survey respondents believed environmental sustainability was highly important, with 100% of respondents believing that they were somewhat responsible or very responsible in making New Zealand more environmentally sustainable. This shows that survey respondents acknowledge the importance of environmental sustainability and feel that they have a duty to contribute to sustainable practise. However, the literature points out that simply being aware of the importance of environmental sustainability does not lead to behaviour change. (24) This means that while having a positive attitude is important, further efforts are required if we want to see lasting behavioural changes in an organisation. With that being said, most survey respondents in the department had already taken steps towards being environmentally sustainable. A majority used recycling, turned off lights, were mindful of printing and turned off their computers and heating when not in use in the workplace.

Individually, survey respondents demonstrated that they were environmentally conscious outside of the workplace. At home, almost all respondents recycled and turned off appliances when not in use. Other sustainable practises such as using KeepCups and eating a vegetarian diet were employed by around 50% of survey respondents. The rate of sustainability practises outside of the workplace are almost mirrored by current sustainability practices within the workplace. This suggests that sustainability practises are being carried through from the workplace to the home and vice versa. It also highlights the importance of creating effective interventions which are easy to implement so that they become second nature, allowing individuals to carry the interventions through to other areas of their life.

One question which was asked to survey respondents was their thoughts on how highly valued environmental sustainability was at the DPH. Just over 50% of respondents believed that the Department valued sustainability highly. Other respondents were indifferent or did not believe that sustainability practices were valued in the Department. The literature found that management engagement was the most important factor regarding environmental sustainability. (24) Furthermore, management needs to promote the idea of sustainability and lead by example in order for it to be effective. (33) While many are already making changes in the Department, ideally all members would make environmentally conscious decisions. To do this, leadership within the Department should place emphasis on the value of environmental sustainability and lead by example. Creating the optimal environment in which implementing these behaviours would become second nature is the overarching goal.

### 8.2 Air Travel

The literature search found that travel related to business contributed to the carbon footprint more than any other interaction of the business. (14) This is reflected in the survey where the top suggestion from respondents was a reduction in air travel. Key informants also believed that air travel was the largest contributor to the Departments carbon footprint. Our data collection team found that 278 metric tonnes of carbon equivalents were emitted in 2016 due to air travel alone. In 2017, 256 metric tonnes of carbon equivalents were emitted. Our survey showed that 87% of respondents attended at least one conference annually. The University of Otago framework focuses on the encouragement of sustainable transport and we note that there have been slight reductions in the carbon emissions in 2017 compared to 2016. However, more could be done. A range of different possible solutions to this issue have been

identified through our literature review, survey and interviews. These include reducing the frequency of air travel by using video conferencing and paying for carbon offsetting on international and domestic flights.

A reduction in the number of flights would be one of the ways we could reduce the Department's carbon footprints. This would mean decreasing the number of conferences that DPH staff attending and instead replacing them with video conferencing. The literature shows that while physical interaction is more effective for education and innovation, virtual communication can be substituted if the relationships fostered were strong enough. (14) The survey also showed that 64% of respondents would consider limiting air travel and key informants noted that online video conferencing was becoming more popular. While video conferencing may seem like a good idea, the majority of respondents preferred to travel to conferences and physically attend them. Only 9% of respondents preferred a video conference. We recognise the importance of physically attending conferences in order to make connections with colleagues which would otherwise be lost with video conferencing. There are limitations to using Zoom, so we understand not all travel can be stopped, but having tighter monitoring of why people need to travel as opposed to using Zoom could help reduce unnecessary flying.

Another option is the carbon offsetting of flights. One key informant believes that "as a university we should be requiring people to offset their flights as a minimum, so when you go overseas or just within the country you have to offset your flights." This will be hard to encourage, as not all individuals would be willing to pay the money to offset their flights. When considering the option of carbon offsetting, the decision must be made whether this is to fall on the individuals or on department. There was a clear trend in the survey results, showing that despite understanding how important the issue of travel may be, there is little motivation at the individual level for behaviour change. Survey results showed that only 15% of respondents were willing to pay for carbon offsetting of flight; 32% were willing to pay for carbon offsetting if it was paid for by their continuing education leave and 53% would only carbon offset flights if paid for by the Department. These numbers may reflect the financial limitations of each staff member's budget. We suggest that carbon offsetting be the default choice for air travel with the cost paid for by the department.

### 8.3 Travel to Work

56% survey respondents reported they were already taking an active journey to work, either cycling or walking with a further 17% taking some form of public transport. With almost three quarters of survey respondents taking some form of sustainable transport to and from work, this does not seem to be an issue for the Departments. Respondents indicated several barriers which might make it difficult to increase number of people using active transport. For example, distance of travel, time restraints and safety. Key informants stated that interventions such as a bike pod had been requested but was turned down by the university due to other investments. Survey respondents were also in favour of financial incentives for active travel. However, this is unlikely to be feasible given the limited pool of financial resources available.

When traveling for work events, most people aimed to fill taxis. The Department uses taxi cards for Blue Bubble Taxis which is a carbon zero taxi company. This is good and should be further encouraged. When traveling around the Wellington region, staff have access to a shared Snapper card for public transport. However, 43.4% of respondents were not aware of this and only 49% of those aware of it used at least half the time. Raising awareness of the shared card should be easy and should show an increase in public transport use.

## 8.4 Electricity

Key informants noted that lift usage was one of the largest energy uses in the hospital. Encouraging the Department to use the stairs consistently would be an ideal way to decrease energy usage and increase physical activity during the day. The data collection team decided to look at lift and stairwell usage from the hours of 0900-0930 over 3 workdays. During our observation period, less than 5% of the people were seen to use the stairs on Level J. This contradicts the views reported by over 40% of the staff members in the survey regarding how they attempt to use the stairs more than the lift. A possible reason for this may be that we only monitored the rates of lift usage for a total of 90 minutes split over three days. A longer period of observation would provide more accurate results. However, from the information obtained, it was identified as an area requiring attention and promotion. One initiative which has been previously trialled in the hospital was “Steptember”. “Steptember” was an incentive used to get University staff using the stairs. This was a competition lasting a month where people’s steps were measured using a pedometer, and the individual with the most steps by the end of the month wins a prize. An incentive like this could be tried in the DPH to encourage stair use or further active journeys.

Another factor identified through the literature review as being an important contributor to climate change, is the use of power generated by non-renewable energy sources. (1) Thus, the type of power company contracted by the University of Otago, Wellington campus would play a major role in the amount of carbon emissions the university is responsible for. CCDHB currently sources its power from Contact Energy, which states it harvests 80% of its energy through renewable energy sources. A move to a more company such as Ecotricity, a more renewable energy sourcing company sourcing 100% of its energy from renewable sources, would be more environmentally friendly.

## 8.5 Waste

With regards to waste, our study looked at paper usage, recycling and the use of reusable cups and plates. Paper usage and recycling is an issue which has been brought up before in the DPH but has proved to be more challenging than expected. Baseline data showed that the cost of printing for the 2017 year was \$11,664. The survey showed that 30% of respondents aimed to actively reduce paper use “all the time”, with a further 40% reducing paper use “most of the time”. Key informant interviews recognised that the Department goes through a lot of paper and indicated that electronic documents could be used in place of physical paper documents. While these results show some awareness towards reducing the paper use, more could be done. Promoting the use of electronic documents over physical documents would not only be environmentally sustainable, but also reduce the cost of printing for the department.

Key informants also noted that recycling was implemented but not executed well. This is supported by the recycling audit that was carried out that found 67% of paper recycling bins contained one or more plastic items in recycling bins of the DPH. These findings contrast to the survey where 94.3% of responders said they utilised recycling. From this we believe the Department knows the importance of recycling and says that they are interested in utilising it; yet when it comes down to it does not follow through. One suggestion to improve recycling habits is to make the recycling bins more accessible and easier to use. The Officer of Sustainability, Valentino Hernandez, suggested having uniformly coloured bins so that people always know to associate one colour with paper, one with plastic and so on. It has been noted in literature that simply monitoring resource usage and waste production in the Department increases the pro-environmental behaviour of employees and reduces waste production. This is presumably through people being more inclined to be sustainable when their unsustainable practices are being audited.

The survey also looked at the use of reusable cups and plates. It was found that current sustainability practices were poor in this area, with only 25% of respondents using reusable plates and cutlery when arranging catering and around 50% of respondents using keep cups for takeaway coffee. 11% of respondents “always avoid plastic and paper cup use” with a further 60% avoiding plastic and paper cups “most of the time”. These results show that the use of reusable plates and cups is not well promoted in the department. This may be because of the convenience of using disposable plates and cups as there is no need to wash and dry them afterwards. One of the interventions we suggested was to subsidize a KeepCup for all staff members and to approach cafes for discounts for those who used their own reusable cups.

## 8.6 Strengths and Limitations

Key informant interviews were conducted with staff members of the DPH and Wellington hospital using an unstructured interview style. Generalised questions were asked to each interviewee with further questions regarding their specific roles in the DPH. This interview style allowed key informants to express their opinions and ideas in their own words. Interviews supplemented the data we gathered from the survey allowing us to gain more insight into the DPH from a sustainability perspective. Furthermore, we were able to explore the current sustainability measures already in place within the Department and learn what more could be done.

The interviews were carried out by a group of 3 medical students. This was done to reduce interviewer bias so that questioning would be consistent throughout all interviews. Recall bias was minimised by recording all interviews. The interviews were then transcribed and relevant ideas were used to guide our survey and recommendations.

One of the limitations of the interview process was the number of relevant key informants we interviewed. Since the same three interviewers conducted each interview, we were only able to perform 5 interviews due to time constraints. This may have limited the depth and breadth of information we were able to obtain.

The survey was used to identify current sustainability practices, attitudes towards sustainability and attitudes towards potential interventions. Questions were mostly multi-choice with some open-ended questions allowing respondents to express their ideas. The importance, ease and willingness to participate in potential interventions were assessed on a sliding scale of 1-5. The survey was sent to staff and students at the DPH and received a response rate of 53/101 (52%); this response rate was thought to be adequate. The survey provided baseline data on what interventions were already in place in the DPH and as well as how respondents felt regarding new recommendations.

A limitation to the survey process was accessibility. A google account was required to enable staff members to log in and fill out the survey. This was notified via email, and it is possible that other staff members may also have experienced this issue. However, this was fixed shortly after the survey team was notified. Another limitation was difficulty with categorising the survey in order to analyse the information. This was due to the vast amount of qualitative information and different interpretations of the questions that were asked.

## 9. Recommendations

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The following sustainability recommendations have been identified for the Department of Public Health (DPH), at the University of Otago, Wellington. The recommendations are based on the results gathered through the different method mediums, taking into account the attitudes and current sustainability practices within the Department. Individual recommendations have been listed first, followed by recommendations that require higher level input from the University and/or Hospital. Through the adoption of these suggested recommendations, it is hoped that sustainable practices can be adopted successfully in the DPH, which may motivate other departments at UoW to follow suit.

- **Turning off the power when not required**
  - This is one of the easiest recommendations, most staff suggest they are currently doing that or aim to do that during working hours. To improve the likelihood of uptake amongst staff, reminders should be placed near light switches. Also, leaders in the Department should reinforce the importance these minor changes in Department meetings.
- **Supplying reusable cups for coffee and encouraging their use**
  - Around 50% of staff state they are using reusable cups for takeaway coffee. The Department should increase this number by supplying each staff member with a reusable cup. Also, it should approach the cafe at Level D to obtain discounts for staff who use these reusable cups.
- **Using reusable plates and cups**
  - The Department should buy reusable plates and cups for Department catering and event use.
- **Catering vegetarian or vegan food for events**
  - For Department events, plant-based food should be catered as it will contribute less to carbon production.
- **Providing a recycling bin or box in each room beside the rubbish bin**
  - By providing a recycling bin/box in each office it would save staff time and effort trying to locate a recycling bin elsewhere. Increasing the level of recycling within the Department.
- **Setting a paper allowance within the Department**
  - The Department should reduce unnecessary paper usage by having a set paper allowance per staff member. Also, staff should be encouraged to print their documents double-sided through reminders placed near all main printers.
- **Advertising the shared Snapper card within the Department**
  - A number of staff members stated they had no knowledge of the shared departmental Snapper card. Emails should be sent to inform staff about this card and sufficient information on how to utilise it should be provided.
- **Promoting stair use to decrease energy expenditure on lifts**
  - Lift usage is among the top three contenders for highest energy consumption. The Department should promote stair use by putting motivational posters close to the lift and stairwell to encourage staff to walk down the stairs. This reduction in lift use would reduce energy consumption and increase health co-benefits.

- **Encouraging video conferencing to reduce domestic/international travel**
  - Video conferences are a great way to reduce international travel. Hence, the Department should provide incentives for staff who have actively declared their intent to increase their use of video conferencing platforms for work.
- **Incentivising active journeys**
  - A small weekly prize should be given to the Department staff member who logs the most active journeys per fortnight.
- **Setting up a Departmental carbon offset fund**
  - A large proportion of staff stated they were only willing to pay a carbon offset fee if it was subsidised by the university. Hence, the Department should set up a central fund to increase utilisation of carbon offsetting when travel is booked.

Possible sustainable approaches that may require support from university/ hospital

- **Increasing the number of secure bike racks**
  - Currently, UoW does not have enough bike racks outside its main building. As a result, staff are reluctant to bring their own bikes to work. The Department should work to increase the number of bike racks to encourage active journeys.
- **Using renewable energy sources**
  - The use of an environmentally-friendly power company will reduce the carbon footprint of the Department.
- **Creating a sustainability committee within the UoW**
  - This subcommittee should be formed in order to guide and focus the efforts made by different Departments. A group that is focused on the development of sustainable practices within the DPH and in UoW as a whole will be useful in the setting of sustainable goals and the enforcement of sustainable policies.

## 10. Implications

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### 10.1 Potential Policy Implications

The importance for offsetting carbon emissions from traveling and the willingness of members in the DPH suggests that a carbon emissions limiting policy for domestic and international air travel for members of the DPH, could significantly lower the Departments overall carbon emissions. In this policy individuals would be given a 'carbon budget' which would encourage people to limit air travel and seek alternative means of attending conferences such as video-conferencing. However, to maximise benefits to the environment we suggest all Departments within the University of Otago, Wellington, adopt similar policies.

### 10.2 Potential Research Implications

Although key areas where changes can be made have been identified by this study, there is still further research that should be done. A follow-up assessment of sustainability within the Department of Public Health after interventions have been introduced will allow measurement of the extent of intervention effects on sustainability. Cost-benefit analysis can then be performed to determine the most effective interventions for the Department, which can be targeted and refined in the future. Research exploring the applicability of these results and potential interventions to other Departments and workplaces may promote sustainable behaviour to be introduced on a wider scale. Research into potential policy introductions within the hospital and government will further extend the scope of positive effects of this study on sustainability. Research into new technology supporting sustainable practices should be continued, along with research exploring the best ways to introduce sustainability interventions to ensure that pro-environmental practices will actually be established and adopted by people within the Department. In order to achieve sustainable practices globally, actions need to lead to further economic and social progress through economic growth and employment, however at the same time strengthening and prioritising environmental protection. This should be implemented at a departmental level, for example at the Department of Public Health, University of Otago, Wellington.



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# 11. Appendices

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## 11.1 Methods Appendix

### Sustainability in the Department of Public Health

Sustainability has been defined as "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs".

This survey looks to observe the current practices of the Department of Public Health, question attitudes towards change and whether potential recommendations for improved sustainability would be feasible and well received within the Department.

All responses will remain anonymous and be treated confidentially.

\* Required

### Some information about you

1. Please indicate your role within the Department of Public Health \*

Mark only one oval.

- ☐ Senior academic staff (Professor, Associate Professor, Senior lecturer)
- ☐ Other academic staff
- ☐ Support staff
- ☐ PHD student
- ☐ Masters student
- ☐ Diploma student
- ☐ Other student

2. If you indicated you were a staff member, how many years have you worked in the Department of Public Health? \*

\_\_\_\_\_

3. What gender do you identify with? \*

Mark only one oval.

- ☐ Female
- ☐ Male
- ☐ Other: \_\_\_\_\_

4. What is your age? \*

Mark only one oval.

- ☐ 15 -24
- ☐ 25 - 44
- ☐ 45 - 64
- ☐ 65+

5. Which of the following ethnicities do you identify with? Please tick all that apply. \*

Check all that apply.

- ☐ NZ European
- ☐ NZ Māori
- ☐ Samoan
- ☐ Tongan
- ☐ Cook Island Māori
- ☐ Chinese
- ☐ Indian
- ☐ Other: \_\_\_\_\_

## Environmental Sustainability

6. Do you believe environmental sustainability is important? \*

Mark only one oval.

- ☐ Yes, highly important
- ☐ Yes, somewhat important
- ☐ Undecided
- ☐ No, not very important
- ☐ No, not important at all

7. Do you believe you are personally responsible for making New Zealand more sustainable? \*

Mark only one oval.

- ☐ Yes, very responsible
- ☐ Yes, somewhat responsible
- ☐ Undecided
- ☐ No, not responsible
- ☐ No, not responsible at all

8. Climate change was identified by the UN Secretary General in 2013 as being the number one threat to sustainable development. How accurate do you think this statement is? \*

Mark only one oval.

	1	2	3	4	5	
Very inaccurate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very accurate

## Current practices within the Department of Public Health

9. Which sustainability related practices do you currently undertake at work? Please tick all that apply. \*

Check all that apply.

- ☐ Recycling
- ☐ Reduced printing
- ☐ Reusable coffee cups
- ☐ Taking the stairs, more than taking the lift
- ☐ Vegetarianism catering when organizing work related events
- ☐ Reusable plates & cutlery for catering purposes when organising events
- ☐ Nominate to pay extra to offset carbon emissions when booking travel
- ☐ Turn heaters off when not required
- ☐ Turn off computers when not required
- ☐ Turn off light switches when no longer in the room
- ☐ No sustainable practices
- ☐ Other: \_\_\_\_\_

10. At work, what do you think is the most effective way to reduce your impact on the environment?  
Please provide your top three. \*

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11. Do you usually take the stairs or the lift? \*

Mark only one oval.

- ☐ Stairs, all of the time  
☐ Stairs going up, and lift going down  
☐ Stairs going down, and lift going up  
☐ Lift, all of the time  
☐ Other: \_\_\_\_\_

12. Do you actively attempt to reduce paper use? \*

Mark only one oval.

- ☐ Yes, all of the time  
☐ Yes, most of the time  
☐ Yes, some of the time  
☐ No, almost never  
☐ No, never

13. At work, do you go out of your way to avoid plastic and paper cup use? \*

Mark only one oval.

	1	2	3	4	5	
No, I always use plastic and paper cups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Yes, I never use plastic or paper cups

14. How highly do you think the Department of Public Health values sustainability? \*

Mark only one oval.

	1	2	3	4	5	
Not highly at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Highly

## Travel

15. How do you get to work most days? \*

Mark only one oval.

- ☐ Drive  
☐ Cycle  
☐ Walk  
☐ Bus  
☐ Train  
☐ Carpool  
☐ Other: \_\_\_\_\_

16. Currently, what are the barriers to taking an active journey to work for you? If you already take an active journey please put n/a. \*

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17. Can you think of any ways to increase the number of people taking active journeys to work? \*

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18. When you travel to a work event, do you have a carpooling system (including taxi sharing)? \*

*Mark only one oval.*

- ☐ Yes, we aim to fill all cars  
☐ Yes, we fill most cars  
☐ No, we travel in pairs or separately

19. The Department of Public Health has a shared Snapper card, were you aware that this was available to you? \*

*Mark only one oval.*

- ☐ Yes  
☐ No

20. If you are aware of the departmental Snapper card, how often do you opt to use it to pay for bus travel over taking a taxi? \*

*Mark only one oval.*

- ☐ All of the time  
☐ Most of the time  
☐ 50/50  
☐ Almost never  
☐ Never  
☐ Not aware of the Snapper card  
☐ Other: \_\_\_\_\_

21. If you weren't aware of the departmental Snapper card previously, now that you are would you be willing to use it to take the bus more often for work related trips? \*

*Mark only one oval.*

- ☐ Yes  
☐ No  
☐ Maybe  
☐ Aware of Snapper card

22. On average, how many conferences would you attend in a year? \*

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23. Of these, how many are overseas conferences? \*

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24. For conferences within NZ and outside of Wellington, what is your preferred method of transport to reach the destination? \*

*Mark only one oval.*

- ☐ Bus
- ☐ Plane
- ☐ Own vehicle
- ☐ Rental car
- ☐ Train
- ☐ I prefer not to travel to conferences. I use Zoom or equivalent (video conference)
- ☐ Other

25. Were you aware that you could pay for carbon offsetting when booking travel for work? \*

*Mark only one oval.*

- ☐ Yes
- ☐ No

26. Would you be willing to pay for carbon offsetting? \*

*Mark only one oval.*

- ☐ I would only carbon offset if this was paid for by the University.
- ☐ I would be happy to use my own research funding to carbon offset.
- ☐ I would be happy to use my Continuing Education Leave (CEL) to carbon offset
- ☐ I would not be willing to pay for carbon offset

27. Would you consider limiting the number of conferences that you attend to reduce your carbon footprint? \*

*Mark only one oval.*

- ☐ Yes
- ☐ Maybe
- ☐ No

## Outside of work

28. Which sustainability related practices do you currently undertake outside of work? \*

*Check all that apply.*

- ☐ Recycling
- ☐ Reduce printing
- ☐ KeepCups ( Reusable coffee cups) for takeaway coffee purchases
- ☐ Vegetarianism
- ☐ Nominate to pay extra to offset carbon emissions when booking travel
- ☐ Turn heaters when not required
- ☐ Turn off computers when not required
- ☐ Turn off light switches when no longer in the room
- ☐ Reusable shopping bags
- ☐ Energy efficient lighting
- ☐ Active conservation of water
- ☐ Cold water washing machine cycle use
- ☐ Environmentally friendly drink bottle use e.g Oasis, swell bottles
- ☐ No sustainable practices
- ☐ Other: \_\_\_\_\_

29. What specific health benefits if any do you expect to see from implementation of the above sustainability practices? \*

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## Recommendations for improved sustainable practice within the Department of Public Health

30. If new sustainability policies were implemented within the Department of Public Health, do you foresee yourself adhering to the changes? \*

*Mark only one oval.*

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Other: \_\_\_\_\_



**31. These are some potential initiatives that could benefit the Department of Public Health in terms of sustainability. Please indicate how easy you think these would be to implement. \***

*Check all that apply.*

	1 Very hard	2	3	4	5 Very easy
Departmental policies limiting domestic conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Departmental policies limiting international conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reusable coffee cups for cafeteria purchases provided by the department (eg. KeepCup)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power down hour - Designated hour within the day or once a week, where electronic devices are turned off and a group activity or lunch break can be taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set paper allowance - encourage printing of only important documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycling - Separate bins in each room for paper and rubbish etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheltered and secure bike racks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turning off electronics when leaving work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase video conferencing instead of traveling to meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active journeys (walking/cycling) - potential prize weekly for the person with the most logged journeys or longest distances covered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carbon offsetting fund - have a central fund to cover all carbon offset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic light switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A computer programme installed on the desktop that automatically powers down the monitor at the end of the day/designated time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green taxi company use only covered by the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a dedicated sustainability group within the department that is involved with educating and motivating team members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian catering within the department when organising events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. **Please indicate how important you think each of these are to the sustainability of the Department of Public Health. \***

*Check all that apply.*

	1 Not important	2	3	4	5 Very important
Departmental policies limiting domestic conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Departmental policies limiting international conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reusable coffee cups for cafeteria purchases provided by the department (eg. KeepCup)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power down hour - Designated hour within the day or once a week, where electronic devices are turned off and a group activity or lunch break can be taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set paper allowance - encourage printing of only important documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycling - Separate bins in each room for paper and rubbish etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheltered and secure bike racks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turning off electronics when leaving work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase video conferencing instead of traveling to meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active journeys (walking/cycling) - potential prize weekly for the person with the most logged journeys or longest distances covered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carbon offsetting fund - have a central fund to cover all carbon offset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic light switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A computer programme installed on the desktop that automatically powers down the monitor at the end of the day/designated time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green taxi company use only covered by the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a dedicated sustainability group within the department that is involved with educating and motivating team members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian catering within the department when organising events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. Please indicate how important you think each of these are to the sustainability of the Department of Public Health. \*

Check all that apply.

	1 Not important	2	3	4	5 Very important
Departmental policies limiting domestic conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Departmental policies limiting international conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reusable coffee cups for cafeteria purchases provided by the department (eg. KeepCup)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power down hour - Designated hour within the day or once a week, where electronic devices are turned off and a group activity or lunch break can be taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set paper allowance - encourage printing of only important documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycling - Separate bins in each room for paper and rubbish etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheltered and secure bike racks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turning off electronics when leaving work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase video conferencing instead of traveling to meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active journeys (walking/cycling) - potential prize weekly for the person with the most logged journeys or longest distances covered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carbon offsetting fund - have a central fund to cover all carbon offset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic light switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A computer programme installed on the desktop that automatically powers down the monitor at the end of the day/designated time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green taxi company use only covered by the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a dedicated sustainability group within the department that is involved with educating and motivating team members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian catering within the department when organising events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. Please indicate how willing you would be to implement each of these sustainability measures. \*

*Check all that apply.*

	1 Not willing	2	3	4	5 Very willing
Departmental policies limiting domestic conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Departmental policies limiting international conference travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reusable coffee cups for cafeteria purchases provided by the department (eg. KeepCup)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power down hour - Designated hour within the day or once a week, where electronic devices are turned off and a group activity or lunch break can be taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set paper allowance - encourage printing of only important documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycling - Separate bins in each room for paper and rubbish etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheltered and secure bike racks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turning off electronics when leaving work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase video conferencing instead of traveling to meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active journeys (walking/cycling) - potential prize weekly for the person with the most logged journeys or longest distances covered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carbon offsetting fund - have a central fund to cover all carbon offset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic light switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A computer programme installed on the desktop that automatically powers down the monitor at the end of the day/designated time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green taxi company use only covered by the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a dedicated sustainability group within the department that is involved with educating and motivating team members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian catering within the department when organising events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. Which of these, if any, are recommendations that you would implement in your own home? \*

*Check all that apply.*

- ☐ Keep cups for takeaway coffee
- ☐ Power down hour
- ☐ 100% renewable energy source - change power source - "Ecotricity"
- ☐ Recycling and composting
- ☐ Turning off electronics when not required
- ☐ Nominate to pay extra to offset carbon emissions when booking personal travel
- ☐ Use of eco friendly light bulbs
- ☐ None of these are applicable

35. The Department of Public Health currently has a software which can shutdown your computer remotely to conserve power. Would you consider using this option? \*

*Mark only one oval.*

- ☐ Yes
- ☐ No
- ☐ Unsure

**Thank you for taking the time to participate in our survey!**