

UNB

The Green Review

2016 | 2017



Sustainability
Facilities Management | Fredericton



UNIVERSITY OF NEW BRUNSWICK

THE GREEN REVIEW • INDEX

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FREDERICTON CAMPUS



SAINT JOHN CAMPUS



THE CANADIAN RIVERS INSTITUTE HAS PARTNERED WITH UNBSJ TO CONDUCT RESEARCH IN THE SAINT JOHN RIVER USING ENVIRONMENTAL DNA.



GO GREEN

Jump in, jump out!

Conserve water by shortening your showers and save energy by turning down the temperature! There are lots of benefits to cooler showers besides being eco-friendly, including improved blood circulation and reduced stress levels!

GREEN CHAMPION

WHAT IS ENVIRONMENTAL DNA?

All non-microscopic organisms shed cells. Each of these cells contain a complete copy of that individual's DNA. In aquatic environments the cells are held in suspension. By collecting and filtering the water, we can take the DNA into the lab and determine what species were present in the aquatic environment.

HOW DO YOU APPLY THIS CONCEPT AND WHY?

Canada has 1/5 of the world's freshwater in our rivers and lakes. Monitoring the presence and abundance of species in such a vast country is a challenge. Environmental DNA has the potential to revolutionize the way aquatic organisms are monitored. It is much easier and cheaper to take a bottle of water back to the lab and analyze the environmental DNA than to spend weeks or months with nets and other traps to capture fish/reptiles/mammals/plankton in a lake.



◀ SCOTT PAVEY

**ASSISTANT PROFESSOR,
DEPARTMENT OF
SCIENCE, UNBSJ**

GREEN UNB

Did you know that water bottle refill stations can be found in most buildings on both campuses? The stations track the number of reusable bottles filled to show the number of plastic water bottles that were avoided.

"The study of environmental DNA is going to revolutionize ecology and the monitoring of endangered species, as well as the way in which we, as conservationists, interact with the environment. The work that Scott is doing at the Canadian Rivers Institute is certainly going to raise the profile of UNB and greatly enhance our capacity to conserve the region's biodiversity."

▲ GREG PUNCHER

GREEN UNB

Did you know that Facilities Management on the UNBSJ campus recently invested \$3 million into an energy audit and retrofit program?



▲
KEVIN SIMPSON

**DIRECTOR OF FACILITIES
MANAGEMENT, UNBSJ**



SJ BUILDINGS

UNBSJ HAS COMPLETED ENERGY AUDITS IN
8 MAJOR BUILDINGS ON CAMPUS.

GREEN CHAMPION

HOW WERE UNBSJ'S ON CAMPUS ENERGY AUDITS PERFORMED THIS YEAR?

Energy audits on campus were performed by MCW Maricor, an engineering company that was hired by Facilities Management. The audits consisted of touring each building, evaluating the systems that run the buildings (ie. lighting, HVAC, mechanical) and most importantly, reviewing all energy data for each building to evaluate how the building performs. Once this work was completed, a final report was created to provide the university with project options that would see energy savings.

HOW IS THE UNBSJ FACILITIES MANAGEMENT TEAM PROCEEDING NOW THAT THE ENERGY AUDITS ARE COMPLETE?

At this time, we are registering each building under NB Power's Commercial Buildings Retrofit Program. Once projects are completed, the university might be eligible to receive incentives that will fund future energy projects from this program. In each building, there are projects that have been identified that would see project payback within 1 year and others that would have a payback of approximately 10 to 15 years. Facilities Management is currently completing projects requiring small investment that will demonstrate immediate energy savings.



GO GREEN

Make a choice! Do you leave utilities plugged in that do not need to be? Are you turning off the lights every time you leave a room? You can easily reduce your carbon footprint at home if you think critically about the way you consume energy.

TRANSPORTATION FR



UNBF IS MAKING ADVANCEMENTS IN SMART GRID TECHNOLOGY WITH THE INSTALLATION OF ELECTRIC VEHICLE CHARGING STATIONS AROUND CAMPUS.



GO GREEN

Utilize public transportation! Student monthly transit passes are \$55 and can be purchased at the Student Union Building Welcome Centre or Fredericton City Hall.

GREEN CHAMPION

WHAT IS SMART GRID TECHNOLOGY AND HOW ARE YOU CONNECTING IT TO ELECTRIC VEHICLE CHARGING STATIONS?

Smart Grid technology combines electrical grid infrastructure with information/communication infrastructure to accomplish power system function for sustainability, reliability, flexibility, security, and affordability. Through communication networks, electric vehicles are connected to energy management systems that can shift the electric vehicle charging load collectively to match with grid resources more effectively.

WHY ARE YOU TRYING TO USE ELECTRIC VEHICLE CHARGING STATIONS AS ENERGY STORAGE DEVICES?

Electric vehicles have large battery packs which can store electric energy, not only for transportation purposes, but also for grid services. Vehicles in the city spend only a very short time on the road, with most time being spent at a parking lot. When an electric vehicle is not on the road, its batteries can be utilized by charging stations as energy storage resources to shift the power system loads from peaks to valleys, provide power system services, and help with the integration of wind and solar generation plants.

GREEN UNB

Did you know that there will be at least 4 electric vehicle charging stations installed around UNBF's new Kinesiology building?



LIUCHEN CHANG

PROFESSOR, FACULTY OF ENGINEERING, UNBF

TEGAN SMITH ▶

“In a technological world, it’s important for children to spend time connecting with and understanding the natural environment. Opportunities that provide youth with this experience are crucial for child development.”



FR EDUCATION

THE NATURE UNBOUND SUMMER CAMP AT UNBF EDUCATES YOUTH ABOUT NATURE AND ENVIRONMENTAL SCIENCE.



GREEN CHAMPION

WHAT IS THE PURPOSE OF THE NATURE UNBOUND SUMMER CAMPS?

The Nature UNBound camps are designed for children ages 7-15 who would like to learn more about nature and the science of forestry and environmental management. The purpose of this camp is to foster an awareness and appreciation of the environment and introduce students to the basic concepts and vocabulary involved in environmental science. With this, it is our hope to cultivate and encourage youth to connect with nature and even create the foundation for future Forestry and Environmental Management students.

WHAT ACTIVITIES OCCUR WITHIN THE NATURE UNBOUND CAMP?

Camp activities are all based around the scientific foundations of forestry and environmental management, with a healthy dose of fun and adventure thrown in. Nature UNBound activities are also designed to be engaging and foster creative thinking. Some of these activities include: survival skills & shelter building, forest navigation, geocaching, bird watching, canoeing, archery, creating natural water filters, wetland awareness, swimming, insect exploration, and so much more.

GREEN UNB

Did you know that UNBF has a Memorial Forest in celebration of Canada 150? See if you can find all 150 dedicated plaques and learn to identify the accompanying trees across campus!



GO GREEN

Spend time outdoors! Studies have shown that spending time in nature increases happiness, creativity, and can even boost the immune system.



AMANDA DIDYCHUK ▲

EDUCATION AND OUTREACH OFFICER, FACULTY OF FORESTRY AND ENVIRONMENTAL MANAGEMENT, UNBF

CLIMATE CHANGE

FR

SJ



UNB IS COMMITTED TO DEVELOPING AN INSTITUTIONAL CLIMATE CHANGE ACTION PLAN.



▲
EDDY CAMPBELL

**PRESIDENT AND
VICE-CHANCELLOR, UNB**

GREEN CHAMPION

HOW HAVE YOU SEEN CLIMATE CHANGE ACTION PROGRESS OVER THE PAST 10 YEARS AT UNB?

Both of our UNB campuses have made tremendous strides towards reducing our energy consumption, which not only reduces our greenhouse gas emissions through mitigation but also helps with the universities financial sustainability. With the development of the Institutional Climate Change Action Plan, UNB will be better prepared to further mitigate and adapt to our changing climate in the future.

HOW DOES UNB'S WORK IN CLIMATE CHANGE RELATE TO CLIMATE CHANGE ACTION HAPPENING IN THE PROVINCE?

In 2007, UNB developed emission reduction targets in support of New Brunswick's Climate Change Action Plan whereby UNB achieved the set targets while mitigating rising utility costs and CO2 emissions. Through the development of UNB's Climate Change Action Plan, the institution will set higher reaching goals in aims to achieve or exceed the newest targets established by our governments while reducing our emissions and operating more sustainably. Collaborations and alignment on climate action within our province is crucial for combatting this very serious issue.

GREEN UNB

Did you know that UNB is one of twenty post-secondary institutions that are part of the Atlantic Canada Universities and College Sustainability Network? Representatives from these campuses gather twice per year to discuss sustainability and energy efficiency initiatives.

GO GREEN

Don't leave your car idling!

Transportation-related emissions are one of the biggest contributors to climate change! Keeping your car off when it's not in drive can make a huge difference.



"It has been great to see the enthusiasm that both campuses and communities have shown contributing to this project throughout the process. It is this input and commitment that is going to make this plan a success and help UNB take a leadership role in combating climate change."

▲
MIKE HARDY

GREEN UNB

Did you know that over the next several years, 22 buildings are going to be audited and upgraded to LED across the UNBF campus? This year alone there has been 9 approved proposals, 6 of which have already been completed.



▲
DISHA BISTO

**JUNIOR ENERGY ANALYST,
FACILITIES MANAGEMENT,
UNBF**



FR ELECTRICITY

THE INSTALLATION OF LED RETROFITS IN OLDER BUILDINGS IS JUST ONE OF THE WAYS UNBF IS CUTTING DOWN ON ENERGY CONSUMPTION.

GREEN CHAMPION

WHY IS UNBF PERFORMING LED LIGHTING RETROFITS?

Replacing the existing lights with LED allows for reduction in energy consumption and it also induces cost savings within a feasible payback period. This project will replace inefficient lights with LED bulbs and occupancy sensors in areas where traffic is sporadic in order to boost energy savings. With the support of the building occupants and new efficient lighting products, the energy consumption in most buildings can be halved.

HOW DO YOU SELECT WHICH BUILDINGS TO RETROFIT?

At the end of every fiscal year, the performance of each building is evaluated through energy benchmarking. Buildings that show higher consumption energy are tackled first. Moreover, with the help of the Energy Coordinator and electricians, buildings which have inefficient lighting systems are pointed out. After identifying the buildings, light audits are carried out whereby the following factors are determined: cost of the project, payback period and cost saved per year. These factors help to determine if a building can benefit from the 'Energy Smart Retrofit Program' by NB Power.



GO GREEN

Turn off the lights! If every light on campus was turned off for just one additional hour each day, the university would reduce its annual energy requirement by an estimated 500,000 kWh, which would amount to \$70,000 in savings annually.

WASTE SJ

CHARTWELLS HAS IMPLEMENTED THEIR CLEAR BIN PROGRAM AT UNBSJ TO CUT DOWN ON CAMPUS FOOD WASTE.



GREEN UNB

Did you know that the Green Society created a Freecycle room on the UNBSJ campus? This is a great place to find new-to-you items for free! You can also donate items to the room, thereby reducing the amount of solid waste you produce.



SAMANTHA HENDERSON

**EXECUTIVE CHEF
OF CHARTWELLS,
UNBSJ**

GREEN CHAMPION

WHAT IS THE CLEAR BIN PROGRAM AND WHY DID YOU IMPLEMENT IT ON CAMPUS?

It is a simple tool for tracking food waste generated in food services. Staff place all food waste (trimmings, peelings, and leftovers) in a clear bin and note the volume and type of waste on a tracking sheet, which myself or my Sous-chef monitor. We then inform and teach the other staff about opportunities to increase efficiency and reduce preventable food waste. Methods from batch cooking- which is cooking in small portions more frequently- to educating everyone on *first in first out* use of goods, help to reduce our environmental impact and control food cost.

HOW MUCH WASTE HAS BEEN REDUCED SINCE THE PROGRAM WAS IMPLEMENTED?

This program has been in place since I began working at Chartwell's over four years ago, but since taking over as Executive Chef, I have been diligently using the program and educating my staff on how we can decrease food waste. We use everything from vegetable peels to ends, things most people view as compost, to create stocks and soups. Since beginning my tracking we have lowered our food waste by 13%. Now that Chartwell's is working with the campus garden, I expect our percentage to decrease even more. The goal isn't necessarily to track ongoing food waste, but rather to instill a culture that promotes practices that discourage food waste.

GO GREEN

Purchasing reused goods such as clothing, books and board games from local second-hand stores is a great way to go green and save money! Using recycled products delays their arrival to landfills and also reduces your consumption of new materials.



"The Student Representative Council thinks that the steps Chartwells takes to make themselves more sustainable are awesome. We've seen Sam Henderson down in the gardens picking vegetables and herbs, and it's great knowing that not only is the food local, but also that it was produced in a sustainable manner."

▲ KENYA PLUT

ASHLYN
BROWNELL

"Good food is nourishing, sustainable, equitable, and environmentally sound. Food nourishes people and communities and affects our culture, economy, health, and identities. Fostering knowledge on sustainable food systems on the UNB campus is the first step to making UNB a leader in the good food movement."



THE CAMPUS FOOD STRATEGY GROUP HAS CREATED A CAMPUS COMMUNITY GARDEN THAT WILL PROVIDE STUDENTS, FACULTY, AND STAFF THE OPPORTUNITY TO GROW THEIR OWN FOOD ON CAMPUS.



GO GREEN

Apply for your own garden plot at the UNBF Campus Community Garden by contacting the Campus Food Strategy Group through their Facebook page or by e-mail: unb.stu@mealexchange.com.

GREEN CHAMPION

WHAT ARE COMMUNITY GARDENS AND WHO CAN USE THE ONE ON UNBF'S CAMPUS?

Community gardens are public green spaces that give you the chance to see the fruits of your labour by growing your own fresh food. We have 50 plots available for rental and a market garden that we will use to partially supply our Wednesday market at UNB Fredericton. Students, faculty, and staff will be able to rent garden plots during the summer of 2018, with 50% of available plots allotted to students!

WHY DID THE CAMPUS FOOD STRATEGY GROUP FEEL IT WAS IMPORTANT TO HAVE THIS GARDEN?

The Campus Food Strategy Group felt that it was a necessity to establish a Campus Community Garden because of the immense benefits it will bring to UNB Fredericton's campus. The Campus Community Garden is a tangible way to connect, educate, and engage the UNB community about the sustainable, local, and equitable food systems. My hope is that this garden will bring together different interested campus groups, faculties, and students to achieve a more sustainable campus.

GREEN UNB

Did you know that the Campus Food Strategy Group hosts a fresh food market in the Student Union Building lobby every Wednesday from 10AM-2PM during the fall?



AIDEN PLUTA

**CAMPUS FOOD STRATEGY
GROUP, GARDEN
COORDINATOR, UNBF**

INVESTMENT FR SJ

AS AN INSTITUTION, UNB HAS THE OPPORTUNITY TO PROMOTE HIGH CORPORATE STANDARDS OF ENVIRONMENTAL SUSTAINABILITY, SOCIAL RESPONSIBILITY, AND GOVERNANCE WHEN MAKING INVESTMENT DECISIONS.



GREEN UNB

Did you know that in 2017-2018, cumulatively, the UNB community received \$184,000 from the New Brunswick Environmental Trust Fund to put towards various green projects and initiatives?



JENNIFER MORRISON
TREASURER, UNB

GREEN CHAMPION

WHAT IS SUSTAINABLE AND RESPONSIBLE INVESTING?

Sustainable and responsible investing is an investment approach where environmental, social and governance (ESG) issues are a set of factors to be considered along with all other factors when making investment decisions. The view is based on the belief that companies that behave responsibly with respect to ESG factors will have an increased likelihood of enhanced long-term financial performance.

HOW IS UNB PERFORMING IN THE REALM OF SUSTAINABLE AND RESPONSIBLE INVESTMENT?

There are a number of ways UNB engages in responsible investment practices that can be incorporated into managing a portfolio such as the Long-Term Investment Fund, collaboration with peers on sustainable investment issues through industry associations, as well as the addition of a statement on Sustainable Investment to the University's policy framework for managing investments and endowment spending. Given UNB's practice of investing in pooled funds, the preferred approach to shareholder advocacy and engagement is through our external investment managers, who are expected to consider environmental sustainability and high standards of corporate social responsibility and governance when making investments decisions.



GO GREEN

Vote with your dollar! By spending your money on green certified items you are choosing to promote and grow a more sustainable economy and society.



GREEN UNB

Did you know that UNBSJ's Student Work Program offers opportunities for students to conduct research in environmental-related job placements?



SJ RESEARCH

THE ENGINEERING FACULTY PARTNERED WITH THE GREEN SOCIETY AT UNBSJ TO EXPLORE EMERGING ENERGY TECHNOLOGIES.

GREEN CHAMPION

WHAT DOES THIS PROJECT ENTAIL AND WHAT IS ITS GOAL?

The work involved several phases. The first was the search and documentation of existing and emerging technologies and links for guiding future projects within Engineering in collaboration with the Green Society on campus. Work then turned to testing and analysing a solar panel and charge controllers, with the resulting data influencing the next phase of design and construction of a solar charging system. Over the coming terms undergraduate students will work on other aspects of the project to produce a working demonstration of renewable energy, with the goal of gaining knowledge and experience themselves while showcasing some of the technology to other students on campus.

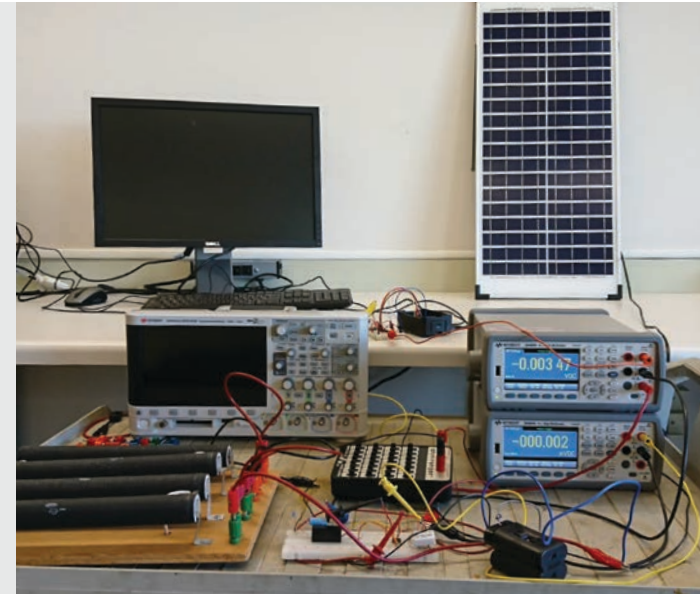
WHAT DO YOU ENVISION THE END RESULT OF THIS PROJECT LOOKING LIKE?

Determining what the final result will be was not part of the research done this summer. It was meant to look at all of the technologies that could either be used as a renewable energy source, or use energy very efficiently. We do expect, at the very least, that the project will end up as some sort of structure on the UNB Saint John campus.



STEPHANIE NICOL

**UNDERGRADUATE
STUDENT, FACULTY OF
ENGINEERING, UNBSJ**



GO GREEN

Get involved with projects on campus, within faculties or campus groups, to develop your skills and knowledge! There is a need for innovative solutions to combat climate change!

CAMPUS COMMUNITY FR SJ

UNB'S CO-CURRICULAR PROGRAM IS A BI-CAMPUS INITIATIVE ENCOURAGING STUDENTS TO LEARN ABOUT THEIR CAMPUS AND THEIR COMMUNITY WHILE DEVELOPING SKILLS FOR SUCCESS.



GREEN UNB

Did you know that the UNBSJ Green Society hosts a variety of green initiatives and events that count towards the Co-Curricular Program?

GREEN CHAMPIONS

HOW DOES THE CO-CURRICULAR PROGRAM INCORPORATE SUSTAINABILITY INTO ITS OUTCOMES?

The program has an environmental awareness component that asks students to calculate their ecological footprint and write a reflection on lifestyle changes they could make to reduce it. Many participants discover their footprint is actually greater than they suspected, allowing them to reflect and develop a plan to reduce it.

GILLIAN MACLEAN ▶

**STUDENT ENGAGEMENT
COORDINATOR, UNBF**



WHAT ENVIRONMENTAL AWARENESS ACTIVITIES DID YOU PARTICIPATE IN?

The Co-Curricular Program gave me the opportunity to track my ecological footprint. I was startled by my contribution to greenhouse gas emissions through transportation. I then looked into different modes of public transportation and ways we could increase its utilization in Fredericton or Saint John.

CORY QUINTAL ▶

**CO-CURRICULAR PROGRAM
PARTICIPANT, UNBF**



GO GREEN

Do your research! The UNB Sustainability website has all sorts of resources for students looking to learn more or get involved. Check out unb.ca/green for sustainability-related academic courses, student groups and more!



"The Co-Curricular Program has a number of components related to sustainability. It's a win-win; do positive work in an area you are passionate about and use the program as a guide to design a plan to reach these goals."



KIANA MOZAFFARI

Did you know that Saint John's Atlantic Coastal Action Program (ACAP) provides administrative support to the Saint John Harbour-Environmental Monitoring Partnership?

COMMUNITY PARTNERSHIP

A MULTI-SECTOR, MULTI-STAKEHOLDER LONG-TERM ENVIRONMENTAL MONITORING PROGRAM HAS BEEN DEVELOPED FOR THE SAINT JOHN HARBOUR BY RESEARCHERS FROM UNB SAINT JOHN, THE CANADIAN RIVERS INSTITUTE, THE HUNTSMAN MARINE SCIENCE CENTRE, AND THE CANADIAN WATERSHED RESEARCH CONSORTIUM

GREEN CHAMPIONS

WHAT IS THE SAINT JOHN HARBOUR-ENVIRONMENTAL MONITORING PARTNERSHIP (SJH-EMP)?

The SJH-EMP is a collaboration that allows us to monitor the health of the harbour as well as its plants and other aquatic species. This monitoring program allows us to gauge the success of management initiatives like the City of Saint John's treatment of wastewater. This monitoring program also allows us to see impacts of climate change in time to respond appropriately.

DR. SIMON COURTENAY ▶

ASSOCIATE DIRECTOR, GRADUATE STUDIES, UNIVERSITY OF WATERLOO



VINCE MCMULLIN ▶

PHD CANDIDATE, UNBSJ



"There's a lot of active shipping and movement in the harbour and there's a real potential for contamination to happen in the harbour. Therefore, having an environmental monitoring program only makes sense. These collaborative programs are being widely recognized as the only way to go."

▲ DR. SIMON COURTENAY



GO GREEN

Join the conversation. The New Brunswick Environmental Network works to create conversation and support over 90 non-profit environmental organizations across the province. You can participate by attending one of their conferences, held in locations all over New Brunswick.

COMMUNITY PARTNERSHIP FR

THE UNITED NATIONS (UN) TRAINING ON SUSTAINABLE DEVELOPMENT GOALS (SDG) WAS A ONE-DAY CONFERENCE OPEN TO BOTH ST. THOMAS UNIVERSITY AND UNB STUDENTS THAT AIMED TO EDUCATE AND CONNECT STUDENTS AROUND LOCAL SUSTAINABILITY INITIATIVES.

GREEN UNB

Did you know that the SDG training also counts towards UNBF's Co-Curricular Program?



▲ MICK JEFFERIES

**INCLUSION
REPRESENTATIVE,
STUDENT UNION, UNBF**

GREEN CHAMPION

WHAT ARE THE SUSTAINABLE DEVELOPMENT GOALS AND WHY IS THEIR IMPLEMENTATION ON UNIVERSITY CAMPUSES IMPORTANT?

The Sustainable Development Goals are 17 goals developed by the United Nations as part of their sustainable development agenda. Each of the 17 goals are connected, demonstrating the need to face global challenges such as environmental degradation, food insecurity, sustainable economic growth, quality education for all, and gender equality, together. It is crucial that our generation be invested in these goals as we are the next doctors, lawyers, teachers, caretakers and role models on the planet. We are the next generation of leaders and must ensure that the Earth will be sustained for future generations.

WHICH SDGS DO YOU WANT TO SEE DEVELOPED AT UNB?

I believe that all 17 goals are very important. At UNB, I would like to see goals 2 - Zero Hunger, 5 - Gender Equality, and 13 - Climate Action tackled. The Friday Breakfast Program that the UNBSU provides is a step in the right direction to reach Zero Hunger on campus. It is important for students to be well nourished as it directly impacts our capability to deal with the stress of university, and breakfast in the morning sets students up for success. I would like to see Gender Equality improved on campus because I personally see my female peers being affected by their gender daily. I believe that all genders need to take collective action on climate change, which is why goals 5 and 13 are crucial.

GO GREEN

Eat for the planet! The David Suzuki Foundation encourages people to eat one meat-free meal a day, buy local or organic when possible, waste as little as you can, and grow your own food as ways to reduce your ecological footprint!



"Education is the basis of change, not just the transfer of knowledge but the transfer of skills. After attending the SDG training, I feel I am better equipped to make the changes I am passionate about, I am now able to go beyond the idea and take the necessary steps to initiate change."

▲ CHLOE JARDINE

**"WE DO NOT
INHERIT THE EARTH
FROM OUR
ANCESTORS, WE
BORROW IT FROM
OUR CHILDREN"**