

Enviroc n 2024 March 22nd - 9:00am - 4:00pm - Western University

FEATURING

Keynote Speaker, Dr. Sarah Burch



Local Vendors and Sustainability Groups

Urban Roots London Environmental Network The Bicycle Cafe Reimagine Co Friends of the Garden Enviro USC SOGS Sustainability Committee

Program Contents:

 Schedule
 Мар
 Panelist Biographies
 Roundtable Topics
 Oral Presentation Abstracts

SCHEDULE

9:00 Coffee and Opening Remarks D.B. Weldon Library - Community Room

9:15 Film Premiere

D.B. Weldon Library - Community Room

10:00 Concurrent Talks and Roundtables

Roundtable Discussions: University College - UC 1110

Table 1	Renée Lemoyne
Table 2	Shafquat Rana
Table 3	Sophia Wright
Table 4	Victoria Ocran

Concurrent Talks: Arts and Humanities Building - AHB 1B04

10:00	Jessica Vader
10:15	Allison Pert
10:30	Brooklyn Lanosky
10:45	Ashar Mobeen

11:15 Keynote Speech

D.B. Weldon Library - Community Room

Dr. Sarah Burch, Canadian Research Chair, Waterloo Climate Institute

Imagination, connectedness, and experimentation: Triggering and accelerating sustainability transformations in a rapidly changing climate

Societies around the globe are faced with an urgent and intensifying challenge: how do we rapidly reduce our reliance on fossil fuels while simultaneously preparing communities to thrive amidst escalating impacts of climate change like floods, fires and extreme heat?

Two critical ingredients are required to generate breakthroughs: strategies that amplify and mobilize the incredible range of climate change solutions that we've already developed; and a deeper understanding of the interventions that deliver help us solve multiple sustainability challenges at the same time.

This talk will explore imaginative, transdisciplinary approaches to sustainability experimentation that uncover the deeper leverage points of change, and the crucial relationships among diverse stakeholders. Ultimately, our goal is to respond directly to the urgency of intersecting crises, while meaningfully engaging with emerging understandings of how individual and collective behaviour actually shift.

12:30LunchD.B. Weldon Library - Community Room

13:30 Concurrent Talks

Arts and Humanities Building

	AHB 1B04	AHB 1B06	AHB 2B02
13:30	Huy Nguyen	Madeline Patenall	Kiona Lo
13:50	Glen DSouza, Aakash Jayavel	Cristina Turcu	Cornelius K. A. Pienaah
14:10		Mehnaz Munir	Aaron Olajide

14:45 Panel Discussion

Arts and Humanities Building - AHB 1R40

Dr. James Voogt Professor, Geography and Environment, Western University

Dr. Genevieve Metson Associate Professor, Geography and Environment, Western University

Carol Dyck Doctoral student, Faculty of Law, Western University

Mary-Lee Townsend Manager, Sustainability & Compliance at Western's Office of Sustainability

15:45 Closing remarks

AHB 1R40



Dr. James Voogt

Dr. James Voogt is Professor in the Department of Geography and Environment. He is an urban climatologist who specializes in the thermal climates of cities. His research examines how remote sensors view the three dimensional surface temperature of cities, the use of remotely sensed surface temperatures in urban climate model evaluation, impacts of trees and green roofs on urban surface temperatures, and spatial variations in heat impacts on urban residents. He is an Editorial Board member for *Remote Sensing of Environment*, Advisory Panel member for *Environmental Research Letters*, past president of the International Association for Urban Climate, and the winner of the 2022 Luke Howard Award for outstanding contributions to the field of urban climatology.

Dr. Genevieve Metson

Dr. Genevieve Metson is an Associate Professor at Western University in London Ontario in the Department of Geography and Environment. She uses both social and natural science methods to investigate how we can better manage phosphorus, and other resources, more sustainably across scales, with a special focus on cities. Her research uses a systems perspective and views nutrients as a useful lens to examine how societies engage with the provision of food, clean water, and waste treatment. This broad lens has afforded her the privilege to work in the USA, Australia, Sweden, South Africa, Malawi, and Vietnam. She received her PhD from McGill University in Canada and qualified as a docent at Linköping University in Sweden.

Carol Dyck

Carol Dyck is originally from British Columbia and moved to London in 2007. She has a Masters of Arts in International Environmental Policy, a Masters of Law (LLM) in Environmental Law and a Masters of Science in Biodiversity, Conservation and Management. Carol is active in the London community. She previously sat on the Environmental and Ecological Planning Advisory Committee and the Trees and Forests Advisory Committee for the City of London, and was a board member for both the Thames Talbot Land Trust and the London Environmental Network, in addition to volunteering for other organizations. She is passionate about biodiversity conservation, particularly in marine and urban environments. Carol is currently a doctoral student in the Faculty of Law at Western University.

Mary-Lee Townsend

Mary-Lee Townsend is a Sustainability and Compliance Manager at Western University. She obtained her Bachelor's in Environmental Science from York University, and her career has included roles in waste management, environmental consulting, and environmental management. She was an Environmental Specialist with London Health Sciences for 5 years, a Sustainability Coordinator at Fanshawe College for 4 years, and began her current role at Western in 2020. Her passion and experience helps guide Western in becoming a more sustainable campus.

ROUNDTABLE DISCUSSION TOPICS

TABLE 1:

Anishinaabemowin Land-based Language Immersion Learning Implications on Wholistic Health

Renée Lemoyne

Laurentian University

Revitalizing Indigenous languages is crucial to the health and wellbeing of all people, plants, animals and Shkagamik-kwe. The land and language are inseparable. The way to heal Shkagamik-kwe (Mother Earth) is found in the acquisition of Anishinaabemowin. When learning the language, we learn how to care for the land. This is a reciprocal relationship in which the land then takes care of us. As a Shkaabewis to the course, I witnessed life changing evolutions amongst the participants and began working to help the Elders, Knowledge Holders and students of the course. To nourish this community along this language acquisition journey, a theoretical fishing metaphor was created. Fishing for a theoretical catch was carefully done through surveys and interviews created to express the changes felt through the course. The surveys showed the positive changes in the four aspects of wholistic health that participants underwent. The interviews gave a voice to the benefits felt by all, whether Indigenous or non. By combining these two data sets, it was clear that there were many positive, wholistic health benefits to learning Anishinaabemowin in this manner.

TABLE 2:

Solar Photovoltaics Integration With Heat Pumps And Thermal Batteries Shafquat Rana

Western University

The focus of this research is directed towards meeting the thermal energy needs of residential areas. It's worth noting that a significant portion of carbon emissions, approximately 80%, stems from the energy sector, with building energy consumption contributing to 17% of this figure. Within the residential sector, our particular emphasis lies in addressing the 13% of energy demand, with space heating and water heating constituting 63.6% and 17.2% of this demand, respectively. The residential sector presents a promising opportunity for decarbonization, as it represents a low-hanging fruit in our sustainability endeavors, where the collective impact of small individual actions can lead to substantial positive changes. The study is dedicated to integrating solar photovoltaics, heat pumps, and thermal batteries, aimed at providing sustainable solutions for fulfilling the thermal and electrical requirements of residential areas, while concurrently mitigating carbon emissions. The primary objective of this study is to advance the decarbonization of the residential sector by employing renewable energy resources in tandem with mechanical components, specifically heat pumps and thermal batteries. The aim is to create an environmentally responsible and cost-effective solution for supplying thermal energy in residential settings. This work's strength is rooted in using renewable resources, costefficiency, and reducing carbon footprint. Solar photovoltaic technology is harnessed to generate electricity, facilitating the operation of heat pumps, and meeting the energy needs of residential areas, presenting an eco-friendly and clean energy alternative. Including thermal batteries bolsters the reliability and sustainability of the entire system. By optimizing the system through a range of parameters, the research enhances its cost-effectiveness. Ultimately, the principal objective of this research is to significantly curtail the carbon footprint associated with the residential sector by leveraging renewable energy sources and efficiently optimizing their utilization.

TABLE 3:

Thrifting in a Green Economy: The Mobilization of Artificial Scarcity and Overconsumption Sophia Wright

Western University

Thifting has become common practice among millennials and GenZ over the past 10 years as a way to find cheap clothes while staying "green". More recently, given the economic downturn and the mobilization of the green economy, more people have been using thrifting as a form of being environmentally conscious. However, the impact of this "consciousness" has been at the cost of people of low SES, fat people, and ironically, the environment. Research has shown that there are many benefits to thrifting in reducing water and carbon emissions. There has also been research around how thrifting has had a narrative switch from being associated with poverty to associations with environmental consciousness. However, the co option of thrifting as a major trend has not been analyzed in risk to people of low SES, fat people, and the environment. Through a literature review, the research will present how thrifting is a multifaceted issue that is mobilized by the green economy, but in turn, hurts marginalized population's access to clothing. This means that while narratives have switched around thrifting, we need to also switch practices in how we consume green products. This means switching from an additive approach of buying and thrifting, to just consuming

less. There are implications of this being a neoliberal individualistic perspective; however, reducing the amount we consume impacts the structures that make us overconsume-leading to structural change.

TABLE 4:

Women's Adaptation Strategies to Climate Change and Food/Water Insecurity in Sub-Saharan Africa Victoria Ocran

Western University

Climate change has over the years become one of the biggest issues many countries face (United Nations, 2017). As climate change worsens, populations especially those with limited financial resources are greatly affected and are less able to adapt to its impacts (Paul, 2020; Luber & Prudent, 2009). According to Klein and Stefoff (2021), it is people or groups who are less likely to be equipped to respond to the impacts of climate change "who are hit first and worst" (Klein & Stefoff, 2021, p. 70). Following climate changes such as droughts and storms, countries mostly in the global south have greatly experienced its effects mostly resulting in food insecurity and access to safe water (Paul, 2020). Studies have shown that although men and women are both affected by the impact of climate change for several reasons; compared to men, women rarely have the same opportunities and less access to resources that prepare them for climate change (Alston, 2014; UN Women, 2016). Using a review of scholarly and practitioner literature published between 2010 and 2024, this study will seek to discuss some strategies that have been adopted by women to survive climate change consequences in Sub-Saharan Africa. It draws on these studies to know and understand women's agency in coping with food insecurity due to climate change.

ORAL PRESENTATION ABSTRACTS

Towards a Blueprint for Electricity Access in Sub-Sahara Africa Aaron Olajide

Western University

Emerging market countries not only face the need to transition to clean energy but also limited access to energy. 2023 marked the mid-point between the creation of SDG7 in 2015 and the 2030 objectives. While the world has reduced the number of people without electricity access globally by around 390 million since 2015 (mainly in Developing Asia), sub-Saharan Africa's progress is lagging despite the proliferation of technologies such as solar home systems. According to the "2023 Tracking SDG 7: The Energy Progress Report", sub-Saharan Africa accounts for 80% of the global population without access, with 600 million people in sub-Saharan Africa lacking electricity in 2023. The access deficit in the region stayed almost the same as in 2010. By 2030, the World Bank estimates that 90% of the global population without access to electricity will be concentrated in sub-Saharan Africa. According to the "2023 IEA-AfDB Financing Clean Energy in Africa: World Energy Outlook Special Report", providing universal electricity access to all Africans requires USD 22 billion annually from now to 2030. However, investments in access to electricity in sub-Saharan Africa are only around 15% of this total today. Mounting debt burdens at national electric utilities constrained financial resources available to expand access. This, along with supply chain disruptions, impede grid extension projects and solar power rollouts. Accordingly, additional efforts and measures must urgently be put in place to ensure that the poorest and hardest-to-reach people are not left behind. Having worked in the renewable energy industry in Africa, my presentation will explore the following pathways:

- Creating the playbook for developing bankable rural mini-grids
- Reduce regulatory complexity and uncertainties in francophone West African power sectors
- Enabling the (voluntary) carbon credit market in sub-Saharan Africa
- Capitalizing opportunities under the Nairobi Declaration on Climate Change
- Deepening financing for the adoption of large-scale battery energy storage systems ("BESS")

The Interplay of Climate Change Education and Mental Wellbeing in North America **Allison Pert**

Western University

With the advent of the climate crisis being an indissoluble force from contemporary life, the need for effective climate change education has become paramount. As awareness of this need has developed, concerns about the mental wellness of youth whose lives will inevitably be impacted by climate change have emerged. With the changing climate being integrated into curricula across North America, mental distress on account of environmental destruction education may be an unsuspecting consequence; one that worsens if not addressed and should not be overlooked. Utilizing a systematic approach, this paper addresses the association between mental distress and climate change education by examining various, mixed-methods literature about the wellbeing of students at various levels of education in North America. Key findings in this review include that youth may be susceptible to distressing emotions brought upon by traditional climate change information delivery both inside and outside the scope of the classroom. However, further results emphasize the importance of tailored, place-based education that address the unique challenges confronted by youth while mitigating negative mental health outcomes in the face of the climate crisis. The potential benefits of adapted climate change education on mental wellness underscores the importance of mindfully incorporating climate change into curricula, while focusing on community connectedness, empowerment, and building more sustainable, resilient societies. Further, this review provides a foundation for educators to collaborate within teaching networks and foster a holistic approach to climate change education delivery while addressing both the required learning outcomes and individual wellbeing.

Planting New Worlds: How Astrobiology and Decolonial Theory Can Reshape Sustainable Farming Ashar Mobeen Western University

This study advances a groundbreaking exploration of the intricate relationship between humans and the cosmos, specifically through the lens of food and agriculture. It investigates how elements essential for life, forged in the hearts of stars and shaped by stellar nucleosynthesis, form the backbone of our food systems. This project aims to construct an interdisciplinary framework that merges insights from environmental humanities, critical plant studies, astrobiology, and the visual arts to enrich our understanding of humanity's cosmic connections and the critical role food systems play in maintaining ecological and societal health. Central to this research is the application of a decolonial lens to challenge the prevailing Eurocentrism and whiteness that

characterize much of the environmental discourse. Drawing from my own South Asian heritage, this research foregrounds the experiences and wisdom of Global South communities, particularly those in Pakistan, to contribute to a more inclusive and diversified environmental discourse. By confronting colonial legacies that have fueled social injustices and environmental degradation, the research promotes a shift toward Indigenous food systems that are not only sustainable but also equitable and just. Through a mix of case studies, ongoing participatory research in Pakistani communities, and comprehensive data analysis, this dissertation offers unique insights, urging a reconsideration of our relationship with the cosmos and Earth itself. It seeks to inform and resonate with Canadian policymakers, including those in federal and provincial agricultural and environmental departments, Indigenous affairs offices, and committees on science, technology, and innovation, by advocating for food systems that operate within our planetary boundaries and championing social justice. This contribution is pivotal for crafting policies that not only address environmental challenges but also dismantle the colonial structures that underpin current global food systems.

Mainstream Eurocentric Veganism and Hunting in North America: Re-Imagining Ethical Consumerism through an Indigenous Lens Brooklyn Lanosky McMaster University

The concept of ethical consumerism has become increasingly popularized as an alleged means of working towards social and environmental justice, especially in light of a growing awareness around contemporary climate change. Emerging from this notion is a burgeoning shift towards plant-based diets, specifically, campaigns such as mainstream Eurocentric veganism. Though often understood as an empathetic, harmonious, movement, this normative pretense has perpetuated colonization and oppression, specifically of Indigenous peoples with regards to traditional hunting practices. This presentation will explore the paradox of ethical consumerism in relation to Indigenous populations. By comparing traditional Indigenous hunting practices and beliefs to those predominant amongst North American "sportsmen", this presentation helps to understand sources of polarization between hunters and supporters of the mainstream vegan movement. Ultimately, this presentation will explore how such polarization and discourse is impeding effective climate action (and justice), and how both groups should heed greater attention to Indigenous ways of knowing as a means to deradicalize their ideology and form a more holistic understanding of ethical consumerism.

Microbial Community Response to Experimental Warming in Boreal Peatlands **Cristina Turcu**

Western University

Boreal peatlands are essential in global carbon cycles and storage as waterlogged, anoxic, acidic, and low temperatures decrease rates of decomposition of organic substrates by microbial communities. Predicted effects of climate change may disproportionately affect boreal peatlands and could potentially alter carbon storage and decomposition processes such that peatlands become carbon sources. As microbial communities play a vital role in decomposition, changes to microbial community composition and biomass responds to these changes is essential. Experimentally warmed plots in boreal peatlands have previously shown shifts in plant and soil mesofauna towards more heterogeneous communities; however less is known about how microbes will respond. Thus, I am examining quantifiable differences in microbial community composition and biomass, specifically targeting bacteria, fungi, and protists in experimentally warmed plots compared to ambient plots. To accomplish this, I will be using metabarcode sequencing to measure community composition and investigating the use of quantitative PCR (qPCR) to measure operon copy number (16S, ITS2, 18S for bacteria, fungi, and protists, respectively) as a proxy for microbial biomass, and in doing so provide an indicator for changes in microbial dynamics in peatlands. By quantifying shifts in microbial community composition and biomass my research will characterize microbial responses to experimental warming and validate the use of qPCR as a measure of microbial biomass in peatlands. Overall, my work will contribute to microbial carbon cycling models under the pressures of ongoing climate change.

The Role of Village Savings and Loan Associations as a Climate Resilience Strategy in Financial Risk Management for Mitigating Food Insecurity in Ghana **Cornelius K. A. Pienaah** Western University

Due to climate change, smallholder farmers in semi-arid Northern Ghana face food insecurity and financial risk. In response, the Village Savings and Loan Associations (VSLAs) have emerged as a community-led microfinance model that offers an alternative to formal banking. VSLAs provide savings, loans, and other financial services to help smallholder farmers manage risks, invest in productive ventures, and foster mutual support. By pooling resources, VSLAs help smallholder farmers manage financial risks associated with climate-related shocks. VSLAs also provide training on sustainable farming practices to enhance farmers'

resilience to climate-related risks. However, it remains unclear how VSLAs can bridge financial inclusion and climate resilience strategies to address food insecurity. From a sustainable livelihood framework (SLF) perspective, we utilized data from a cross-sectional survey involving 517 smallholder farmers in the Upper West region of northern Ghana to investigate the relationship between VSLAs and food insecurity amidst climate resilience. Results from ordered logistic regression show that households with membership in VSLAs were less likely to experience severe food insecurity (OR = 0.437, P<0.01). In addition, households that reported good resilience (OR = 0.560, P<0.001), owned land (OR = 0.998, P<0.001), had higher wealth (including richer (OR = 0.398, P<0.001) and the richest (OR = 0.411 P<0.001)), were female-headed (OR = 0.559, P<0.01), and made financial decisions jointly (OR = 0.351, P<0.001) were less likely to experience severe food insecurity. Also, spending time accessing the market increases the risk of severe food insecurity (OR = 1.005 P<0.001). The study's findings shed light on the potential of VSLAs to address food insecurity in regions facing similar climatic conditions by promoting financial inclusion and climate resilience. However, policy interventions are required to support and scale VSLAs as a viable, sustainable development and food security strategy in vulnerable regions. By integrating financial risk management with climate adaptation strategies via VSLAs, there is a promising path toward building more resilient and food-secure communities in the face of mounting climatic challenges.

Development of Lignosulfonate-Based Phenolic Foams for Floral, Hydrophonic, and Environmental Remediation Applications

Glen DSouza

Western University

The production of bio-based foams has gained significant attention in recent years due to the increasing demand for sustainable and eco-friendly materials. Bio-based foams are produced from renewable resources such as biomass, making them more environmentally friendly than traditional petroleum-based foams. In terms of applications, bio-based foams have shown promise in various industries such as construction, automotive, and packaging. The main goal of this research is to investigate the potential of using lignosulfonate as a raw material for the synthesis of hydrophilic bio-based foam. The foams developed will thereafter be subjected to various characterization tests to determine their morphological structure, density, water absorption and retention capacities, open-cell content, and mechanical strength. Additionally, the applicability of the prepared BPF foams will be tested as floral foams, for hydroponic seed germination in a greenhouse, and for environmental remediation (such as phosphorus recovery and dye/heavy metals removal from wastewaters).

Modeling Travel Mode Choice Behavior Using the Random Forest Method **Hong Yao**

Queen's University

In recent years, concerns over high greenhouse gas (GHG) emissions in urban areas have significantly increased. The transportation sector is responsible for a considerable portion of these emissions, with statistics indicating it contributes approximately one quarter of all energy-related GHG emissions, making it the second-largest source of emissions worldwide. To address this issue, many cities advocate the use of public transportation and green travel modes to mitigate GHG emissions. With urban development and population growth making people's travel behaviors more complex, there is a pressing need for robust analytical tools and prediction models. These tools and models should not only provide insights into travel patterns but also predict future travel trends and support effective policymaking. Research in the field of machine learning has been exploring the use of random forest, a powerful method for constructing an ensemble of de-correlated decision trees. It decorrelates the decision trees in the ensemble through randomization, leading to improved forecasting and reduced variance when averaged over the trees. However, the application of random forest to travel model choice behavior remains among the less explored approaches in machine learning modeling. This study proposes a random forest model to analyze travel mode choices, aiming to investigate key features and examine the model's prediction capability. Demonstrated in the case of Toronto, Canada, the model leverages individual demographic, socio-economic, and built environment data from 2016 to identify key features fundamental for understanding people's travel behavior and aiding effective policymaking. Furthermore, the results show that the random forest method outperforms others in predicting travel mode choice with greater accuracy, highlighting its potential to uncover important insights into travel preferences and predictive capabilities.

Machine Learning and Statistical Techniques in Fingerprinting and Source Tracking of Microplastics Huy Nguyen

Toronto Metropolitan University

Regulatory interventions in mitigating microplastic pollution face significant obstacles due to the inherent challenges in accurately identifying sources, due to the variety of microplastics and microplastic sources in the environment. To enhance source tracking capabilities, our study introduces a sophisticated computational fingerprinting workflow. This workflow integrates non-targeted data gathered from three analytical techniques-thermal desorption gas chromatograph-mass spectrometer (TD-GC-MS) and high-performance liquid chromatography with quantitative time-of-flight mass spectrometry (HPLC-qToF-MS) and Inductively coupled plasma mass spectrometry (ICP-MS)-to discern unique chemical fingerprints based on additive compositions. To interpret this rich dataset, an ensemble of supervised machine learning (ML) algorithms was applied, including Random Forest (RF), Gradient Boosting machines (GBM), Support Vector Machine (SVM), and Penalized-Multinomial Logistic Regression (P-MLR). These algorithms were employed to classify and identify the sources of both storebought and environmental microplastics in environmental samples from five major plastic product categories: children's toys, construction materials, food contact materials, cigarette tips, and face masks. Using multiple Wilcoxon tests and p-value correction methods, a set of at least 200 tracer compounds was identified, capable of distinguishing between the selected product categories. Prior to ML methods, clustering analyses shown distinctive grouping of plastic product types with ICP-MS and HPLC-qTOF-MS datasets. Among the tested machine learning methods, RF and GBM showed the highest prediction accuracy, especially when trained with the composite dataset from ICP-MS and HPLC-qToF-MS. Our results underscore the potential of machine learning algorithms in advancing the science of microplastic source identification. The study further elucidates a robust methodology for classifier and feature selection, offering valuable insights for optimizing source tracking efforts based on additive compositional fingerprints. In summary, this research stands as a pioneering effort that fuses artificial intelligence with advanced analytical chemistry methods to provide an innovative approach for tackling the critical environmental challenge of microplastic pollution.

Assessing and Addressing Food Waste in University Dining: A Dual-Design Study at Brescia University College

Jessica Vader Brescia/Western University

This study at Brescia University College explored methods to reduce plate waste in a university restaurant. Utilizing two research designs, it first analyzed and categorized all plate waste, finding non-food waste predominant at breakfast (59.8%) and lunch (54.3%), while edible waste was highest at dinner (51.0%), with carbohydrates (54.5%) being the major contributor. and plant-based protein (3.1%) the least. These findings align with those of similar studies. The second design involved student participation in waste weighing and completing questionnaires. Results showed a median edible waste of 19.0 grams per participant, with fullness, poor taste, large portions and inability to take leftovers as the main reasons for waste. Willingness to buy imperfect products was high. 68% would purchase imperfect produce, 81% would purchase meals not meeting perfect visual standards, and 76% would purchase products close to the best-before date. Meal plan students had significantly higher levels of plate waste than non-meal plan students (p<0.001). Recommendations to reduce food waste include serving smaller portions, improving food taste, and offering storage solutions for leftovers.

Current and Best Practices for Scope3 Emissions Reductions in Higher Education Institutions – Procurement

Kiona Lo York University

Given the pressing need to reduce greenhouse gas (GHG) emissions and the limited information available concerning higher education institutions' (HEIs) approach to Scope 3 procurement emissions, this study investigates how HEIs measure and mitigate these emissions while identifying best practices. A review of literature, institutional websites and responses to a self-reporting sustainability performance framework was conducted along with a case study on York University. Results indicate a need to enhance HEIs' awareness of procurement emissions, with only half of the HEIs examining total procurement emissions. While Environmentally Extended Input-Output Analysis (EEIOA) emerges as the primary and recommended method for emissions estimation due to its resource efficiency, it lacks sensitivity to reduction strategies. Notably, HEIs predominately rely on sustainable product certifications to reduce procurement emissions falls within the broader context of sustainability, rather than recognizing them as hotspots of emissions requiring attention for climate change mitigation. A re-evaluation of their approach is needed, given the urgency of the climate crisis and the significance of procurement emissions. Future studies should address challenges related to data collection, standardization of the reporting framework and awareness of procurement emissions.

Beyond Oxygenation: The impact of aerator installation on the chemical and biological recovery of Frame Lake, Yellowknife Madeline Patenall Wilfrid Laurier University

The contamination of freshwater resources from nutrient and metal(loid) pollution is a leading cause of freshwater resource degradation, which is a global concern. Frame Lake, located in Yellowknife, Northwest Territories, provides an excellent case study for investigating nutrient and contaminant dynamics. A rehabilitation project is underway to install an aerator in Frame Lake, which injects oxygenated water into the deep region of the lake. There has been a paucity of studies on aeration and the chemical and biological recovery of lakes. Therefore, the specific objectives of this work are: 1) to investigate the impact of aeration on the cycling of arsenic and nutrients between sediments and the water column and 2) to assess how aeration influences the composition and abundance of the lower food web. This study will capitalize on the rare macroscale opportunity to study the influence of aeration on the water quality of a subarctic, seasonally anoxic lake by integrating geochemical and biological measurements across seasons before and after the aerator installation. Baseline data has been collected monthly to build a high-frequency, multi-season data set. The input of legacy arsenic and nutrients from sediments can limit lake rehabilitation for decades; thus, assessing the effectiveness and viability of aeration is essential for Frame Lake and other nutrient-enriched and arsenic-contaminated lakes. Since Frame Lake was historically a gathering place for subsistence and recreational activities, the rehabilitation of this lake is significant for the people of the region.

The Effects of Exposure to Air Pollution on obesity and obesity related anthropometric measures: A Systematic review and Meta-analysis

Mehnaz Munir

McMaster University

Given the pressing need to reduce greenhouse gas (GHG) emissions and the limited information available concerning higher The present study sought to determine the impact of ambient air pollutants on obesity and the most frequently used anthropometric measurements related to obesity. Methods: We searched the following databases: OVID Medline, Embase, PubMed, Web of Science, LILACS and grey literature before May 2023. Two independent reviewers assessed the eligibility of articles and extracted the data. A meta-analysis was conducted for all outcomes with two or more studies, and GRADE criteria were used to assess the certainty of evidence. Results: We analyzed 37 studies (26 cross-sectional and 11 prospective cohort), 19 from middleincome countries (China), and 18 from high-income countries. The meta-analysis revealed that a 10 µg/m3 increase in PM2.5 and a 10-ppb increase in NO2 were associated with an increase in body mass index (BMI) of 0.74 kg/m2 and 1.40 kg/m2 respectively. PM2.5 (per 10 µg/m3), NO2 (per 10 ppb), and SO2 (per 10 ppb) exposure were also associated with an increase odd of general obesity by 15%, 37%, and 9% respectively. Furthermore, PM2.5 (per 10 µg/m3), NO2, O3, and SO2 (per 10 ppb) were associated with increases in overweight prevalence by 22%, 29%, 12%, and 7%, while NO2 and SO2 (per 10 ppb) were associated with increases in overweight and obesity prevalence by 14% and 7%, respectively. Moreover, in prospective studies, an increase of 10 µg/m3 PM2.5 is linked to a 0.53 cm increase in waist circumference and a 0.85 kg increase in weight. This increase in PM2.5 (per 10 µg/m3) is also associated with an 8%, and 9% increase in the risk of obesity and overweight/obesity respectively. Conclusion: PM2.5 and NO2 were positively associated with increased risks of being overweight or obese, as well as a higher level of visceral fat than other pollutants.