CONFERENCE ABSTRACT BOOK OPEN ACCESS

EnviroUSC x GreenSort Sustainability Case Competition 2025

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Abstract
The 2025 Sustainability Case Competition, the first research-focused case competition organized by EnviroUSC and GreenSort at Western University, provided undergraduate students with an engaging platform to develop and showcase critical research, analysis, and problem-solving skills in sustainability. Teams of one to five students submitted innovative research proposals focused on Waste Management and Reduction on Western University's campus, addressing both practical and systemic sustainability challenges. Over the course of the competition, held from November 22 to 23, 2025, all participating teams presented their sustainability solutions, highlighting creative strategies to reduce waste, optimize resource use, and implement feasible environmental improvements. Submissions incorporated novel approaches, including modifications to existing systems and the introduction of innovative interventions designed to overcome current limitations in campus waste management practices. The competition culminated in a case competition day where teams shared their findings and solutions with a panel of PhD and Master's-level judges. The top 50% of submissions are featured in this conference abstract booklet, with awards presented to the two highest-scoring teams.

Keywords: environment; waste management; Western University; waste sorting; undergraduate research; enviroUSC; greensort Western

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Conference Abstracts
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Top 2 Oral Presentations

A Three-Pronged Approach to Optimizing Waste Diversion at Western University: A Research Study

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Waste accumulation is a pressing issue worldwide. As landfills fill, the resulting decrease in soil, water and air quality negatively impacts both ecosystems and human populations. Ineffective waste management worsens this issue, as more recyclable and compostable materials enter landfills. The University of Western Ontario currently utilizes the City of London's W12A landfill. Western has worked to divert waste away from this landfill through increased signage at waste stations, the addition of green bins and the introduction of the Choose2Reuse reusable container initiative. In 2024, 39% of Western's waste was diverted from the landfill. A three-pronged initiative can be utilized to further optimize this diversion. First, AI algorithms can be used to optimize the locations of waste stations. Decreasing user distance and increasing accessibility increases waste sorting success. Secondly, single-use plastics at on-campus eateries can be de-incentivized by implementing a $0.50 fee for plastic utensils, and the Choose2Reuse program can be expanded to include utensils. Finally, a Student Sustainability Leaders program could be introduced. Students who voluntarily complete a waste sorting module would become Student Sustainability Leaders, tasked with educating the student body about proper waste management. This could increase correct waste sorting and sustainable practices within Western's community. Student Leaders could be recruited through partnerships with the 33 sustainability-related student groups at Western.

Overconsumption of Fast Fashion by Consumers Aged 18-30 (Young Adults) and Contribution to Increased Textile Waste: A Research Study

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Fast fashion overconsumption among young adults aged 18–30, contextually Western University's community, critically accelerates textile waste generation and environmental contamination. Due to financial circumstances, social media influence, and convenience, this group is drawn to inexpensive, trend-driven purchases encouraging compulsive buying habits and a lack of environmental awareness. Synthetic fibres release microplastics into waterway systems, causing chemical and biological harm to ecosystems and human health. Despite the existence of biodegradable textile innovations, improper disposal continues to occur worldwide and adoption is still restricted. This project integrates behavioural science, environmental education, and community-driven reuse methodologies to reduce excessive apparel waste across campus. The initiative includes waste-sorting literacy, composting guidance for biodegradable textiles, and workshops on efficient laundering practices to curb everyday pollution. Behaviour-change seminars addressing impulse shopping and clothing maintenance may regress overconsumption. Clothing exchanges, thrifting pop-ups, donation drive-downs, and centralized secondhand resource access are made possible by a dynamic panel that unites Western's fashion and sustainability clubs, residences, and local small businesses. Increased waste diversion, decreased landfill pressure, heightened disposable income, and improved local circular economies are some of the economic and environmental advantages. Scalability throughout academic terms is ensured by a structured year-long implementation plan. This project offers a workable, community-integrated way to reduce textile waste and change consumption patterns at Western by combining multidisciplinary insights from biology, chemistry, psychology, and the social sciences.

Remaining Top 50% Oral Presentations (Unranked)

Western Circularity Blueprint: A Research Study

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Western University generates significant waste across its dining halls, dormitories, and academic buildings, facing challenges including inconsistent waste sorting, limited access to composting, and a reliance on single-use plastics. Although existing recycling programs are in place, the university struggles with implementing innovative, scalable solutions to make campus waste-free. We report on research that explores Western University's ongoing waste management challenges. We conducted feedback sessions with the Western community and found that there was a strong desire for clear, ambitious goals from 2024-2025 with surveys, focus groups, and town halls. In response, we designed a scalable, multidisciplinary solution to create a

zero-waste campus. The Western Circularity Blueprint strategy integrates three interconnected components. First, enhanced waste diversion systems, defined as processes that redirect recyclable or compostable materials away from landfills, would be implemented through AI-assisted sorting hubs to replace old bins. Second, incentive-based programs would promote reusable alternatives by offering on-campus discounts, dining hall credits, and bookstore coupons for individuals who choose to participate in sustainability efforts. Third, long-term behaviour-change initiatives, including a zero-waste orientation module, partnerships with the London Compost Council and local waste startups, and an annual zero-waste week. This would foster a campus culture of sustainability and bring the Western community and the greater London community together. Our strategy includes a phased implementation plan, measuring key performance indicators (KPIs), and managing risks. The projected outcomes include reduced waste going to landfills, community partnerships, and strengthened participation from community members in sustainability. Western University will achieve net-zero emissions for campus operations by 2050 and at least a 45 per cent reduction (over 2005) by 2030. This will establish Western University as a leader in sustainability on campuses worldwide.

Purple Pantry: A Campus Integrated Circular Economy Model for Food Waste Reduction and Food Security

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Food waste is a major but often overlooked contributor to greenhouse gas (GHG) emissions, with decomposing organics generating significant methane in landfill environments. At the University of Western Ontario, surplus food from campus eateries are routinely discarded at the end of operational hours despite being safe and high-quality. To address this dual challenge of avoidable waste and food insecurity among Western communities, we developed the Purple Pantry, a campus-wide food redistribution app designed to advance Western's zero-waste goals while supporting community wellbeing. Using research on the climate impacts of food waste and emissions models, combined with Western's food waste production, we have concluded that diverting edible surplus through Purple Pantry can reduce Western's GHG footprint compared with diversion to engineered landfills. Our economic analysis mirrors the 'win-win-win' circular framework: Providers recover revenue, students access affordable meals, and Western reduces its carbon footprint. Social innovation strategies are leveraged to destigmatize leftovers and secure long-term commitment for the student consumers. Seed funding from the Western Sustainability Fund enables a controlled low-capital pilot for an iterative, campus scalable waste reduction model. To ensure safety and compliance, Purple Pantry incorporates standardized protocols including HACCP-aligned vendor requirements. We differentiate via Western OneCard integration for accessibility, data-driven negative feedback mechanism to curb root overproduction, and opportunity for auditable metrics for university reporting. Purple Pantry leverages digital infrastructure, existing food-safety systems, and circular economy principles to create a high-impact, low-barrier intervention. Transforming surplus meals into accessible resources positions Western as a model for climate-aligned campus food systems.

Conflicts of Interest

The author(s) declare that they have no conflict of interests

Authors' Contributions

SK: co-founded the 1st annual sustainability case competition of EnviroUSC x GreenSort Western, served as a planning committee for the conference, drafted the conference abstract booklet, and gave final approval of the version to be published.
KD: co-founded the 1st annual sustainability case competition of EnviroUSC x GreenSort Western, served as a planning committee for the conference, assisted authors with their abstract submissions, and gave final approval of the version to be published.

Acknowledgements

The 2025 EnviroUSC x GreenSort Sustainability Case Competition Planning Committee would like to recognize the PhD and Master's of Science students: Dharma Raj Dhakal, Javier Ponce De León, and Liam Richard Bogucki for offering their time and expertise as judges. We would also like to recognize Vice President of Communications Heather Stanley; External Communications Coordinator Hailey Elizabeth Simpson; Marketing Coordinator Arya Agrawal; Vice President of Events Siyeon You; Event Coordinators Raghav Nayudu and Glenys Tran; Vice President of Finance Irvin Wong; and Vice President of Research Kobby Paintsil for their contributions and general support.

Funding

The 2025 EnviroUSC x Greensort Case Competition was funded by the EnviroUSC budget.

Article Information
Managing Editor: Jeremy Y. Ng
Article Dates: Received Nov 27 25; Published Jan 23 26

Citation
Please cite this article as follows:
Kagan S, Dhanoa K. EnviroUSC x GreenSort Sustainability Case Competition 2025.
URNCST Journal. 2026 Jan 23: 10(1). https://urncst.com/index.php/urncst/article/view/1014
DOI Link: https://doi.org/10.26685/urncst.1014

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