



SUBJECT	Annual Sustainability Report FY 2019-20
SUBMITTED TO	Sustainability & Climate Action Committee
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SESSION CLASSIFICATION	Recommended session criteria from Board Meetings Policy: OPEN
REQUEST	For information only - No action requested
LEAD EXECUTIVES	Gail Murphy, Vice-President, Research and Innovation Robin Ciceri, Vice-President, External Relations
SUPPORTED BY	Andrew Szeri, Provost and Vice-President Academic Ananya Mukherjee-Reed, Provost and Vice-Principal Academic and Research Lesley Cormack, Deputy Vice Chancellor & Principal, UBC Okanagan Ainsley Carry, Vice-President, Students Peter Smailes, Vice-President, Finance & Operation Michael White, Associate Vice-President, Campus and Community Planning John Metras, Associate Vice-President, Facilities Linda Nowlan, Senior Director, UBC Sustainability Initiative John Madden, Director, Sustainability and Engineering Campus & Community Planning

PRIOR SUBMISSIONS

The Annual Sustainability Report is provided to the Board every winter; the last report was on [December 5, 2019](#).

This year’s Annual Sustainability Report, for UBC’s fiscal year 2019-20, shows that UBC continued to demonstrate bold sustainability leadership – particularly in relation to climate action. UBC retained its #1 ranking in the world by the Times Higher Education Impact Ranking under the United Nations Sustainable Development Goal 13 – Climate Action, and added a new global rank of #1 for SDG 14 – Life Below Water. Acknowledging the need for accelerated climate action, UBC declared a Climate Emergency, initiated updated Climate Action Plans for both campuses, and supported a deep community engagement process led by the Climate Emergency Task Force. However, UBC Vancouver’s GHG emissions increased by 10% over the previous fiscal year as a result of interruptions to natural gas supply due to the Enbridge pipeline explosion in fall 2018 which impacted supply into 2019 resulting in greater use of diesel and gas with a high emissions footprint, a colder than average winter, and closure of the biomass energy plant for maintenance. These factors increased the use of diesel to heat buildings. This setback will be addressed by expansion of the biomass plant and reduced dependency on natural gas, and UBC remains on course to meet long-term GHG reduction targets.

This year faculty and students continued to aggressively explore sustainability issues in the classroom, lab, and communities, while the amplification of programs such as the UBC Sustainability Scholars, SEEDS, and Campus as a Living Lab intensified efforts on climate action and many other areas of sustainability. This continued leadership will further strengthen partnerships with members of the University Climate Change Coalition (UC3), the U7 Alliance (an international alliance of university presidents), and organizations across our region.

PART ONE: 2019-20 HIGHLIGHTS

I. Teaching, Learning and Research

- Sustainability Fellowship Program celebrates 10 years. Since 2010, 68 fellowships have been awarded to 42 faculty members to support innovations and collaborations in sustainability teaching and learning.
- Four new Interdisciplinary Education Grants supported interdisciplinary courses on gender, health and wicked problems, climate theatre, and perspectives on the Anthropocene and link two existing sustainability courses using collaborative technology.
- UBCO developed a new Bachelor of Sustainability degree – a four-year interdisciplinary program blending practice, theory, and research methodology (pending approval by Ministry of Advanced Ed).
- UBC Sustainability Scholar applied research project led to City of Vancouver adopting recommendations to develop an anti-Black racism strategy in Vancouver.
- SEEDS Sustainability Program launched ‘Big 5’ research priority areas: 1. Accelerate Climate Action; 2. Enable the Great Food Transformation; 3. Maintain and Enhance Urban Biodiversity; 4. Create Circular & Regenerative Economies; 5. Foster Wellbeing and Inclusive, Place-Based and Resilient Communities; and launched two new collaborative Interdisciplinary initiatives: Climate Crisis in Urban Biodiversity (CCUB), and the Food Security Initiative (FSI).
- UBC joined the Emerald Corridor Collaboratory – a regional network of four city-university partnerships that aim to develop collaborative solutions for sustainable and resilient cities.
- UBCO researchers revealed significant new details about the carbon cycle associated with irrigation using lake water, with implications for farming and related CO₂ emissions.

II. Operations and Infrastructure

- UBC Climate Emergency Declaration mobilized staff to partner with student-led Climate Hub and deliver large-scale offline and online campus-wide consultations across UBCV and UBCO.
- New Climate Action Planning 2030 processes commenced simultaneously in Vancouver and the Okanagan to identify pathways to accelerate greenhouse gas reductions towards net zero emissions.
- Green Building Action Plan launched to ensure UBC institutional buildings are designed to adapt to future climate impacts.
- The ‘Let’s Choose to Reuse’ campaign helped reduce the use of 1.7M single-use coffee cups/year at UBCV. Following a 25 cent cup fee and campaign, 68% said they were more likely to carry their own travel mug.
- The Skeena Residence at UBCO was awarded CleanBC’s Better Buildings Net-Zero Energy-Ready Challenge’s Construction and Design Incentive Award; includes “living lab” research area for UBCO faculty.
- Green Labs Personal Protective Equipment Recycling Pilot tested recycling nitrile gloves in order to help address an estimated 7 million gloves (estimated 28 tonnes of waste) sent to landfills each year.
- UBCO completed phase 2 Low Carbon Strategy identifying a preferred District Energy Expansion Option.

III. Community

- UBCV assumed executive leadership of the International Sustainable Campus Network (ISCN).
- UBCO, in partnership with the City of Kelowna, won national 2019 Campus Commuter Challenge by encouraging sustainable modes of transportation – avoiding the release of 7,120 kg of carbon emissions.
- Community capacity building initiatives at UBCV included 300+ attendees to the first ever “Tough Toddler” event, 39 UTown@UBC Community Grants, and supported student-led music and art projects.

- New RapidBus from UBC to Joyce-Collingwood Station began operating; UBC President and Vice-Chancellor and Mayor of Vancouver continued joint advocacy efforts for a SkyTrain extension to UBC.
- UBCV added 137 new childcare spaces to our Point Grey campus, raising the total number to 951.
- Completed new Exchange Residence and Bus Exchange at UBCV to combine transit and student living in a mixed-use environment. The project added 651 new student beds raising the campus total to 12,425; targets LEED gold certification; and supports arrival for 66,000 people/day.
- UBC Wellbeing launched *Wellbeing Strategic Framework* across both campuses – connecting long-term, university-wide aspirations with actions and targets that promote wellbeing across six priority areas.

PART TWO: 2020-21 STRATEGIC PRIORITIES

Overall

- Advance recommendations of Climate Emergency Task Force across Vancouver and Okanagan campuses
- Support the amplification of the four sustainability priority areas for the year: Climate Action; Sustainable Cities and Communities; Responsible Consumption and Production; and Good Health and Wellbeing.
- Climate Action Planning 2030: adoption and implementation of high impact actions across both UBCV and UBCO campuses, increasing scope beyond operational emissions to include food and transportation.
- Continue integration of climate action priorities with parallel initiatives such as the Indigenous Strategic Plan, Climate Action Plan 2030, International Strategy, Wellbeing Strategic Framework, Inclusion Action Plan, etc.
- Deliver UC3 Strategic Plan under President Ono's leadership and continue progress on U7 Alliance priority actions.
- Implement an institution-wide Sustainability Communications & Engagement Plan.

I. Teaching, Learning and Research

- Support 40 additional students over the previous year to work on applied climate action research projects with off campus NGOs through the Sustainability Scholars program with funding provided to accelerate climate action activities.
- Deliver three new teaching resources to support climate education: Climate Teaching Connector (embeds climate change teaching into broader courses), Climate Education Grants to integrate climate change and climate justice content into existing courses and a faculty-curated list of UBCV climate change courses.
- Pilot the co-curricular Stamina for Sustainability program that aims to deepen participants' analytical skills, emotional intelligence, and individual resilience.
- Launch a renewed and impact-oriented Campus as a Living Lab initiative, including expansion to the UBC Okanagan Campus, greater engagement off-campus, and pilot a Living Lab Funding Competition to support new innovative and collaborative projects in Climate Action, Sustainable Cities and Communities, Good Health and Wellbeing, and Responsible Consumption and Production.
- Under the Rogers 5G partnership, a second round of interdisciplinary projects will support 5G research in the areas of transportation, biodiversity, and buildings and infrastructure, in collaboration with UBC's Urban Data Laboratory.
- The new BioProducts Institute (BPI) developed the world's first biodegradable N95 mask to reduce the burden of discarded personal protective equipment on our environment.

II. Operations and Infrastructure

- Launch Neighbourhood Low Carbon Energy Strategy Process for Vancouver Campus.
- Continue to implement the UBC Green Building Action Plan with a focus on addressing greenhouse gas emissions reductions and revise the Residential Environmental Assessment Program (REAP) to align with UBC's climate and sustainability priorities.
- Develop UBC Okanagan Transportation Plan to provide transportation targets and supportive policies/actions to reduce GHG emissions, among multiple objectives.
- UBCO Low Carbon Energy Strategy implementation to support energy supply decisions, target setting and GHG reductions, complemented by the Strategic Energy Management Plan.
- Launch of the four Sustainability Focus Areas and establishing Working Groups to scope out areas for advancement.

III. Community

- Continue to implement child care expansion plan to grow child care spaces on campus in multiple locations, and implement UBC Housing Action Plan with a new non-market development targeting Passive House certification, including 110 faculty/staff rental residential units in Wesbrook Place (Lot BCR 8 - Evolve).
- Embark on a new community building identity and website to better serve our community and to emphasize growing areas of work including capacity building and place-making.
- Strengthen program offerings in order to better support equity, diversity and inclusion, particularly through partnerships, capacity building and place-making projects.

SUPPLEMENTAL MATERIALS (optional reading for Governors)

1. 2019-2020 UBC Annual Sustainability Report including performance data

PRESENTATIONS

1. ASR Presentation

ANNUAL SUSTAINABILITY REPORT

19/20 Performance and Next Steps

LINDA NOWLAN, MICHAEL WHITE, ROB EINARSON, JOHN METRAS,
JOHN MADDEN



AGENDA

- **Overview** | Linda Nowlan
- **Teaching, learning, & research** | Linda Nowlan, John Metras
- **Operations** | John Madden, Rob Einarson, John Metras
- **Community development** | Michael White and Rob Einarson
- **21/22 priorities & discussion** | Michael White, All



OVERVIEW

- **UBC Climate Emergency Declaration** accelerated actions across all areas of the institution including academic, fiscal (divestment), and operational
- **UBC recognized as #1 university in the world** for UNSDG #13 Climate Action and #14 Life Below Water according to Times Higher Ed. University Impact Rankings
- **Climate Emergency Task Force** recommendations advanced where possible to further accelerate action, aligning with new Climate Action Plans for both campuses
- **Amplification of UBC Sustainability Scholars, SEEDS, and Campus as a Living Lab** programs supported intensified efforts by faculty and student researchers
- **Leadership efforts strengthened regional and international partnerships**, including UC3, the U7 Alliance, and multiple organizations across our region



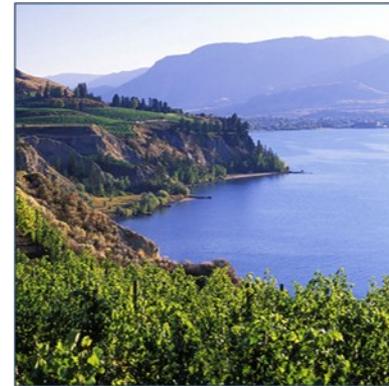
TEACHING, LEARNING, AND STUDENT ENGAGEMENT

- **UBC Sustainability Scholars** program added 40 new climate-related research positions
- **SEEDS** program launched ‘Big 5’ research priority areas, including “Accelerate Climate Action”
- **Interdisciplinary Education Grants & Fellowships** support new climate-related curriculum development
- **Student leadership** on climate action and divestment by UBC350, Climate Hub, AMS, supported by staff



RESEARCH

- **BioProducts Institute** developed the world's first biodegradable N95 mask to reduce PPE waste
- **Emerald Corridor Collaboratory** saw UBC partner with City of Vancouver to combat urban challenges such as climate change, rapid growth, affordability and inequality
- **Embodied Carbon Pilot** by the Urban Innovation Research group is working on life cycle assessments (LCAs) to estimate embodied carbon during building life cycle
- **CO₂ release from Lake Okanagan water** studied by researchers to understand the balance of CO₂ release from lake water during irrigation vs. CO₂ drawdown via crop production



CAMPUS AS A LIVING LAB

UBC Vancouver: evolving the CLL Initiative to align with UBC strategic focus areas, better engage academic faculty, promote more impactful projects and create a sustainable and equitable campus.

- Reorganized Steering Committee started meeting in December 2019
- UBC Sustainability Initiative taking on program management/facilitator role
- Expanding faculty engagement for better participation from social sciences, humanities, arts and health disciplines
- Developing more interdisciplinary collaboration and strategic partnerships on and off campus
- Enhancing knowledge exchange and communications of CLL activities and learning
- \$200K pilot competitive call-for-proposal; fund 3-6 appl. research projects in 2021

UBC Okanagan: exploring the potential for replicating or expanding CLL to the Kelowna campus.



Brock Commons Tallwood House: CLL projects advance climate action on-campus and influence policy and practices off-campus.

BIOENERGY FACILITY EXPANSION

- BRDF is currently being expanded as a primary initiative to help UBC to advance towards its Climate Action Plan 2020 target of 67% GHG emission reduction below 2007 levels.
- The expansion is targeted for completion in April 2021 and will triple capacity
- The expanded facility will produce up to 70 per cent of UBC Vancouver campus thermal energy using clean, locally-sourced wood waste
- This will further diminish UBC's reliance on fossil fuels and lead to the reduction of an additional 13,000 to 15,000 tonnes of carbon dioxide (tCO₂) annually
- Includes new heat recovery system to increase the efficiency of the facility and further reduce the university's reliance on fossil fuel heating systems
- Funded in part through \$8.6 million in total contributions from the Federal Low Carbon Economy Fund
- The BRDF is a signature Campus as a Living Laboratory project, integrating UBC's core academic mandate of research and teaching with our district infrastructure, all within a facility that is a showcase for cross-laminated-timber products made in BC
- A Canada Foundation for Innovation (CFI) "Biorefinery" research project is also being integrated into the BRDF expansion as a Campus as a Living project



Bioenergy Facility: renewable energy sources for academic district energy system and campus electrical grid.

CLIMATE EMERGENCY & CLIMATE ACTION PLANNING



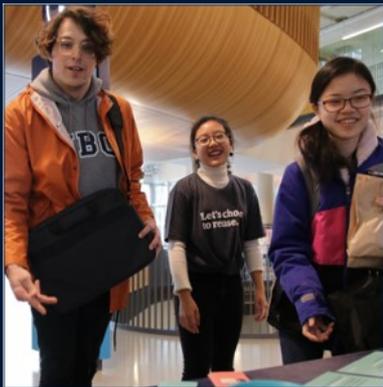
- **Climate Emergency Engagement** of staff and students across UBCV and UBCO
- **Climate Emergency Task Force** formed to advance UBC Climate Emergency commitments – informed by extensive community consultation
- **GHG emissions reduced by 28%** since 2007 (Vancouver) and **33%** since 2013 (Okanagan). BRDF expansion expected to be complete by spring '21.



- **Climate Action Planning**, both campuses are currently planning for even more aggressive reductions in greenhouse gas (GHG) reductions by 2030
- **UBCO completed phase 2 Low Carbon Strategy** identifying a preferred District Energy Expansion Option



WATER, ZERO WASTE, GREEN BUILDINGS



- **Stormwater management** designs & monitoring guided by UBC Integrated Stormwater Management Plan
- **UBCO integrated Rainwater Management Plan** to include Low Impact Development (LID) facilities
- **Water use intensity per student reduced** by 70% since 2000 (Vancouver) and 10% since 2013 (Okanagan)
- **Zero Waste Food Ware Strategy launched** in support of Zero Waste Action Plan
- **Annual waste disposed per student reduced** by 26% (Vancouver) and 35% (Okanagan) since 2010
- **Green Building Action Plan** continues to implement Climate Ready Building Requirements and updates to REAP



COMMUNITY

- **Transportation.** New RapidBus service, SkyTrain advocacy. **Sustainable transportation** to UBCV campus primarily made by **transit (54%)** while at UBCO it is **23% by transit and 19% by walking and cycling.**
- **Housing and Amenities.** Exchange Residence Complete. UBC now provides **686 faculty and staff rental units, 987 child care spaces** and has increased student residences to **14,101 student beds.**
- **UBC Wellbeing** launched *Wellbeing Strategic Framework* across both campuses; 46 new commitments to wellbeing made in President's Leadership Forum.
- **UBC Community Programs** aimed to nurture inclusive, connected and vibrant community; 39 community grants awarded.



21/22 PRIORITIES AND DISCUSSION

- **Continue to support the Climate Emergency** process moving forward, including accelerating actions underway, integrating actions with parallel UBC initiatives, identifying new opportunities to make change
- **Strengthen community programs** to better support equity, diversity and inclusion
- **Review Sustainability Focus Areas initial assessments**
- **Deliver three new teaching resources** to support climate education, including Climate Teaching Connector, Climate Education Grants, faculty curated course-list
- **Renew Campus as a Living Lab initiative**, expand to UBCO
- **Launch Neighbourhood Low Carbon Energy Strategy Process**, continue with **UBC Green Building Action Plan**
- **Develop UBC Okanagan Transportation Plan**
- **Complete UBCO Low Carbon Energy Strategy**, identify funding and implement timeline
- **Continue to implement Child Care Expansion Plan** and UBC Housing Action Plan
- **Support President's Leadership** of University Climate Change Coalition (UC3) and U7+





THE UNIVERSITY OF BRITISH COLUMBIA





ANNUAL SUSTAINABILITY REPORT

2019 - 2020



THE UNIVERSITY OF BRITISH COLUMBIA

sustainability

2019/20 FAST FACTS

VANCOUVER

28% 
reduction in absolute GHG
emissions since 2007

16% 
increase in faculty and
staff housing since 2015

50% 
reduction in absolute
water use since 2000

66% 
increase in childcare
spaces since 2015

677 
sustainability-related
courses

56% 
of trips by sustainable
modes of transportation

393 
faculty researching
sustainability-related
topics

1,400 
attendees at Sustainability
Ambassador events

OKANAGAN

33% 
reduction in absolute GHG
emissions since 2013

10% 
reduction in water use
intensity per student
since 2013

52% 
reduction in GHG emissions
per student since 2007

104 
sustainability-related
courses

MILESTONES

1990

1990

Tailloires declaration signed. Globally commits to sustainability.

1996

C.K. Choi Building opens, setting new green building benchmarks worldwide.

Dr. William Rees and graduate student Mathis Wackernagel develop ecological footprint concept.

1997

*Sustainable Development Policy adopted.

1998

*Campus Sustainability Office opened.

2000

2001

ECOTREK (2001-2008), the largest energy and water retrofit program at a Canadian university launched.

2003

U-Pass program pioneered, quadrupling transit ridership since 1997.

2006

*Comprehensive campus-wide sustainability strategy published.

2007

Kyoto Protocol greenhouse gas (GHG) reduction targets met five years early.

Dr. John Robinson shares Nobel Peace Prize as one of lead authors of the Intergovernmental Panel for Climate Change report.

2009

Sustainability Academic Strategy developed.

Sustainability integrated as a core pillar of UBC's strategic plan.

2010+

2010

*Bold targets set to reduce GHG emissions. Invests to meet climate change goals.

Okanagan Sustainability Office established.

UBC Sustainability Initiative (USI) established to integrate operational and academic sustainability.

MOU signed with City of Vancouver

2011

*Gold rating in STARS, a university sustainability rating system, earned.

*Designation as Fair Trade Campus earned.

2014

*20-year Sustainability Strategy to advance regenerative sustainability released.

2015

MOU signed with Metro Vancouver

Second Gold rating in STARS earned.

2016

34% reduction in GHG emissions from 2007 levels achieved at Vancouver campus.

33% reduction in GHG emissions from 2013 levels achieved at Okanagan campus.

2019/20

Ranked #1 for taking urgent action to combat climate change and its impacts (Times Higher Education, UNSDG #13)

2020

Ranked #1 for research and education to support life below water (Times Higher Education, UNSDG #14)

*First university in Canada





This year marks a decade of the UBC Sustainability Initiative. Ten years of connecting, sharing knowledge, and working in partnership to advance sustainability Teaching, Learning, Research, Operations and Infrastructure, and Community Development. But as we face multiple global crises related to health, climate, biodiversity, and social justice, we recognize how much more there is to do.

UBC was an early champion of sustainability. We're proud to reflect on 10 years of plans, policies, programs, and projects that have supported over \$300,000 in curriculum development grants, 349 Sustainability Scholars, over 250 Sustainability Coordinators, 135 Sustainability Ambassadors, and more than two thousand SEEDS research reports. At the same time, we have cut GHG emissions by 28% at our Vancouver campus, reduced water use per student by 10% in the Okanagan, added thousands of new student housing beds, increased childcare spaces by over 60%, added over 100 new LEED Gold certified buildings, and launched a Wellbeing Strategic Framework across both campuses.

Before the coronavirus pandemic struck, momentum was building for 2020 to stand tall as a bold year of climate action. Cities across the world including Ottawa, London, Los Angeles and Vancouver – where over 100,000 people went on Climate Strike – declared a climate emergency and pledged to urgently reduce emissions. We're still hopeful. For while the impact of COVID-19 is still unfolding, we've already witnessed how societies under threat are capable of making powerful and rapid changes. At UBC, our response included declaring a Climate Emergency and forming a Climate Emergency Taskforce to accelerate our actions – informed by extensive community consultation. On campus, work began on aggressive new Climate Action Plans for our Vancouver and Okanagan operations.

Beyond campus, President Ono assumed leadership of the University Climate Change Coalition (UC3), a network of 22 North American research universities working together to accelerate local and regional climate action. And in a move with global repercussions, student-led climate action group UBC350 and others continued to advocate for divestment from fossil fuel companies – resulting in the UBC Board's unanimous decision to approve in principle full divestment of remaining university funds – approximately \$1.71 billion.

UBC will continue to explore the UN Sustainable Development Goals alongside other relevant frameworks to organize and report on our activities. This year we retained our #1 position in the world under the United Nations Sustainable Development Goal 13 – Climate Action, and added a new global rank of #1 for SDG 14 – Life Below Water (Times Higher Education Impact Rankings). A new section of this report demonstrates the scale, diversity and impact of UBC research, projects, programs, plans, and policies related to all 17 SDGs, as well as our efforts within four focus areas.

UBC's imprint today is evident on cutting edge issues ranging from World Trade Organization talks to end harmful fisheries subsidies, to building Pollinator Pop-up Parks where bees can thrive, and everything in between. It's a position to be proud of. And a place to build from in order for UBC to lead globally and locally in sustainability and wellbeing across our campuses and communities.

Linda Nowlan

Senior Director, UBC Sustainability Initiative

Michael White

Associate Vice-President, Campus + Community Planning

Rob Einarson

Associate Vice-President, Finance & Operations (UBCO)

ABOUT UBC

The University of British Columbia is a global centre for research and teaching, consistently ranking among the 40 best globally, and among the top 20 public universities in the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. At UBC, bold thinking is given a place to develop into ideas that can change the world.

UBC recognizes that the UBC Point Grey campus is situated on the traditional, ancestral, and unceded territory of the Musqueam (xʷməθkʷəy̓əm) people and that the Okanagan campus is situated on the territory of the Syilx Okanagan Nation.

6	TEACHING, LEARNING AND RESEARCH
17	OPERATIONS AND INFRASTRUCTURE
28	COMMUNITY
34	THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS



Teaching, Learning and Research

Across UBC, faculty and students are teaching, learning and exploring sustainability through hundreds of courses, programs and research projects. We are committed to fostering the knowledge, skills and experience of students in order for them to serve as agents of change, community leaders, and responsible global citizens. UBC's ambitious goals are for all students to have access to sustainability learning alongside their chosen degree program; to create diverse learning and co-curricular engagement opportunities for students; and to be global leaders in applied research on sustainable behaviour, infrastructure, and communities.

TEACHING AND LEARNING

Each year, thousands of students learn about issues like the climate emergency, biodiversity, food systems, racial equity, social justice and more through courses and programs offered by diverse faculties and a variety of disciplines. To encourage students to explore sustainability, we curate and promote UBC's wide range of sustainability learning opportunities. We also support teaching and curriculum innovation through interdisciplinary education grants and faculty fellowships.

Sustainability Fellowship Program celebrates 10 Years

The program brings faculty together from different disciplines to learn from each other, collaborate on new curriculum projects, and transform sustainability teaching and learning at UBC. Since 2010, 68 fellowships have been awarded to 42 faculty members from 8 Faculties and 25 Departments, with many fellows participating over multiple years.

"The Fellows meetings have been important venues to sit with expansive, and sometimes difficult, ideas about transforming education, that do not often come up in my other professional settings." — Amanda Giang, Assistant Professor, IRES, Science & Mechanical Engineering

New interdisciplinary curriculum on gender, health, and collaborative technology

This year the Interdisciplinary Education Grants program awarded four new grants. Each project is collaboratively led by two faculty members from different disciplines.

Topics this year included:

- Collaborative technology for interdisciplinary sustainability education
- Gender, Health, and Wicked Problems

Innovative new sustainability degree options

New undergraduate and graduate degree options added this year included:

- Sustainability Science Area of Concentration for Environmental Science
- Sustainable Food Systems Minor
- Environmental Engineering at UBC's Vancouver campus



Collaborative technology for interdisciplinary sustainability education

An effective response to broad societal challenges – such as how to design sustainable energy systems, improve air quality, or mitigate climate change – requires interdisciplinary thinking and teams. However, interdisciplinary education tools are often difficult to scale in large classes, and are not easily transferred to new courses.

This project is piloting two technologies to facilitate cross-faculty discussions between students of MECH 410U (Air Pollution, Technology, and Society) and ENVR 410 (Energy, Environment and Society). The first technology is a UBC Blogs space to support students to explore their unique perspectives based on specific course topics (e.g. energy vs. air pollution). The second technology is a toolkit of resources for students to create online, interactive presentations to review prior to class, creating more time for in-class discussions.

The results of this pilot – developed by Amanda Giang and Naomi Zimmerman – will be shared with sustainability educators at UBC and across the Canadian Engineering Education community.

677

sustainability-related courses

42

sustainability-related degree programs

6

new/ongoing Interdisciplinary Educations Grants

12

Sustainability Fellows from 10 Departments

An innovative paid internship program that matches graduate students with on- and off-campus partners to work on applied research projects that advance sustainability. Projects explore topics such as emissions reduction, food security, sustainable transportation, green buildings, biodiversity, climate change, social sustainability, and more.

A decade of regional partnerships

The Sustainability Scholars Program celebrated a decade of achievement supporting UBC's emerging sustainability leaders and advancing sustainability across the region for over 14 local governments and organizations such as the Community Energy Association, BC Housing, Climate Smart, Fortis, BC Hydro, TransLink, local health authorities, UBC, and more.

Scholars program explores breadth of human and environmental sustainability issues

This year's Sustainability Scholars took on a wide variety of sustainability topics, including reducing building emissions, energy benchmarking, step code implementation, waste diversion, air pollution, visual air quality, the impact of climate change on the regional drinking water supply, food systems and food waste avoidance, equity and inclusion, anti-Black racism, waste diversion in healthcare, and more.

Sustainable transportation projects examine drones, blockchain technology

Ten transportation-related projects on topics such as, using drones for passenger and freight transportation; understanding the role blockchain technology can play in a transportation sharing economy; and developing a lifecycle costing tool to assist selection of new fleet vehicles.

Exploring food security and food systems

Scholars brought a critical lens to five food and nutrition projects ranging from understanding GHG emissions from food to engagement practices for food system change, and measuring the value of the circular economy of food.



Sustainability Scholar lays groundwork for anti-Black racism strategy in Vancouver

Vancouver aspires to be a safe city in which residents feel secure. It's one of the goals of the Healthy City Strategy approved by city council in 2014.

This year, the City engaged UBC law student Oludolapo Makinde as a Sustainability Scholar to conduct research into anti-Black racism in Vancouver and suggest ways to address it. One of her recommendations – development and implementation of an anti-Black racism strategy – received funding from council in the city's 2020 budget.

"I think the particular issue that makes being Black in Vancouver unique is the fact that we account for such a small number of the population – about one per cent. We're actually a minority within a minority here in Vancouver and so people tend to think that there's no history or occurrence of anti-Black racism in Vancouver."

"I was happy to see that my work wasn't in vain, because often times, academic studies are conducted and government reports about anti-Black racism are issued, but nothing substantial is done with the recommendations."

67

graduate student
internships

18

partner organizations

29

graduate degree programs
with participating
students

349

scholars since 2010

SEEDS SUSTAINABILITY PROGRAM

The SEEDS Sustainability Program creates applied student-led research and interdisciplinary partnerships between students, faculty, staff and community. An internationally recognized Campus as Living Laboratory initiative, SEEDS advances UBC's sustainability and wellbeing commitments, supports the integration of academic and operational sustainability efforts, and contributes to enriched student research and professional experiences.

SEEDS launches 'Big 5' research priority areas

This year SEEDS launched five research priority areas to focus on some of our most pressing social and environmental issues.

1. Accelerate Climate Action

Over 150 students engaged in 23 applied research projects related to addressing the climate crisis. For example, investigating the cultural and gender barriers to active transportation, and electric bicycle subsidies.

2. Enable the Great Food Transformation

Five interdisciplinary teams involving staff, faculty, and 100 students engaged in 18 applied research projects. For example, climate friendly-food systems, urban food production for community resilience, biodiverse food systems, zero-waste and circular economy, food justice and sovereignty.

3. Maintain and Enhance Urban Biodiversity

Over 280 students engaged in 18 applied research projects that informed policies, plans and practices to enhance campus urban biodiversity. For example, using GIS and remote sensing to assess campus grey & green infrastructure, tree species composition & diversity, solar radiation and canopy coverage.

4. Create Circular & Regenerative Economies

Innovative pilot projects to demonstrate the potential savings of adopting new tools and practices. For example, a new recycling program to repurpose used gloves into outdoor furniture demonstrating the potential to divert seven million gloves from landfill each year.

5. Foster Wellbeing & Inclusive, Place-Based and Resilient Communities

Over 180 students engaged in 23 demonstrative research projects that addressed multiple dimensions of human and ecological wellbeing. For example, students and faculty from a School of Architecture and Landscape Architecture course designed and built a large innovative open-air pavilion that connects community with place, and contribute to eco-human health and wellbeing.



Food Security Initiative

The Food Security Initiative launched in February 2020 as a cross-disciplinary partnership between UBC Wellbeing and the SEEDS Sustainability Program, operating in both Vancouver and Okanagan campuses.

The initiative is the first aimed at alleviating household food insecurity and promoting community food security. Key insights from recent student-led research shed light into lived experiences on food insecurity and affordability issues – highlighting the daily financial, health, and social sacrifices students must make while being food insecure.

Ongoing work at grassroots level on campus continues to support immediate relief, capacity building efforts, and broadening partnerships, while a series of applied research projects is being integrated into campus courses in partnership with UBC Food Services, AMS Food Bank, AMS Conference & Catering to UBC Wellbeing.

In partnership with student leaders, operational staff, and other stakeholders, the initiative is developing dignified and sustainable solutions for a food secure campus that meets the diverse needs of various UBC communities.

27

UBC sustainability plans and policies advanced

849

students, faculty, staff and community partners engaged

150

applied research reports

5

Food System Action Teams launched

STUDENT ENGAGEMENT

Student engagement is at the heart of sustainability learning at UBC. Through immersive, transformative, and experiential learning experiences, our engagement programs provide opportunities to build leadership skills and professional competencies. Whether it's facilitating collaborations, making connections, or offering discussion platforms for sustainability issues, we offer diverse opportunities to meet a variety of student needs and interests.

Sustainability Ambassadors partnered with 35 organizations, raising over \$14,000

This year twenty-five Sustainability Ambassadors – our largest ever cohort – collaborated with 35 organizations to plan and deliver sustainability awareness raising events that attracted over 1,000 attendees.

With projects ranging from social and environmental hackathons to behaviour change engagement activities on campus, students gained new skills and competencies through immersive experiential learning opportunities in a safe, multidisciplinary and diverse team environment.

"Reaching out to potential partners and collaborators was very insightful and rewarding. I hope to work for an NGO and partnering with one for our event gave me some very useful connections and information." — Ambassador

"I feel that I am walking away with a much broader toolkit of skills than when I entered. This program has shifted the way that I think about sustainability." — Ambassador

Student Sustainability Network welcomed 86 new members

Over 65 unique engagement opportunities were shared via the Student Sustainability Network, where members can connect with various organizations for volunteer and involvement opportunities.

Advising and support services reached over 82 student organizations

Through our advising and support services, we offered direct support to 20 student groups to develop their projects and events, corresponded with over 82 student organizations, and liaised with 300 student advisors.



Sustainability Ambassadors' SDG Week

The United Nations Sustainable Development Goals (SDGs) are a call to action for every nation and individual. The Sustainability Ambassadors recognized the need to increase awareness of SDGs among the campus community and designed a week-long critical discourse on the framework.

SDG Week explored the interdisciplinary nature of the SDG framework, focusing on collaboration across disciplines and sectors. Through ten unique events, SDG Week highlighted various themes and concepts at the heart of the SDGs.

Events:

- Introduction to the SDGs
- Disconnect: The Miscommunication of Climate Change
- Healthy Planet, Healthy People
- Entrepreneurs for Social Change
- Greenest City Panel
- Indigenous Perspectives
- The Power of Plant Forward Food
- The Stories That Trees Tell Us About SDGs
- Career Connections
- The Future of SDGs: Roundtable and Celebration

25

Ambassadors planned 14 unique engagement events

\$14,300

raised by Ambassadors to support sustainability projects

100%

of Ambassadors report gaining transferable skills and experience

103

students joined the Student Sustainability Network

STUDENT LEADERSHIP

UBC students are leading change across our campus, and in our communities. By self-organizing and speaking out, student groups take the initiative to spark meaningful conversations – often about what UBC itself can do differently. Addressing issues like the climate crisis, social and racial justice, student wellness and more, student leaders at UBC are committed to making a positive contribution to sustainability.

UBC Climate Strike attended by 4,000+

Students from UBCC350, the Social Justice Centre, and the Climate Hub organized a climate strike to galvanize support for divestment and the declaration of a climate emergency. Dozens of departments made statements of support, over 70 student groups signed an open letter, along with 1600+ individual signatures.

UBC's Climate Emergency Response

This year UBC declared a climate emergency, driven by the leadership of our students. An independent Climate Emergency Task Force was convened with representation from faculty, staff and students across both campuses responsible for drafting recommendations on how to advance UBC's Climate Emergency commitments.

Climate Hub storytelling workshops

This year the Climate Hub's hybrid student-staff model actively supported the development of UBC's Climate Emergency Response, and launched other new initiatives including the Youth Climate Ambassador Project to deliver climate storytelling workshops to hundreds of high school students.

Student Sustainability Council input on UBC plans

This year the Student Sustainability Council included representatives from 24 student-led organizations. The Council offered feedback and suggestions to seven staff, faculty and student-led projects including the Zero Waste Food Ware Strategy, Gender and Health Course Curriculum.

"Being on this council has given me a renewed belief that UBC is listening to students on environmental matters." — Student Sustainability Council Member



UBCC350 led successful call for divestment across UBC endowment portfolio

UBCC350 (now Climate Justice UBC) is a student-led political climate action group that aims to use the power of collective action to promote climate justice.

The divestment campaign was started by students from UBCC350 in 2013. Via AMS referendums, 77% of UBC students voted yes to UBC immediately forgoing further investments in fossil fuel companies, supported by 62% of UBC faculty. In 2016, in response to a UBCC350 proposal, UBC created a \$10 million fossil-free "Sustainable Future Fund".

UBCC350 continued campaigning for full divestment, and in December 2019 the UBC Board of Governors unanimously passed a resolution supporting full divestment of the \$1.71 billion Main Endowment Fund from the fossil fuel industry.

"The recent achievements we have seen on the climate front at UBC - divestment, the declaration of a climate emergency, the creation of the student-led Climate Hub - are all thanks to students organizing and speaking up. When students come together and organize for a cause we believe in, we have enormous power, much more than we might think. Never underestimate the power of a student movement." — Michelle Marcus, UBCC350.

24

student-led groups participated in the Student Sustainability Council

40+

climate story-telling workshops in high schools by UBC Climate Hub

4,000+

took part in student-led UBC Climate Strike

50+

sustainability-related student groups at UBC

CAMPUS ENGAGEMENT

Engagement programs for students, staff, and faculty support the implementation of our campus sustainability plans and advance a culture of sustainability. Over the past year, we continued to focus on high-impact areas and opportunities including research laboratories, workplace engagement, and student residences to advance resource conversation and sustainability leadership.

Sustainability workplace engagement reached over 8,500 (Vancouver)

Training and educational opportunities reached over 8,500 employees through workshops, events, and campaigns.

- Workplace Sustainability Grants funded seven projects to pilot new sustainable innovations in workplaces and laboratories
- Green Labs launched a rebate program to replace old freezer units, saving as much 70% on electricity consumption, and was recognized again by the International Institute for Sustainable Laboratories
- The Sustainability in Residence Program engaged over 500 students to reduce GHG's through the Cool Campus Challenge
- The Zero Waste Squad's peer-to-peer engagement program trained nearly 300 volunteer hours and engaged 8,200 event attendees

Sustainability Coordinators promoted green practices across 77 departments

UBC's Sustainability Coordinator Program celebrated its 21st year of building sustainability leadership and fostering change. Nearly 130 Sustainability Coordinators from 77 operational and academic departments participated.

The Power of You (Okanagan)

The Power of You is UBC Okanagan's signature conservation and awareness behaviour change program. Results this year included:

- 35% waste diversion rate achieved through campus engagement and awareness programs, including a student-developed 'Sort It Out' video
- 20% average fume hood height reduction achieved during the Shut the Sash campaign
- 7,120 kgCO₂e reduction in commuter emissions via UBC Okanagan's winning entry in the National Campus Commuter Challenge



UBC Bookstore reduces plastic bag use

Single-use plastics are traditionally difficult to recycle. To help address this challenge, the UBC Bookstore used a Workplace Sustainability Fund to pilot small paper bags instead of plastic bags. To reduce the use of medium-sized plastic bags, new signage included memorable posters to show the relationship between bags and the serious harm they posed for sea lions, turtles and sea birds.

Feedback from cashiers revealed that fewer customers were asking for bags, and a recent bookstore order of 23,000 more paper bags means 23,000 fewer plastic bags in circulation. The Bookstore began to charge for the remaining plastic bags in January 2020, and plans to resume this practice once the COVID-19 pandemic's reusable shopping bag restrictions are lifted.

Looking ahead, the Bookstore hopes to phase out plastic bags entirely, which would equate approximately 160,000 less plastic bags annually.

77

operational and academic departments engaged (Vancouver)

70,217 km

cycled during Bike to Work Week saving 15,000+ KG GHG emissions (Vancouver + Okanagan)

4,710 kg

CO₂e emissions avoided through Shut the Sash campaign (Okanagan)

127

Sustainability Coordinators in offices and labs (Vancouver)

RESEARCH

UBC plays a leadership role among global post-secondary institutions that focus on researching, developing, and demonstrating sustainable practices. With over 400 faculty investigating sustainability, our goal is to excel across the spectrum of fundamental and applied research. Below are some examples of new groups and projects – just a small selection from an incredible breadth of work across the university.

Interdisciplinary Research & Collaborations

Emerald Corridor Collaboratory

The Emerald Corridor Collaboratory is a regional network of four city-university partnerships that aim to develop collaborative solutions for sustainable and resilient cities. Meaningful city-university partnerships can be effective in combating complex and interconnected urban challenges such as climate change, rapid growth, affordability and inequality.

Supported by the Bullitt Foundation, the participating partners include:

- University of British Columbia & Vancouver, British Columbia
- University of Washington & Seattle, Washington
- Western Washington University & Bellingham, Washington
- Portland State University & Portland, Oregon

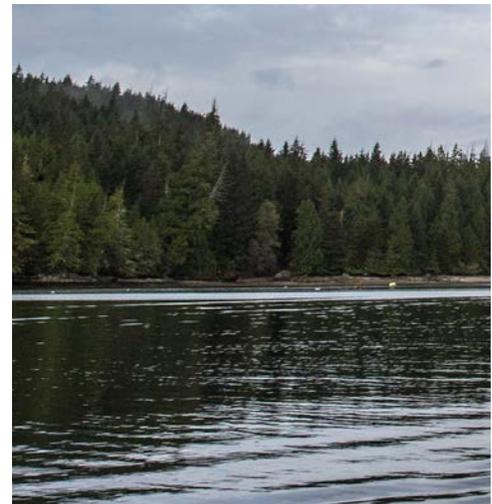
Bioproducts Institute

The BioProducts Institute (BPI) is an innovative team of fundamental and applied researchers working on solutions to today’s climate and environmental challenges. The Institute brings together inter- and multi-disciplinary researchers comprised of scientists, engineers, and market and policy experts to unlock the full potential of materials, chemicals and fuels produced in nature.

Based on the guiding principles of circularity, sustainability and renewability, BPI seeks to reduce society’s footprint and tackle rampant environment challenges such as reducing greenhouse gas emissions and plastic waste, including the increased use of personal protective equipment in the context of the COVID-19 pandemic.

EDGES Research Collaborative

The acronym EDGES identifies the major themes of this collaborative research group. Environment & Development: Gender, Equity, and Sustainability. The use of the term EDGE is also intended to invoke several of its meanings – highlighting the goal of cutting edge research, signaling the focus of research on marginal and vulnerable populations (women, impoverished, etc.), and references the aim for sharp analysis.



Mapping the Tsleil-Waututh coastal waters

What did the Burrard Inlet look like in the past, compared to how it is now? What were the fishing, food source, and maritime resources there and how did this habitat change over time?

UBC researchers sought to answer those questions, in a clear and interactive way. In collaboration with Tsleil-Waututh Nation and West Coast Environmental Law, graduate student researchers in the Ocean Leaders Program at the Institute for the Oceans and Fisheries and University of British Columbia brought together research on factors of change in Burrard Inlet.

Via an interactive map, they illustrate how factors such as infrastructure, fishing, climate, and maritime activities have impacted Burrard Inlet over the past 200 years, while also highlighting some exciting conservation and restoration projects.

“Much of the habitat has, over the years, been lost to industrial and commercial activity. Protecting the Inlet from further damage would be beneficial to everyone along its coastline,” said Meaghan Efford, a PhD student and member of the Ocean Leaders Program research team.

393

faculty researching sustainability-related topics

54%

departments with sustainability-related courses

23

sustainability-related graduate research programs

40+

research groups exploring sustainability-related issues



Water Insecurity: From Cape Town to Tr'ondëk Hwëch'in territory

Water sharing is widespread, across geographic and cultural contexts, and can be important for ritual, religiosity, maintaining social relations, or overcoming water scarcity. In particular, lack of access to safe and affordable water goes beyond bodily and public health concerns; it is also proving important for citizenship engagement, senses of state legitimacy, and other broad socio-political concerns.

The EDGES team at UBC leads research into underserved communities without access to secure and affordable water in diverse locations from Cape Town, South Africa, to the Tr'ondëk Hwëch'in Nation in Canada.

More recently, the team has analyzed a multi-country data set to consider links between water insecurity and COVID-19 spread. Beyond the clear links between water insecurity and the ability to wash hands, this research examines how shared water sources, or water sharing practices, might hinder the ability of communities to practice social distancing, or limit the ability to engage in hygiene and cleaning efforts important to limiting COVID-19 spread.

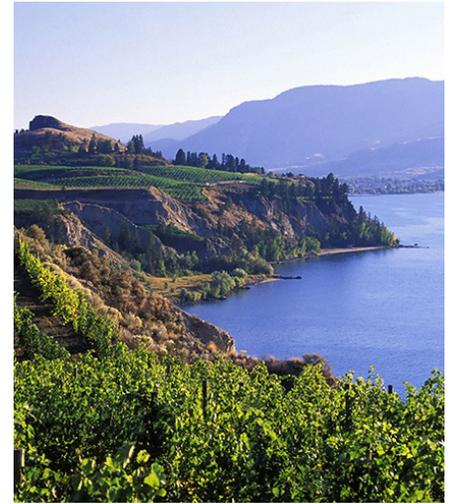


Can-Mask: The world's first biodegradable N95 mask

The Canada-Mask, or Can-Mask, is an N95 mask prototype designed by UBC's BioProducts Institute to be easily produced from wood fibres and be fully compostable and biodegradable. The concept grew organically in response to the COVID-19 pandemic, combining in-house expertise in the areas of complex fluids, fiber processing, surface chemistry and nanotechnologies. While a mask for air filtration appears to be a simple material, its multiple functions require the use of advanced technologies that must be applied to the frame and filter.

The N95 level filtration media is currently being developed from a combination of structures and compositions. The team is also working with other UBC professors to evaluate the possibility of antiviral components as well as possible manufacturing processes and partners.

The end goal? To design a cost-effective biodegradable mask that can be sourced and manufactured in Canada, and reduce the burden of discarded personal protective equipment on our environment.



Carbon dioxide release during irrigation with lake water

UBC Okanagan researchers Melanie Jones and Kirsten Hannam have discovered a surprising new source of carbon dioxide (CO₂) emissions.

Working in a drip-irrigated apple orchard, their research study involved continuous measurement of air coming from dynamic soil respiration chambers placed in the orchard.

"It turns out that some of the CO₂ released after irrigation comes from the natural salt - bicarbonates - dissolved in water from Okanagan Lake as it is applied to the soil," says Midwood. "It's a process we had not considered until we noticed some unusual results when we traced the source of the CO₂."

"This is a natural process," says Hannam. "Along with causing the release of CO₂ from bicarbonates in the water, irrigation is also promoting the removal of CO₂ from the atmosphere by encouraging plant growth. It's a balance and to understand the balance, you need to know all the component parts."



Education for Sustainability Cohort works with City of Vancouver on municipal education projects

The Education for Sustainability Cohort was launched in the Teacher Education Program at UBC two years ago. Since then, full cohorts of 36 teacher candidates have demonstrated that school districts, community partners, and teachers themselves demand a focus on sustainability in education.

Expanding and extending the program, students of three new course modules will focus on sustainable urban architecture, urban planning and participatory planning pedagogy, and Indigenous community planning. The modules will be piloted via courses in Year 1, and through evaluation of the pilot, the modules will be enhanced, adapted for other UBC programs, courses and audiences in Year 2.

Students will take lessons from these new modules from the classroom to real-world application - supporting the City of Vancouver on two key municipal education projects: the Climate Change Emergency declaration and Democracy and Civic literacy.

Created via collaboration between UBC and Syncollab Strategies, Polar Education Canada, Metro Vancouver, the City of Vancouver, and Vancouver School Board.



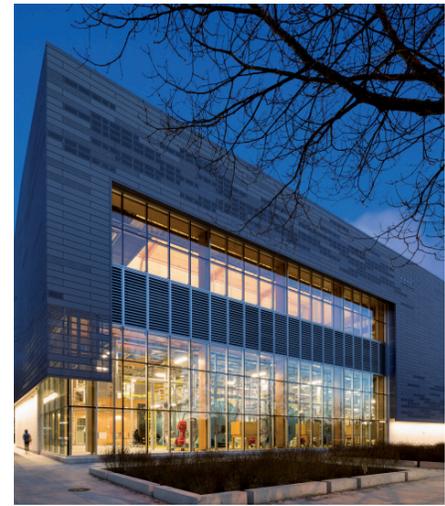
Selective harvesting improves health, resiliency of lodgepole pine stands

According to new research, the more rigorously forests are thinned, the more resilient they can be to the impacts of climate change.

UBC Okanagan Professor Adam Wei's research team, consisting of scientists from the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development, the University of Waterloo and universities in Spain and China, conducted a multi-year study in the upper Penticton experimental watershed.

Trees in selectively harvested stands demonstrated benefits from having more space and daylight, and less vulnerability to drought, as fewer trees need rainwater and moisture from the ground.

"The age at which forests are thinned, and the number of trees left after thinning all have a substantial effect on the health of the future forest and wood products, says Wei. "So forest management decisions on thinning must also take into consideration timber supply, forest health, carbon stocks, water conservation, wildfire risks and wildlife habitat."



Embodied Carbon Pilot

GHG emissions from the built environment are a significant contributor to climate change. As policies to reduce operational energy consumption and associated GHG emissions from buildings start to take effect, the embodied emissions from building material choices are becoming proportionally more significant.

This year saw the start of a multi-year pilot conducted by the UBC Sustainability Initiative's Urban Innovation Research group focused on improving the practice of life cycle assessments (LCA) to estimate the embodied carbon emissions of buildings throughout their life cycle. The goal is to inform policy and guidelines through the establishment of emission benchmarks and eventually performance targets.

This first phase of the pilot leveraged UBC's Campus as a Living Lab initiative to study the embodied carbon emissions of campus buildings. Key findings support early-stage recommendations for policymakers to guide project teams when requesting LCAs in order to standardize assessments and the transparency of information.



Earth day at 50: Science, society, and sustainability in the Anthropocene

In the run up to the 50th anniversary of Earth Day, UBC Oceanographer Philippe Tortell edited a new collection of essays examining how our understanding of the environment has changed in the last half century.

The first Earth Day helped catalyze more than two decades of sweeping legislative changes, first at national levels, and then through multilateral institutions seeking to tackle global environmental problems. Science is a foundation for such transitions, but it is not enough. Rather, it is through wide collaborations across fields, including law, economics, and politics, and through direct engagement with civil society, that science can illuminate a better path forward.

Earth 2020: An Insider's Guide to a Rapidly Changing Planet details a number of case studies highlighting the role of scientists in leading positive societal change, often in the face of strong oppositional forces. The past five decades reveal significant triumphs of environmental protection, but also notable failures, which have led to the continuing deterioration of Earth's natural systems.

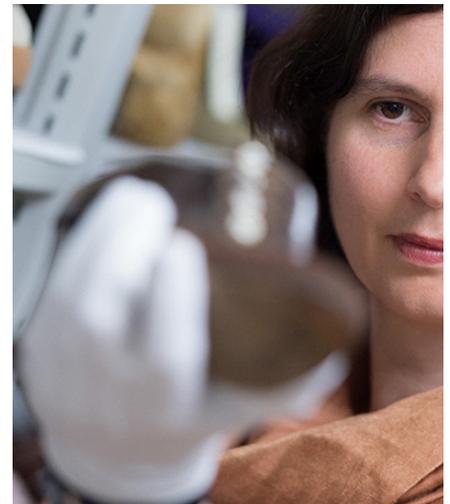


Climate disaster law, working with Tsilhqot'in Nation

During British Columbia's response to the historic 2017 wildfires, legal conflict and confusion had detrimental effects on Indigenous communities vulnerable to wildfire. In collaboration with the Tsilhqot'in Nation, UBC Assistant Professor at the Peter A. Allard School of Law Jocelyn Stacey co-authored *The Fires Awakened Us*, a report that documented the Tsilhqot'in Nation's leadership in wildfire response and the legal challenges the Nation encountered with BC and Canada.

The report identifies thirty-three tangible measures needed to recognize and support the Tsilhqot'in Nation's exercise of its inherent jurisdiction over emergency management. It informs the implementation of a new tripartite Collaborative Emergency Management Agreement, the first of its kind in Canada.

In the aftermath of the wildfires of 2017, the mental and physical tolls that the Tsilhqot'in people have endured through historical oppressions have intensified. However, the wildfires may also provide an opportunity to strengthen Tsilhqot'in knowledge, to better understand the full story of how Tsilhqot'in lived on the land prior to colonization, and pass this on to future generations.



Using the humanities to bridge cultural divisions

In an era when divisions in society seem more prevalent than ever, two UBC Okanagan humanities professors are using the power of arts, history and philosophy to address the world's most pressing issues through the creation of a public humanities hub on both campuses.

"We're faced with a number of critical problems and we have a tendency to turn to scientists and engineers for the answer," says Brigitte Le Normand, Academic Director of UBC Okanagan's public humanities hub. "Technology certainly has a lot to contribute, but humanists can step in by asking how can we even frame the problems in the first place and how does that shape the solutions we develop."

"We might turn to technology to solve our issues but it may be that technological solutions are not the best for addressing the problem," says Greg Garrard, professor of environmental humanities. "Perhaps the problem is bigger than that and you need to find an opening for other kinds of conversation. This is a great example of where humanists can step in and change the terms of the discussion."



Operations and Infrastructure

As a large, research-intensive university, with considerable land, assets and utilities in Vancouver and the Okanagan, UBC is in a unique position to use our campuses as test beds for sustainability. Our goals are to enhance the efficiency of our operations, improve environmental performance, and achieve cost savings, while leveraging our campus infrastructure and built environment to demonstrate innovative sustainability solutions at a municipal scale.

ENERGY AND EMISSIONS

UBC is pursuing ambitious greenhouse gas (GHG) reductions on both campuses. The Vancouver campus now produces 28 percent fewer GHG emissions than it did in 2007, while in the Okanagan our focus on sustainable design and building performance has achieved a 33 percent reduction in absolute GHG emissions vs. 2013. Both campuses are currently planning for even more aggressive reductions in GHG emissions by 2030.

UBC Vancouver + Okanagan

UBC declares a climate emergency, seeks to accelerate GHG emissions, pledges to fully divest from fossil fuels

In December 2019, UBC declared a climate emergency, recognizing that the climate crisis poses extensive and disastrous threats to peoples' lives and livelihoods both locally and globally, contributing to famine, migration, and disease worldwide, including impact on individual physical and mental well-being.

By increasing ambition and materially accelerating timelines for existing actions under the UBC Strategic Plan and Climate Action Plan, UBC is adding new actions to help reduce GHG emissions beyond current targets, such as emissions from travel and food.

UBC ranked global #1 for taking urgent climate action

For the second year in a row UBC was ranked first for taking urgent action to combat climate change (UN Sustainable Development Goal 13) according to the Times Higher Education Impact Rankings.

UBC Vancouver

GHG emissions impacted by supply issues and weather

This year UBC Vancouver's GHG emissions increased by 10% as a result of interruptions to natural gas supply (Enbridge pipeline explosion), a colder than average winter, and closure of our biomass energy plant for maintenance. These factors increased the use of diesel to heat buildings. This setback will be addressed by expansion of our biomass plant and reduced dependency

on natural gas, and we remain on course to meet long-term GHG reduction targets.

Biomass energy expansion underway

Construction is in progress to expand the Bioenergy Research and Demonstration Facility (BRDF). Once the new boiler is operational in 2021, the BRDF will help eliminate an annual average of 13 to 15 thousand tonnes of GHG emissions over the life of the project.

Museum of Anthropology Heat Recovery Chiller

In order to conserve precious first nations art and cultural artefacts, the museum has strict climate control requirements. To reduce energy consumption, Energy and Water Services installed a heat recovery chiller to capture energy normally rejected to the atmosphere, and instead use it to supplement conventional heating systems. This new chiller also provides cooling redundancy to the building, and aims to reduce energy costs by \$50k per year.

UBC Okanagan

Climate emergency declaration sparked new climate action plan

The declaration of a climate emergency by UBC renewed the urgency to develop UBC Okanagan's first Climate Action Plan. Initiated in 2019, the UBC Okanagan Climate Action Plan accelerates targets and actions for GHG reductions, and widens the scope beyond operational emissions.

Low Carbon District Energy Strategy

The first phase of a Low Carbon District Energy Strategy was completed in 2019. This resulted in a pro forma model that will be used to measure various energy supply strategies, and to support decisions related to campus GHG targets, future building retrofits, and future campus infrastructure expansion.

District Energy System Upgrades

A new connection from the LDES to the central heating plant reduced natural gas consumption and associated GHG emissions; a low flow pump upgrade improved groundwater use and reduced electricity consumption by approximately 30,000 kWh annually; and an Aquifer Recharge Pilot Program aims to increase system capacity.

28%

reduction in absolute GHG emissions since 2007 (Vancouver)

33%

reduction in absolute GHG emissions since 2013 (Okanagan)

43%

reduction in CO₂ equivalent/gross sq meter since 2007 (Vancouver)

46%

reduction in CO₂ equivalent/gross sq meter since 2007 (Okanagan)



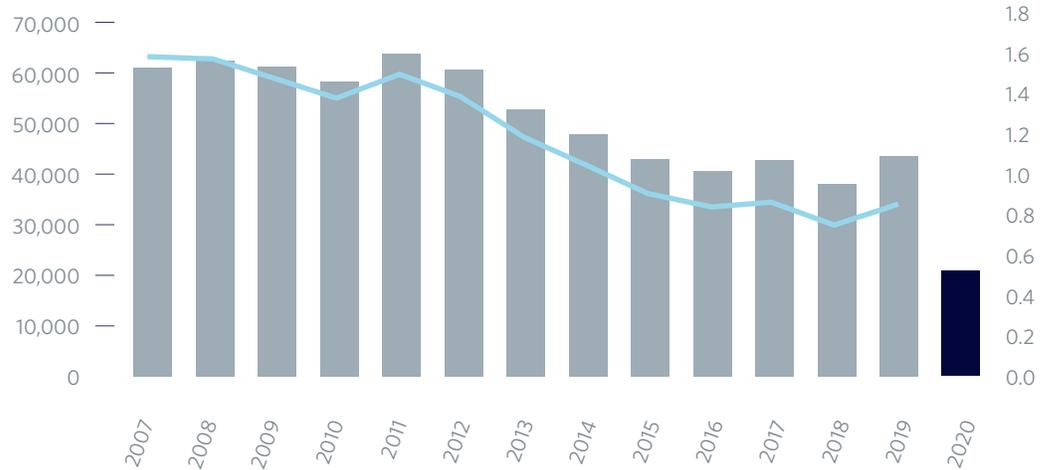
GHG EMISSIONS/ STUDENT FTE

Vancouver Campus

- Absolute GHG Emissions (tCO₂e)
- GHG Emissions per Student (tCO₂e/FTE)
- Target

GHG Emissions (tCO₂e)

GHG Emissions per Student (tCO₂e/FTE)



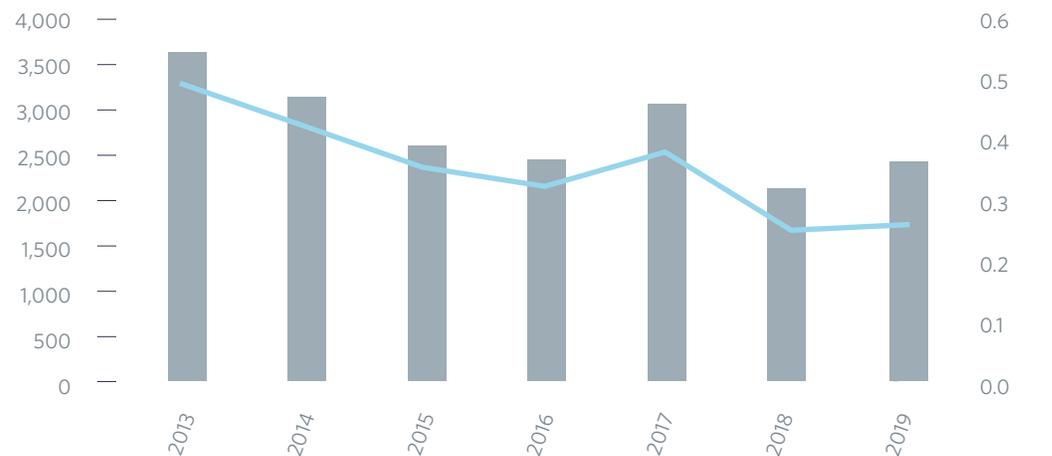
GHG EMISSIONS/ STUDENT FTE

Okanagan Campus

- Absolute GHG Emissions (tCO₂e)
- GHG Emissions per Student (tCO₂e/FTE)

GHG Emissions (tCO₂e)

GHG Emissions per Student (tCO₂e/FTE)



Efficient water use, greater resilience in the face of increasing drought periods, and effective management of heavy rainfall events are important goals at UBC. Multiple departments are collaborating to address these issues through development of new and better tools for metering and analyzing consumption, improving the efficiency of buildings and infrastructure, and engagement programs.

UBC Vancouver

Increased water efficiency

UBC Vancouver continues to incrementally increase water use efficiency across institutional buildings through high efficiency new green buildings, building renewals and retrofits, and more efficient infrastructure. During the reporting year, UBC measured a further 2.6% reduction in water consumption for institutional buildings while our student population and floor space continued to grow between 2 to 3%.

New stormwater management designs & monitoring

Guided by UBC's Integrated Stormwater Management Plan, new UBC developments are exploring the use of community scale stormwater detention facilities. The first is proposed for the new Brock Commons site, and will allow the development site to not be burdened by the infrastructure.

In addition, UBC has also recently installed a Stormwater Quality Monitoring Station in the southern campus to collect data on flow rates and water quality parameters. The data will be used for planning and control of the stormwater system.

SEEDS research explores underground water storage option for Stadium Neighbourhood

A team of SEEDS researchers explored options for a stormwater detention facility and underground parkade to reduce surface stormwater runoff resulting from a 10-year and 100-year storm events that are expected to cause erosion of the adjacent cliffs, and increase pressure on the current stormwater network.

Under this scenario, stored and treated water would be distributed to the stadium, nearby botanical garden, and reused for irrigation and flushing toilets. Stored water can also infiltrate into the native soils and act as a groundwater recharge source.

UBC Okanagan

Skeena Residence landscape designed to reduce irrigation and strengthen local ecology

In alignment with UBC Okanagan's updated Design Guidelines, the new Skeena Residence will incorporate non-invasive landscape plants that are appropriate for the site conditions, climate, and restore native plants and biodiversity. The Skeena Residence landscape will also utilize a raingarden to manage all rainwater on-site, while providing social amenity and ecological co-benefits.

Low Impact Development (LID) facilities

UBC Okanagan's Integrated Rainwater Management Plan (IRMP) includes the application of Low Impact Development (LID) facilities such as raingardens and bioswales that achieve rainwater management with ecological and social co-benefits. LID applications will be incorporated into all new building landscape designs to achieve the IRMP's minimum retention requirements while providing a valuable social amenity.

70%

reduction in water use intensity per student since 2000 (Vancouver)

10%

reduction in water use intensity per student since 2013 (Okanagan)

50%

reduction in absolute water consumption since 2000 (Vancouver)

20m³

water use per student (Okanagan)



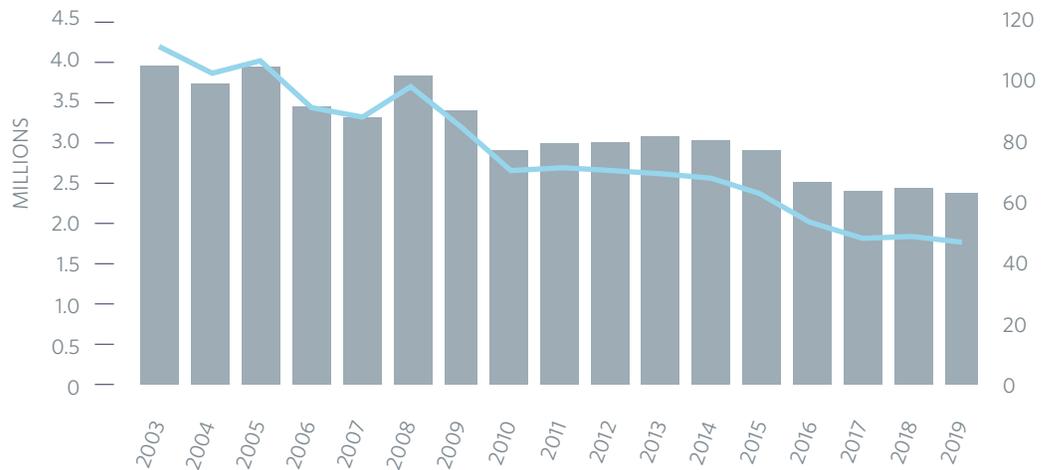
WATER USE

Vancouver Campus

- Absolute Water Use (m³)
- Water Use per Student (m³/FTE)

Absolute Water Use (m³)

Water Use per Student (m³/FTE)



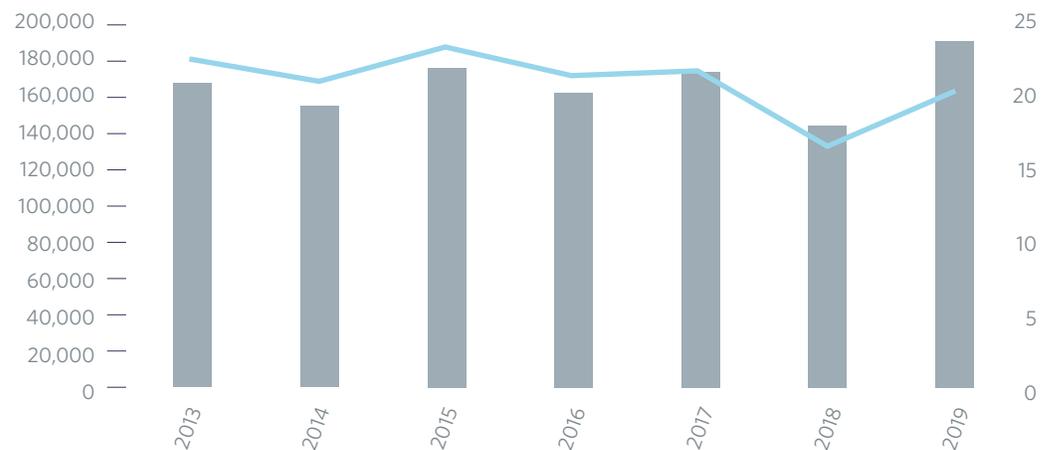
WATER USE

Okanagan Campus

- Absolute Water Use (m³)
- Water Use per Student (m³/FTE)

Absolute Water Use (m³)

Water Use per Student (m³/FTE)



WASTE AND MATERIALS

UBC Vancouver's Zero Waste Action Plan targets 80 percent overall waste diversion by 2020, and both campuses are striving towards full waste recovery and reuse by 2050. Achieving this will require continued updating of infrastructure and operational processes, the commitment of the campus community, and collaboration with sustainable industry partners and government policymakers.

UBC Vancouver

Innovations in laboratories target plastic, glass, soil

New studies to evaluate non-hazardous laboratory waste streams identified plastic, soil and glass as areas with high impact opportunities.

- **Plastic:** Gloves, pipettes, and centrifuge tubes generate an estimated 64 to 128 tonnes of waste each year; approximately 2 to 5 percent of operational landfill waste. In response, UBC piloted a glove recycling project and refreshed a lab plastics recycling program.
- **Glass:** An estimated 16 tonnes of amber glass containers is sent from labs to landfill each year. A pilot recycling program in the Michael Smith Laboratories diverted over one tonne this year, and is set to expand to new sites next year.
- **Soil:** UBC Botany generates 22.5 tonnes of soil waste per year. Through collaboration with Safety & Risk Services, Sustainability & Engineering, and Building Operations, the soil is now collected, treated and repurposed as construction fill or soil for soft landscaping on campus.

Zero Waste Food Ware Strategy goes live

The Zero Waste Food Ware Strategy was completed in collaboration with UBC Food Services and other stakeholders. One goal of the strategy is to reduce the approximately 1.7 million single use coffee cups used on campus by 50% by the end of 2020. This was supported by a 25 cent cup fee and the Let's Choose to Reuse campaign to raise awareness and campus engagement.

Office and residential reuse projects demonstrate potential savings of over \$600,000

A team led by UBC's Campus + Community Planning department and including One Earth Society, UBC Student Housing and Community Services, and with financial support from Vancity, developed a business model for expanding and scaling up the reuse pilot program at student residences.

Another Move In Market pilot was also conducted at Walter Gage Residence, which generated \$2,300 in revenue and a desire from 96% of survey respondents to have future markets to re-use residential items.

In addition, a UBC SEEDS study analysed the business case for an expanded office furniture reuse program. This study demonstrated potential for cost savings of over \$600,000 through a dedicated office furniture reuse program.

UBC Okanagan

Compost program expanded

UBC Okanagan expanded its compost program in 2019. Working with a new partner, the list of acceptable material increased to include carbohydrates, grains, meat, bones, dairy and compostable foodware such as chopsticks, wooden flatware, and compostable containers.

Students lead 'Sort It Out' at UBC Okanagan campaign

A team of GEOG491D students developed a short video that was viewed in social media posts on UBCOTV and across the campus' electronic signs, and now permanently resides at sustain.ok.ubc.ca.

Supported by the Okanagan Sustainability Office, Facilities Management and Food Services, the project created a peer-to-peer educational tool to increase awareness of current waste and recycling issues and improve sorting behaviour.

PaperCut™ prevents printing of 469,000 pages

UBC Okanagan introduced PaperCut™, a user-driven, online based printing program in 2016. In 2019 the campus printed 38,000 fewer pages than the previous year and prevented the release of 469,000 pages for print, reducing GHG emissions by 2,111 kgCO₂e.

26%

reduction in annual waste disposed per student since 2010 (Vancouver)

76%

agreed the Choose to Reuse campaign inspired behaviour change (Vancouver)

35%

reduction in annual waste disposed per student since 2010 (Okanagan)

13%

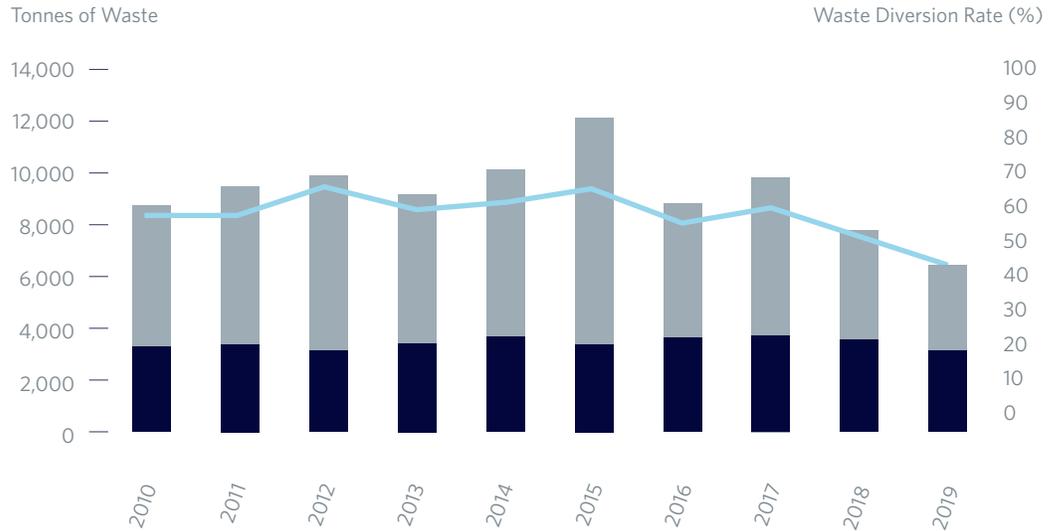
increase in waste diversion rate since 2010 (Okanagan)



WASTE DIVERSION AND DISPOSAL

Vancouver Campus

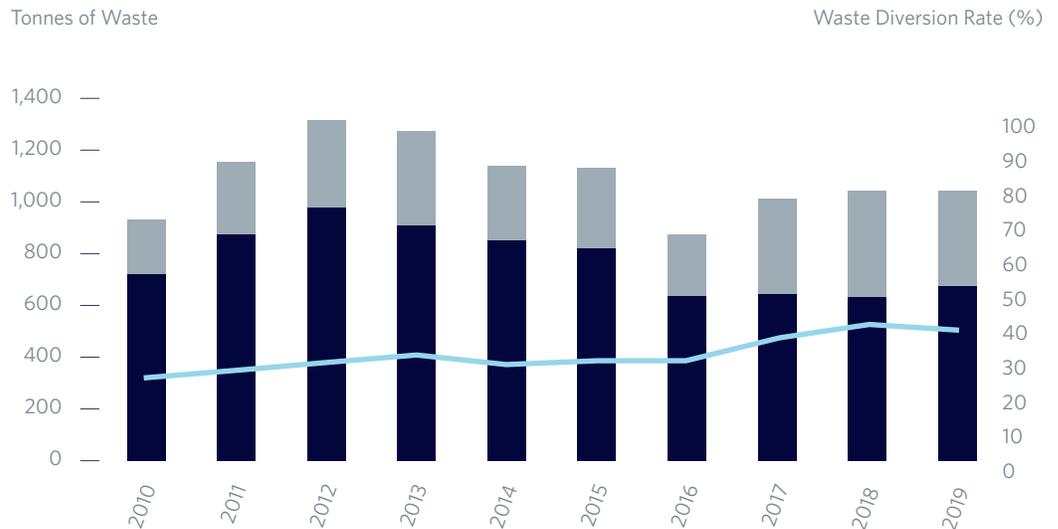
- Operational Waste Sent to Landfill (tonnes)
- Waste Diverted (tonnes)
- Overall Waste Diversion Rate (%)



WASTE DIVERSION AND DISPOSAL

Okanagan Campus

- Operational Waste Sent to Landfill (tonnes)
- Waste Diverted (tonnes)
- Overall Waste Diversion Rate (%)



GREEN BUILDINGS

UBC buildings create an exceptional environment that provide sustainable, healthy places for teaching, learning and research, and places to socialize, live and play. Our Vancouver campus Green Building Action Plan commits us to the vision that by 2035, UBC buildings will make net positive contributions to human and natural systems. While in the Okanagan our Whole Systems Infrastructure Plan supports greater energy efficiency, low carbon district energy system expansion, and climate adaptive design guidelines.

UBC Vancouver

Green Building Action Plan, 23 new LEED buildings

Ongoing work to implement the Green Building Action Plan included the development of 23 new LEED certified institutional buildings. These buildings contribute towards a vibrant and sustainable campus that supports the academic mission.

UBC's REAP update process for residences

UBC's Residential Environmental Assessment Program (REAP) is going through a major structural shift to better align with UBC's climate and sustainability priorities.

In fall 2020, UBC will launch a new Neighbourhood Low Carbon Strategy that will develop an integrated approach with REAP to reducing neighbourhood emissions.

Three new student residences achieve LEED gold certification

Three student housing and community services residence buildings achieved LEED gold certification in 2019, adding to a portfolio of residence buildings that have committed to exemplary community and sustainable design.

SEEDS research explores innovations in retrofits

This year 23 students engaged in SEEDS research to support the implementation of UBC's Green Building Action Plan. In one example, a group explored detailed end-use breakdowns for building energy uses, and integrating dual-opportunity retrofit solutions.

UBC Okanagan

Skeena Residence on track to become UBC's first passive house

Targeting completion in 2020, the Skeena Residence will provide 220 student resident units, including lounges, informal study spaces, activity room and laundry facilities. The project is targeting Passive House (Classic) certification, an internationally recognized energy standard characterized by a highly efficient building envelope and heat recovery ventilation system.

Nechako Student Residence and Commons Building targets LEED gold

Designed to achieve LEED Gold certification upon its completion in 2021, this mixed-use 'hub' will combine 220-student resident housing units with 24-hour services and amenities and a 500-seat dining hall. Social shared spaces integrated into the building's design will offer students with many opportunities for social engagement. The facility will be connected to the campus' district energy system, which provides low carbon energy supply.

Interdisciplinary Collaboration and Innovation Building

UBC Okanagan initiated the design of an Interdisciplinary Collaboration and Innovation facility in 2020. Targeting LEED Gold certification, this academic facility will be designed to foster interdisciplinary knowledge, support collaborative, team-based learning and innovative approaches to teaching.

23

new LEED certified buildings (Vancouver)

41%

of total floor space occupied by Green Buildings (Vancouver)

95%

of institutional buildings by m² connected to district energy system (Okanagan)

28%

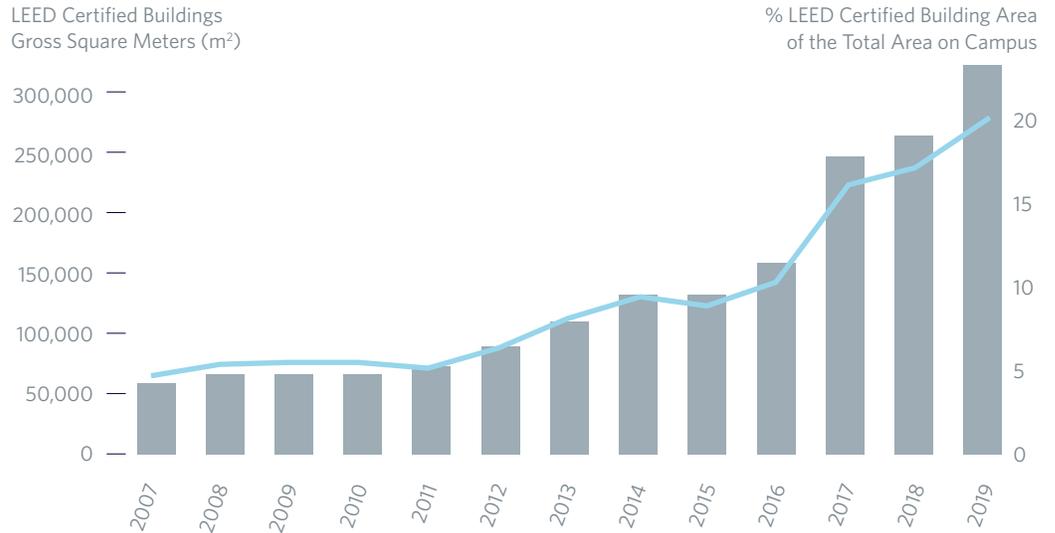
reduction in total energy per FTE since 2013 (Okanagan)



GREEN BUILDINGS

Vancouver Campus

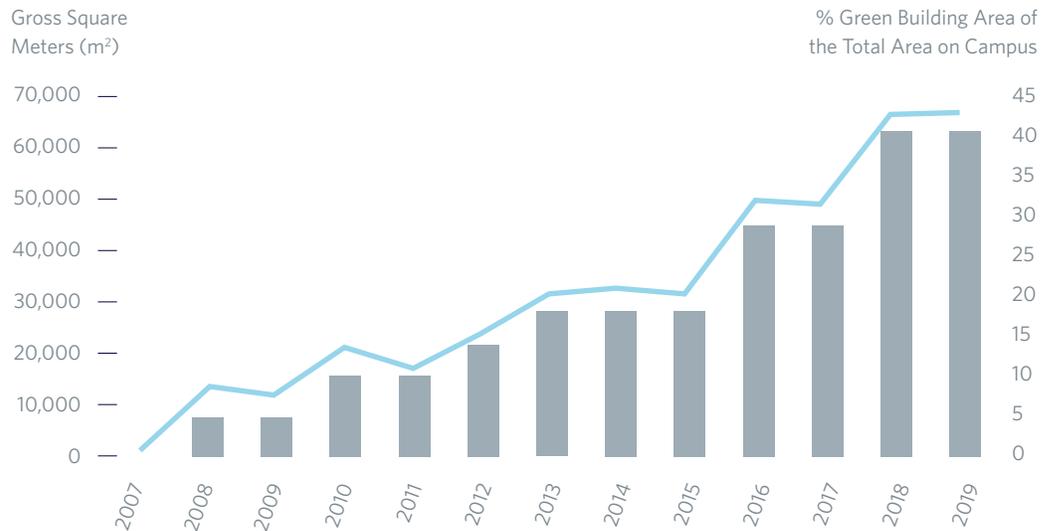
- Total Green Building Area (m²)
- Percentage green building area of the total area on campus



GREEN BUILDINGS

Okanagan Campus

- Total Green Building Area (m²)
- Percentage green building area of the total area on campus





Let's Choose to Reuse Campaign

How can a campus that uses 1.7 million single-use coffee cups each year reduce cup waste by 50% in the space of just a year?

UBC's Campus + Community Planning department is taking a two-pronged approach, combining new policy measures with a campus-wide behaviour change campaign.

From the end of January 2020, outlets across campus were required to charge a minimum 25 cent cup fee. To support coffeeshops and their customers with this shift, partners from UBC Brand & Marketing and the UBC Sustainability Initiative joined in to raise awareness and engagement.

The campaign featured digital billboards, videos, parkades and poster-boards. In addition, on-the-ground engagement activities outside 12 key coffeeshop locations encouraged instant behaviour change with games, giveaways, and reusable coffee cup prizes.

At the end of the campaign, 68% of survey respondents said they are more likely to carry their own travel mug knowing there is a cup fee, and 76% indicated the campaign inspired them to live more sustainably.



New Undergraduate Life Sciences Teaching Laboratories

Completed this year, the Undergraduate Life Sciences Teaching Labs Renewal project provides modern, well equipped teaching laboratories for over 2,000 students enrolled in undergraduate life sciences programs.

Sustainable initiatives, including targeting LEED gold certification, informed the design to create a highly functional and aesthetic environment, inspired by connections to nature and with the campus to reinforce the significant role of this facility at UBC.

Drawing from the design team's exploration of natural geometric patterns with the bioscience user groups, the frit patterns on the glazing of the building are modelled on patterns found in nature, including dragonfly wings and giraffe spots. Along with the reference to natural environment, the frit patterns on glass serve a dual purpose by preventing bird collisions.

The building carries the classroom outside with the new Biosciences Courtyard, designed as an outdoor teaching platform that includes both indigenous plants and plant collections from the biology department - another example



Skeena Residence is net-zero energy ready

The Skeena Residence has been designed to the highest level of the BC Energy Step Code. Net-zero energy-ready buildings are designed to be so efficient that they meet all or most of their own energy consumption requirements with renewable energy.

Specific measures include:

- Integration of leading-edge green building "living lab" research
- Design to achieve a minimum indoor water use reduction of 35% vs. the base building design
- Managing all rainwater on-site, while providing social amenity and ecological co-benefits

UBC Okanagan was also awarded CleanBC's Better Buildings Net-Zero Energy-Ready Challenge's Construction and Design Incentive Award in 2019 for the Skeena Residence, its first Passivhaus project. The Net-Zero Energy-Ready Challenge (NZERC) is one of CleanBC's programs aimed at making buildings all over the province less polluting, more comfortable and energy-efficient.



SkySpark puts building level energy data to work

UBC's Energy & Water Services has been building out a data analytics platform for several years in order to analyze and optimize campus energy usage. The platform – SkySpark – collects information about the operation of building equipment, weather data, building-level meter data, and saves it all in long-term trends. By the end of 2019, SkySpark was collecting data from nearly 60 thousand sources.

This data allows Energy & Water Services to benchmark building energy performance, monitor the success of existing projects, identify new energy conservation opportunities, and view our campus' energy picture in ways never previously possible. It has also opened up possibilities for new partnerships, with this valuable data being used by on-campus research groups, governmental agencies, consultancies, and more.

In the future, the UBC Sustainability Initiative, Campus + Community Planning, Energy and Water Services will explore making these data open access via a new online dashboard and reporting system.



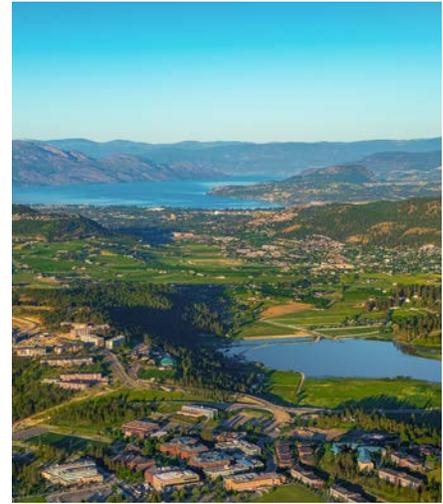
Green Labs Personal Protective Equipment recycling pilot

A Green Labs Program pilot is recycling nitrile gloves into new consumer goods such as outdoor furniture. The non-hazardous gloves are a vital part of personal protective equipment (PPE) in many UBC labs.

Nitrile gloves account for nearly 30% of plastic waste generated by UBC Vancouver labs. "With UBC labs throwing away an estimated 7 million disposable gloves each year, this program can help divert a significant portion of the 28 tonnes of this waste sent to landfills," said David Righter, Green Labs Environmental Impact Specialist.

Research led by engineering students and coordinated by the Green Labs Program as part of the SEEDS Sustainability Program investigated the economic and environmental impacts of the recycling pilot.

"This SEEDS Sustainability Program project will help the Green Labs program and researchers advance more sustainable management of lab waste materials, which are often more challenging than many other types of waste, and are an emerging opportunity area," said Bud Fraser, Senior Planning and Sustainability Engineer.



New Low Carbon District Energy System (LDES)

The first phase of a Low Carbon District Energy Strategy for UBC Okanagan was completed in 2019, resulting in a pro forma model for a system that will be used to measure against various energy supply strategies. The strategy will be fundamental to developing a Climate Action Plan for the campus. It will support decisions specific to setting campus GHG targets, future building retrofits, and future campus infrastructure expansion.

To support the growing energy needs of the Okanagan campus, the District Energy System underwent upgrades and was expanded this year. Projects include a new connection from the LDES to the central heating plant, which will reduce natural gas consumption and associated GHG emissions; a low flow pump upgrade on the LDES that will improve groundwater use and reduce electricity consumption by approximately 30,000 kWh annually; an Aquifer Recharge Pilot Program to support increased system capacity; and the addition of vector wells for future expansion.



Community

UBC is home to a growing community of people that live, work, learn and take part in everything that UBC has to offer. Each year, we design and deliver quality programming and events that leverage our world-class assets and public spaces. Our goal is to foster an inclusive and welcoming campus by sparking the imagination of our community members to join in.

COMMUNITY PROGRAMS

UBC campuses are special places possessing breathtaking natural beauty, world-class amenities, and diverse outdoor spaces for everyone to enjoy. Each year we seek to strengthen programming, partnerships and capacity building to leverage our campus spaces and the unique skills and talents of our students, faculty, staff and residents to nurture an inclusive, connected and vibrant community.

UBC Vancouver Campus

One of this year's goals was to increase opportunities for student-led animation in order to nurture a greater sense of student ownership of the UBC public realm.

This work took many forms including new funding tools and partnerships, but also the creation of a student space activation team to lead several events and initiatives and engage hundreds of students on campus.

Outdoor Music with Blank Vinyl Project

Our student team formed a new partnership with Blank Vinyl – a student-run organization that nurtures a live music community at UBC on two outdoor music series. The first was in November for the Thrive mental health campaign called *Thrive by the Fire*. The second in March called *Who run the World?* was in celebration of International Women's Day.

Before I graduate

In February our team delivered a twist on Candy Chang's famous public art piece with "Before I graduate." Students were encouraged to interact with the chalkboard message and write down their own aspirations. The initiative helped motivate students to push through exam season with future goals in mind.

International Women's Day Womb Room

Our student team worked with student artists to design the Womb Room – a safe space in the form of a fabric tent with a cozy, comfortable and warm atmosphere inside where the UBC community could reflect on experiences with gender-based inequality.

Cherry Blossom Photo Frames

To celebrate UBC's gorgeous cherry blossoms that bloom each year, the team installed four wooden photo frames around campus to serve as a photo prop for the community. The team used social media to market the frames through photos, maps and stories with the hashtag #UBCblossoms.



SCRAP: Youth-led program keeps computers out of landfill

The Student Computer Repurposing in Aid Program (SCRAP) is a youth-led program created by a group of UBC high school students after noticing that many computers being discarded were often in good condition.

The program aims to keep electronics out of the landfill and allow for more people to have access to technology. Seeded by a UTown@UBC Community Grant, the group purchased tools and parts to repair computers. Over time, SCRAP has attracted many young volunteers who collaborate by sharing their skills - refurbishing over 80 electronic devices this year and distributing them to the community.

By leveraging their passion and interest, the students built capacity amongst a committed group of high school volunteers with all aspects of the program - including the creation of leadership positions within the program - making this a truly youth-driven endeavour.

200

community members participated in 30 bike clinics

33

health and safety workshops given to 875 attendees

39

community grants awarded

300+

attendees at the first ever Tough Toddler event

TRANSPORTATION

As British Columbia's largest university across two main campuses, UBC is a destination for students, staff, faculty, neighbourhood residents, alumni and citizens from communities across the region. Trips to our Vancouver campus are made primarily by transit (54%) and carpooling (11%). While in the Okanagan, sustainable transportation has increased to 23% for transit, and 19% for walking and cycling.

UBC Vancouver Campus

New RapidBus service, SkyTrain advocacy

A new RapidBus from UBC to the Expo Line's Joyce-Collingwood Station began operating, capable of carrying 4,400 passengers per hour. UBC President and Vice-Chancellor Santa J. Ono and Mayor of Vancouver Kennedy Stewart, continued joint advocacy efforts in local media for a SkyTrain extension to UBC.

Vanpool partnership with Translink and Modo

In addition to 10 new vanpools, the program has also introduced carsharing to regions previously not served by Modo. The pilot is part of TransLink's efforts to provide commuting options beyond the fixed route transit system.

Ride-hailing arrives at UBC Vancouver

With the potential for high usage, ride-hailing services at UBC will follow a new policy framework designed to manage potential curbside and congestion impacts, and support UBC's sustainable transportation goals.

New Bus Exchange at UBC Vancouver

The new bus exchange has separate arrival/departure platforms, large canopies for rain cover, improved lighting, and a screened layover facility.

UBC Okanagan Campus

New transportation plan in development

The plan will tackle scope 3 commuting emissions through infrastructure improvements, Transportation Demand Management strategies, and sustainable transportation opportunities to reduce single occupancy vehicle use.

UBC Okanagan wins national commuting challenge

UBC Okanagan encouraged sustainable transportation via a 30% increase in Bike to Work Week participation, and by promoting transit, walking, carpooling and telecommuting options. The result reduced CO₂ emissions by 7,120 kg and won the 2019 National Campus Commuter Challenge.



Campus-wide bike share program rolls out across campus

In July 2019, UBC Vancouver's campus-wide bike share pilot evolved into an ongoing program, operated by HOPR. This free-floating bike share program has a fleet of 200 bikes and over 80 designated hubs installed across campus, in both academic and neighbourhood areas.

The program provides an important first and last mile connection to transit, improving transit travel times and access to destinations across UBC's vast 400 hectare campus community. The designated hubs make it easier for users to locate and park shared bikes, they conserve bike rack space for other cyclists, and they reduce potential for bikes to end up scattered around the public realm.

The program has been extremely successful with an average of over 225 trips per day throughout the fall of 2019.

54%

of all trips to and from campus were made by transit (Vancouver)

56%

of all trips were made by sustainable modes of transportation (Vancouver)

43%

of all trips were made by sustainable modes of transportation (Okanagan)

19%

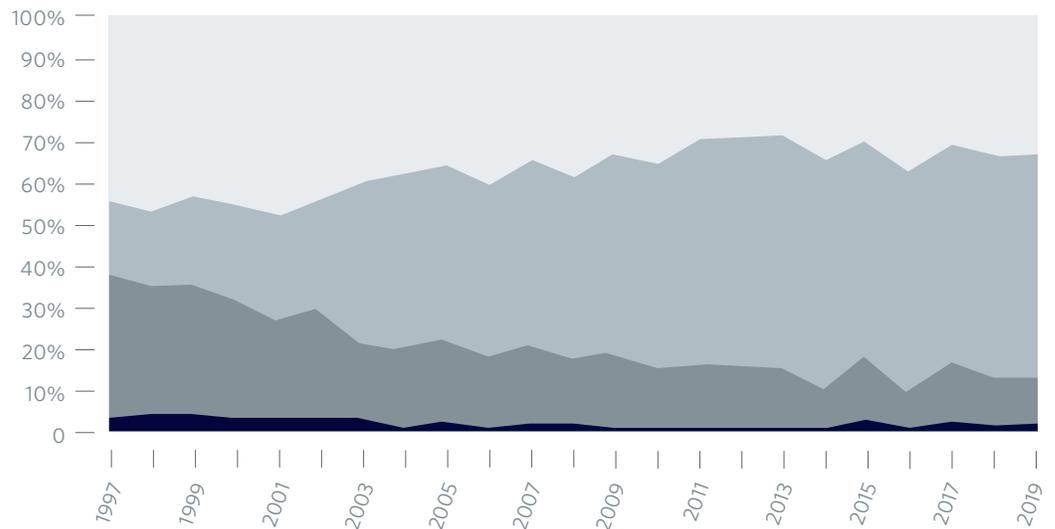
of all trips to campus made by cycling & walking (Okanagan)



TRANSPORTATION

Vancouver Campus

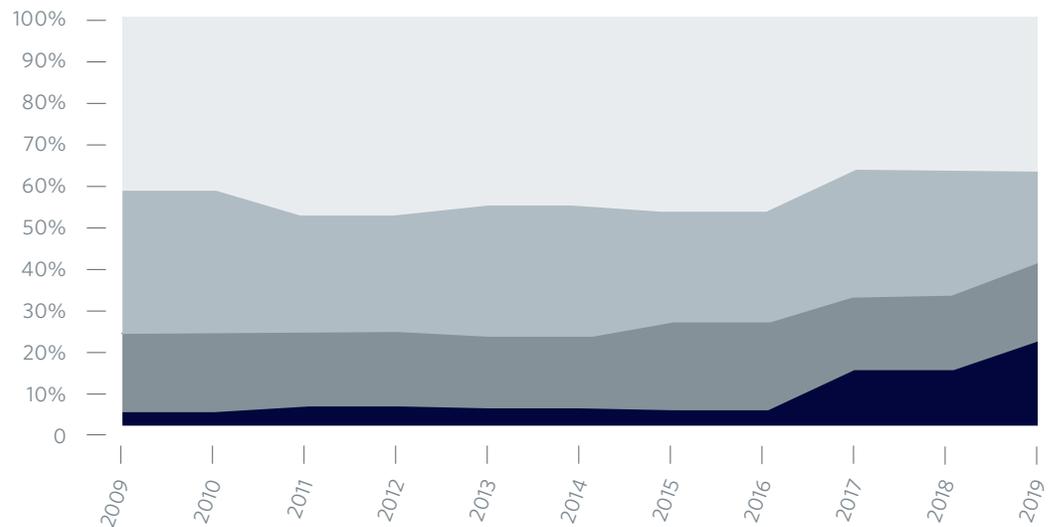
- Single Occupancy Vehicle
- By Transit
- Carpooling
- Walking and Cycling



TRANSPORTATION

Okanagan Campus

- Single Occupancy Vehicle
- By Transit
- Carpooling
- Walking and Cycling



HOUSING AND AMENITIES

UBC is building a vibrant community by providing campus housing options to students, faculty, staff and residents, and by developing recreation facilities, community centres, parks, and open spaces within our neighbourhoods and academic spaces. UBC now provides 686 faculty and staff rental units, 137 new childcare spaces raising the total to 951, and has increased student residences to 14,101 student beds.

UBC Vancouver Campus

Exchange Residence Complete

The Exchange Residence and UBC Bus Exchange combine transit and student living in a mixed-use environment. The building showcases livability and accessibility, while targeting sustainable design goals such as building LEED gold certification, energy performance, and support for sustainable transportation.

With 651 beds, Exchange Residence supports a larger diversity of student needs by offering a unique mix of different housing types. The attached UBC Bus Exchange is the point of arrival for approximately 66,000 people daily traveling to campus on various bus routes, and is the second busiest transit exchange in the Lower Mainland region and supporting sustainable transportation.

The landscaped podium over the bus exchange in the project consists of drought-tolerant native and adaptive species. The design was intended to promote outdoor amenity use and reduce heat-island effect.

Wesbrook Place Neighbourhood Plan accelerated delivery

The new Wesbrook Child Care Centre is being constructed as an addition to the Wesbrook Community Centre. The facility will accommodate 49 child care space for infants, toddler, and preschool age children. In addition, changes were made to the Wesbrook Place Neighbourhood Plan to accelerate delivery of up to 500 faculty and staff rental units.

UBC Okanagan Campus

New student housing & amenities and childcare spaces

The Nechako Housing Commons and Skeena Residence, currently under construction, will increase student housing from 1,670 beds to just over 2,100 beds, offer 24-hour amenities services, and provide a 500-seat dining hall to students by 2021. In addition, upcoming renovations to UBC Okanagan's existing childcare facility will add 20 new spaces by fall 2020.



Fostering inclusive, resilient and place-based neighbourhoods

Urban biodiversity is in critical decline. Creating biodiversity installations such as a mason bee home can not only actively enhance biodiversity, but can create community connections with place and each other, by encouraging community conversations on biodiversity-related topics and experiences in food gardens.

Ten UBC neighbourhoods families made mason bee homes for a pollinator installation that five senior undergraduate students designed and built through a SEEDS research project to increase local pollinators in campus community gardens. In addition to ecological benefits, this research helped create new connections between neighbours.

According to the University Neighbourhood Association's Sustainability Coordinator Emily Lomax, "Having the installation in the garden has brought people together, in a way we couldn't have imagined a year ago!"

951

child care and out of school spaces in operation (Vancouver)

49

new childcare spaces under construction (Vancouver)

440

additional student beds ready for 2021 (Okanagan)

56%

increase in childcare spaces under construction (Okanagan)

WELLBEING

UBC Wellbeing is a collaborative effort to make the University a better place to live, work and learn through a systems-wide approach to wellbeing across our campuses. We believe that good health and wellbeing are foundational to our success as individuals, a university and a community, and are committed to making wellbeing a priority that guides our daily interactions, decisions, policy planning, and program development.

Cross Campus Initiatives

UBC Wellbeing launches Wellbeing Strategic Framework

The Wellbeing Strategic Framework is our shared vision for UBC as a health and wellbeing promoting university. To advance UBC's Strategic Plan, and guided by the Okanagan Charter, it connects our long-term, university-wide aspirations with actions and targets that promote wellbeing across six priority areas.

Thrive celebrates 10 years at UBC

Thrive - UBC's annual mental health literacy campaign - celebrated 10 years at UBC with a month of events and initiatives to help our community members foster and maintain their mental health.

Food Security Initiative launched

Data and student-led research shows that food insecurity is a substantial concern on UBC campuses. The Food Security Initiative launched to bring together students, faculty, staff and community stakeholders to further policy and advocacy work by deepening our understanding of food security, alleviating immediate pressures, and fostering knowledge exchange and advocacy efforts within UBC and beyond.

Smoke and vape free areas at UBC Vancouver

UBC Vancouver implemented smoke and vape free areas in the health precinct and Library Gardens, ensuring that visitors to our hospital and surrounding buildings have access to an environment that supports healing.

President's Leadership Forum

In October 2019, UBC Human Resources and UBC Wellbeing led a wellbeing-focused session of the President's Leadership Forum, engaging 120 senior leaders to embed new wellbeing strategies in their units.

VOICE research tackles crucial wellbeing topics

A four-year VOICE project "Perspectives of Smoking at UBC Okanagan" concluded, and Campus Health launched their VOICE 5 research project, with a substantial focus on food security and issues that are impacting student access to food.



Wellbeing Strategic Framework launches

"We know that increased wellbeing leads to deeper learning, higher productivity, and a stronger sense of connection - all of which help create happier, healthier communities" says Professor Santa Ono.

The UBC community agrees. During consultation for UBC's Strategic Plan, "focusing on the wellbeing of our UBC community," was recognized as an area for significant transformational potential.

In September 2019, UBC launched the Wellbeing Strategic Framework to connect our long-term, university-wide aspirations with actions and targets that promote wellbeing across six priority areas: Collaborative Leadership, Mental Health & Resilience, Food & Nutrition, Social Connection, Built and Natural Environments, and Physical Activity.

The framework outlines a collaborative and system-wide approach—over the past year, departments and units have activated it by working together on initiatives to shift University culture and support wellbeing - everything from food security, to mental health literacy, to active health.

\$90,000

granted to 24 capacity-building projects to support wellbeing

46

new commitments to wellbeing made in President's Leadership Forum

30%

of vending machines at UBC Vancouver converted to healthier choices

85%

increase in managers trained and certified in 'The Working Mind for Managers'



The United Nations Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) are a blueprint for a more sustainable future. Adopted by all UN Member States in 2015, the 17 SDGs are global and interconnected. They aim to leave no-one behind, and to lift up those in greatest need first.

Broadly addressing inequality, education, environment, health, peace and justice, the Goals include 169 ambitious targets. Examples include ending all forms of malnutrition by 2025; achieving universal and equitable access to safe and affordable drinking water for all by 2030; and preventing and significantly reducing marine pollution of all

kinds by 2025. In addition, three goals focus specifically on climate, land and water – the essential life support systems for human survival.

Yet the SDGs are not perfect. They presume continued economic growth, which on its face is incompatible with the deep greenhouse gas emission reductions required to avoid the escalating climate crisis. The SDG international poverty line indicator – an individual income of less than \$1.25 a day – is a controversial low benchmark.¹ And Indigenous peoples and Indigenous rights receive inadequate attention. Critics – including members of the UBC community – point out that adopting the SDGs will perpetuate unequal relationships between dominant and marginalized communities. As a university committed to open dialogue and evidence-based decision-making, UBC invites critical perspectives as we work together within this framework.

But despite their flaws, the SDGs are the only comprehensive global plan of action to address the world's most daunting problems. The SDGs not only empower governments and businesses all over the globe, they also unite citizens, NGOs – and universities – with a common language and vision for a better world.

¹ Philip Alston, UN Special Rapporteur on extreme poverty and human rights COVID-19 has revealed a pre-existing pandemic of poverty that benefits the rich. The Guardian, July 11, 2020 <https://www.theguardian.com/global-development/2020/jul/11/COVID-19-has-revealed-a-pre-existing-pandemic-of-poverty-that-benefits-the-rich>plant trimmings.

The SDGs at UBC

Inspiring Action

Like many universities around the world, UBC is inspired by all 17 Goals as a comprehensive framework for sustainability. For example, the new UBC Global Engagement Strategy, *In Service*, with its theme of UBC as a global citizen and our commitment to building a better world, advocates the vital need to bring knowledge, expertise, partnerships and service capacity to address complex planetary challenges highlighted by the SDGs.

Students, in particular, are inspired by the SDGs. In 2020, members of the Sustainability Ambassadors Program – an immersive sustainability leadership experience for students – organized a week-long series of SDG events and speakers, including Indigenous perspectives, science, city, and social entrepreneurship. UBC students have also formed a new group, the SDG Alliance, to take a justice-centred approach towards sustainability and equity.

Four Focus Areas

Our Progress this Year

UBC faculty, staff and students are working hard to advance all 17 SDGs through a wide range of activities. The table on pp.36-37 illustrates an example of a UBC plan, policy, project, program, or research group that advances each of the SDGs.

In addition, this year UBC’s executive level Sustainability Strategy Steering Committee identified specific areas of focus, informed by the UBC Strategic Plan and the SDGs.

The four focus areas are:

- **Climate Action [SDG 13]**
Climate action took centre stage at UBC this year, marked by President Ono’s Declaration on the Climate Emergency and the convening of a Climate Emergency Task Force. Work continued on ambitious campus climate action plans with aggressive emission reduction targets. After years of pressure from student, faculty, and staff activists, the Board of Governors made the decision to divest from fossil fuels, joining other leading universities around the world.

- **Sustainable Cities and Communities [SDG 11]**
UBC has long been at the forefront of research and action towards sustainable cities and communities. Mass timber, low-emission and other green building innovations showcase UBC’s expertise. This year a new Working Group was formed to unite the multiple strands of work on this theme. The Campus as a Living Lab program will hold its first competition to promote sustainable projects at UBC. Practitioners and researchers have co-designed new real-world student learning opportunities.
- **Responsible Consumption and Production [SDG 12]**
The Zero Waste Committee tackles a number of aspects of sustainable production and consumption. This year, the “Let’s Choose to Reuse” behaviour change campaign began significantly reducing UBC’s biggest single-use item: disposable coffee cups.
- **Good Health and Wellbeing [SDG 3]**
A diverse and dedicated Wellbeing Committee unites work on this theme across both campuses. This year, UBC launched the Wellbeing Strategic Framework, with six priority areas: Built and Natural Environments, Food and Nutrition, Mental Health and Resilience, Physical Activity, Social Connection, and Collaborative Leadership. This framework moves the university closer to its goals of health for all and social sustainability.

Next Steps

The UBC community will continue to map out the focus areas across all aspects of university life, setting targets for improvements in each field, and designing workplans to reach the targets. A stand-alone SDG report later this year will showcase the breadth and depth of UBC’s activities. Increasing ambition and accelerating timelines characterize all of the focus areas, and UBC’s sustainability work overall.

UBC’s impact is evident in every aspect of campus life, and spreads far beyond campus through its research, partnerships, and graduates who embody our commitment to sustainability.

Selected examples



Basic Income as a policy tool for BC

Vancouver School of Economics researchers are investigating Basic Income to reduce or eliminate poverty; allow workers to choose more rewarding work; eliminate problematic aspects of the current welfare system; and reduce administrative cost and bureaucracy.



A Road Map around North America's Crop Wild Relatives and Wild Utilized Plants

Botanical Garden staff have helped create a road map to understand, document, conserve and promote North America's crop wild relatives (species closely related to agricultural crops) and wild utilized plants (plants that grow spontaneously in self-maintaining populations).



First Nations Health Authority Chair in Cancer and Wellness at UBC

This new position, supported by a \$1.5 million contribution from the FNHA, with matching funds from UBC, aims to address the disparity in cancer health outcomes between Indigenous and non-Indigenous people in BC.



Indigenous Strategic Plan Action 39

UBC has committed to strengthen relationships with educational providers and support a comprehensive, multi-pathway approach for transitioning Indigenous students from K-12 or college to undergraduate studies, or from undergraduate studies to graduate studies.



Engendering Success in STEM research consortium

Psychology researchers testing the long-term efficacy of interventions that harness the power of positive social interactions to mitigate subtle gender bias. The ultimate goal is understanding and combating cultural biases preventing inclusive cultures for women and men in STEM.



RESEAU Centre for Mobilizing Innovation

RESEAU uses its proven model for creating ecosystems with cross-sector actors participating in strategic open innovation in Indigenous and Non-Urban settings. The model has solved several long-lasting boil water advisories in British Columbia.



Bioenergy Research Development Facility expansion

A \$7.6 million grant from the federal government's low-carbon economy fund will be used to purchase and install a 12 MW biomass fuelled hot water combustion boiler. Once operational, the BRDF will halve UBC's current dependency on natural gas.



Social Innovation Academy

Run from the Sauder School of Business, students at universities across Canada improve their employment-related skills by helping organizations with strong social or environmental missions to build their capacity and solve a business problem.



Lab spins nanofibre from waste fabrics

Materials engineering researchers have developed a way to recycle cotton waste into higher-value nanofibres used for the building blocks of advanced products like surgical implants, antibacterial wound dressings and fuel cell batteries.

Selected examples



UBCO School of Nursing's Global Health practicum

Practicum in Ghana or Zambia based on critical social theory and community development principles. Students help deliver acute and community care and collaborate with the local community to solve issues.



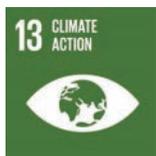
Sustainable Communities Lab

Researchers explore the burden on communities due to the enormous economic and social costs associated with road collisions, and research tools to enable community planners, engineers and decision-makers to better understand and address their challenges.



UBC Bioreactor Technology Group

The Bioreactor Technology Group researches biological waste treatment processes such as how to identify and remove micropollutants like hormones, pharmaceuticals and pesticides. In addition, researchers are investigating how anaerobic digestion can utilize microorganisms to turn organic waste into renewable energy and organic fertilizer.



Wildfire and Carbon: Increasing the resilience of BC's forests to climate change

The Pacific Institute for Climate Solutions recently announced a \$1 million four-year partnership project led by UBC Forestry to de-escalate the impact of forest wildfires that are increasingly occurring due to climate change.



100% Ocean Wise

Only 100 per cent Ocean Wise recommended sustainable seafood is purchased and offered since July 2019 at every food service location on both campuses, excluding franchises.



Okanagan Institute for Biodiversity, Resilience, and Ecosystem Services

BRAES is a group of over 30 faculty members and their graduate students working in ecology, biodiversity and conservation, and environmental sustainability.



International Justice and Human Rights Clinic

Provides upper-year law students the opportunity to work on pressing human rights and global justice concerns through hands-on work on international cases and projects.



UBC adopts leadership of University Climate Change Coalition (UC3)

UC3 is a network of 22 leading North American research universities working together to accelerate local and regional climate action. As UC3 lead, UBC President Santa J. Ono will coordinate the coalition, guide strategic projects and continue to build the network of partnerships.

VANCOUVER CAMPUS			
	2019/20	Cumulative data	Cumulative since
TEACHING, LEARNING AND RESEARCH			
Academic Courses & Programs			
Sustainability-related degree programs (#)	42	-	n/a
Sustainability-related courses (#) (Vancouver)	677	-	n/a
Sustainability-related courses (#) (Okanagan)	104	-	n/a
Departments with sustainability-related courses (%)	54	-	n/a
Research			
Faculty engaged in sustainability-related research (#)	393	-	n/a
Sustainability Curriculum Grants			
Grants awarded (#)	4	37	2010
Funds awarded (\$)	50,618	323,231	2010
Sustainability Fellowship Program			
Faculty Fellows (#)	6	42	2010
Departments with participating faculty (#)	10	25	2010
Sustainability Scholars Program			
Graduate student internships (#)	67	349	2010
Partner organizations (#)	18	32	2010
Graduate degree programs with participating students (#)	29	71	2010
Sustainability Ambassadors			
Student members (#)	25	135	2012
Attendees at Ambassador events (#)	1,400	7,636	2012
Student-generated funding received (includes in kind) (\$)	14,300	62,080	2012
Degree programs with participating students (#)	18	39	2012
Student Sustainability Council			
Student-led groups (#)	24	146	2010
Projects given feedback from Council (#)	7	37	2010
Student Sustainability Network			
Student members (#)	229	477	2017
SEEDS			
Participants (students, faculty, staff, and community partners) (#)	849	10,240	2001
Applied research projects (#)	89	1,211	2001
Research reports (#)	150	2,032	2001
UBC sustainability plans and policies advanced (#)	27	n/a	-
Campus Engagement			
Sustainability Coordinators (# in offices and labs, Vancouver Campus)	127	n/a	-
Power of You (# volunteers, Okanagan Campus)	23	n/a	-
Community Engagement			
Sustainability tours conducted (#)	156	n/a	-
Sustainability tour participants (#)	1,304	n/a	-
Digital Engagement			
Website page views (#)	241,430	n/a	-
Website users (#)	84,560	n/a	-
Facebook likes (#)	4,124	n/a	-
Twitter followers (#)	11,800	n/a	-
Instagram subscribers (#)	3,305	n/a	-
Newsletter subscribers (#)	3,874	n/a	-

	VANCOUVER CAMPUS			OKANAGAN CAMPUS		
	2019/20	Trend	Baseline	2019/20	Trend	Baseline
CONTEXT						
Staff and Faculty Employees (FTE)	13,861	+31%	2007	1,438	+128%	2007
Student Enrollment (FTE)	50,608	+35%	2007	9,405	+130%	2007
Institutional Floor Space (m ²)	1,605,006	+25%	2007	147,236	+105%	2007
OPERATIONS AND INFRASTRUCTURE						
Campus Total GHG Emissions (tCO ₂ e) Target (UBCV): 67% by 2020; 100% by 2050	43,683	-28% ●	2007	2,424	-33% ●	2013
Campus Total GHG Emissions, Buildings Only (tCO ₂ e)	42,270	-27% ●	2007	2,236	-26% ●	2013
GHG Emissions per student (tCO ₂ e/student FTE)	0.86	-47% ●	2007	0.26	-52% ●	2007
GHG Emissions per floorspace (tCO ₂ e/m ²)	0.027	-43% ●	2007	0.016	-46% ●	2007
Campus Energy Sources in GJ (%)						
Natural Gas	41%	-22%	2007	28%	-	-
Electricity	43%	6%	2007	71%	-	-
Biomass (Vancouver)	11%	11%	2007	-	-	-
Propane / Diesel / Light Fuel	1%	1%	2007	P=0.06%	-	-
Renewable Natural Gas	4%	4%	2007	D=0.11%	-	-
Campus Building Energy Use (GJ)	1,701,135	-1% ●	2007	149,600	-9% ●	2013
Campus Building Energy Use Intensity (GJ/m ²)	1.06	-20% ●	2007	1.02	-15% ●	2013
Absolute Water Use (m ³)	2,352,075	-50% ●	2000	188,436	14% ●	2013
Water Use Intensity (m ³ /student FTE)	46	-70% ●	2000	20.04	-10% ●	2013
Overall waste diversion rate (%) Target (UBCV): Increase overall waste diversion rate by 80% by 2020	47%	-12% ●	2010	35%	+13% ●	2010
Operational waste disposed (tonnes) Target (UBCV): Achieve a decreasing trend in operational waste disposed to landfill/incineration despite forecasted campus growth	3,323	+7% ●	2010	658	-7% ●	2010
Annual waste disposed (tonnes)	3,581	-8% ●	2010	695	-2% ●	2010
LEED Projects (# Certified)	23	-	n/a	2	-	n/a
REAP Projects (# Certified)	33	-	n/a	1	-	n/a
COMMUNITY AND ENGAGEMENT						
Transportation Mode Share						
Trips to/from campus by single occupant vehicle (SOV) (%)	32%	3% ●	1997	37%	-6% ●	2009
Trips to/from campus by walking, cycling, or transit (%)	56%	+95% ●	1997	43%	+7% ●	2009
Trips to/from campus by transit only (%)	54%	+200% ●	1997	23%	-11% ●	2009
Trips to/from campus per person by public transit only (#)	80,200	+322% ●	1997	5,495	-3% ●	2009
Student beds (#) Target: Build up to the capacity for SHHS-operated housing in the Academic lands	12,425	n/a	n/a	1,676	73%	2007
Faculty and Staff Housing (# of total units)	686	+16%	2014/2015	-	-	-
Child Care (# of total spaces)	951	+66% ●	2014/2015	36	0%	2013

● On track/continued progress made. ● Monitor/explore opportunities for improvement. ● Attention required/advance process.

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