# SUSTAINABLE DEVELOPMENT GOALS

## AT THE UNIVERSITY OF WATERLOO

**MAKING A CONTRIBUTION TO A BETTER WORLD** — APRIL 2022

UNIVERSITY OF **WATERLOO**

University of Waterloo supports the Sustainable Development Goals

# SUSTAINABLE DEVELOPMENT GOALS

The interconnectedness of the Sustainable Development Goals (SDG)s is one of their key features, creating both synergies for solving shared challenges and risks for failing to manage tradeoffs.

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## Territorial Acknowledgement

The University of Waterloo acknowledges that it operates on the traditional territory of the Attawandaron (Neutral), Anishinaabeg, and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land granted to the Six Nations that includes ten kilometers on each side of the Grand River.

# FROM THE PRESIDENT



At the University of Waterloo, sustainability is more than a buzz-word. We are committed to being a global leader when it comes to sustainability.

The United Nations Sustainable Development Goals present an important global framework that is pushing countries, communities, and organizations to collectively work toward a prosperous, equitable, and ecologically sustainable world.

Within this inaugural report, you will discover how many on-going campus initiatives are aligning with these global targets. These efforts include the Environmental Sustainability Strategy, Climate Action Plan, EDI-R and Indigenous initiatives, and the development of experiential education and wellness programming.

The University of Waterloo is the founding institution and host of Sustainable Development Solutions Network (SDSN) Canada. We leverage our position as home to Canada's largest Faculty of Environment to share knowledge, activate research and help solve the interconnected economic, social, and environmental challenges confronting the world.

Sustainable Development Goals play an integral role in our institution's Sustainability Strategy. The strategy commits Waterloo to be a leader in sustainability education and research, operate a sustainable campus, and imbed sustainability into our campus culture.

We continue to uncover innovative ways to meet and exceed our commitments moving forward. These measures include striving towards net-zero operations, but equally as important, fostering a community culture of diversity and inclusion.

The challenges of sustainable development are complex and interconnected. As we continue to witness, global threats like the pandemic and climate change compound existing social and economic inequities.

The SDGs provide a roadmap towards a more sustainable future, but that roadmap only goes so far. Together, we need to commit to doing our part individually and collectively to ensure success. I hope this document inspires our community to continue on this path.

*Vivek Goel*

**VIVEK GOEL, CM**
**PRESIDENT AND VICE-CHANCELLOR**

# A BETTER FUTURE FOR ALL IS POSSIBLE

A more caring future, a more sustainable future, a more equitable future … the bright futures we imagine are improved in so many ways over what we have today. But while it is easy to see how things can be better, it is hard to see how to achieve that brighter future with our complex institutions and competing priorities. The United Nations (UN) Sustainable Development Goals (SDG)s are meant to guide countries and institutions in building that better future for all.

The 17 SDGs were unanimously adopted by the UN in 2015 to build prosperity, equity and a healthy planet. Each goal has multiple targets for 2030, plus indicators that together can guide policy and strategic decisions. The goals are a recognition that all countries can do better, and countries that are the furthest behind in these goals must be a priority for progress.

There is also a recognition that the SDGs are all interconnected. Increasing access to higher education, for example, can reduce poverty and gender inequalities while increasing economic opportunities. However, the same interconnectedness could generate dissonance between the goals. For instance, access to education is diminished in a society threatened with ecological degradation, war, or major climate disruptions.

In solving pressing challenges and building a better future, the higher education sector has an enormous role to play. Institutions are responding through growing dialogue, networks, and action to drive impact toward the SDGs.

As such, the SDGs can be used by the University of Waterloo to understand how our institutional and community actions contribute to achieving the bright future we collectively seek.

At the University of Waterloo, the SDGs are an integral part of the campus **Sustainability Strategy**. The University of Waterloo is a host to **SDSN Canada**, an organization dedicated to implementing the SDGs through education, research, policy analysis and global cooperation. Waterloo is also a founding member of the **University Global Coalition**, which works with campuses from around the world to support implementation of the SDGs in education.

This report aims to provide a snapshot of the type of activity undertaken at the University of Waterloo which contributes to the SDGs. It introduces each SDG and provides a selection of representative case studies along with some key statistics or accomplishments for each SDG.

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2 ZERO HUNGER
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4 QUALITY EDUCATION
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6 CLEAN WATER AND SANITATION
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17 PARTNERSHIPS FOR THE GOALS

Icons are used to show how those case studies connect the four broad mechanisms by which the work has impact through: research, educational activities including academic courses and courses for the wider community, the operational practices carried out on campus, and community engagement activities.

**RESEARCH**

**TEACHING**

**PRACTICES**

**COMMUNITY**

This report provides a sample of SDG-related work, not an inventory. Many activities happening across campus were not included to maintain brevity. The case studies and accomplishments are meant to reflect prominent efforts, to showcase the range of ways in which Waterloo is supporting implementation of the SDGs from the local through the global. The report is meant to raise the profile of the SDGs, create opportunities for reflection, and inspire action.

The interconnectedness of the SDGs is one of their key features, creating both synergies for solving shared challenges and risks for failing to manage tradeoffs. For ease of synthesizing Waterloo's actions, each case study was assigned to only one SDG, However, the work profiled in case studies often contributes to more than just the one SDG under which it was assigned.

The snapshots of SDGs are followed by a summary of research activity, international research collaborations, and courses related to the SDGs. The methodologies used for this analysis are outlined in the appendix.

Finally, an opportunities section highlights where the University of Waterloo can increase its impact both locally and globally.

Any questions on this report can be directed to the Sustainability Office, at **sustainability@uwaterloo.ca**

**SUSTAINABLE DEVELOPMENT GOALS**

# 2021 KEY ACCOMPLISHMENTS

Over the course of 2021, the University of Waterloo:

> **Ranked 14th in the world and 3rd in Canada for efforts toward ending hunger and improving food security** (SDG 2) by the Times Higher Education (THE) University Impact rankings, and ranked 4th in Canada for no poverty (SDG 1) and also for decent work and economic growth (SDG 8). The THE University Impact rankings examined over 1,600 Universities from 99 countries in 2021.

> **Received a <u>Silver rating</u> in the Sustainability, Tracking, Assessment and Rating System** (STARS), a global higher education standard for sustainability.

> **Launched the <u>Waterloo Institute for Sustainable Aeronautics</u>** (WISA), the world's leading hub for sustainable aviation and aerospace research, technology, and education. By facilitating direct partnerships with industry, government, and academia, WISA mobilizes the research and innovation capacity of all six faculties at the University of Waterloo to drive meaningful and lasting impact.

> **Made a <u>Climate Emergency Declaration</u>,** recognizing that human activity has already caused changes to the Earth's climate system; that these effects will continue to intensify, compounding inequalities and escalating threats to all life on earth; and that the University of Waterloo has an important role to play in climate action and climate justice.

> **Committed to reducing the carbon footprint of its pension and endowment investment portfolios** by 50 per cent by 2030 and achieving full carbon neutrality by 2040.

> **Launched two new undergraduate degree programs centered on sustainability.**
> The **Sustainability and Financial Management** degree will prepare a new generation of financial experts to incorporate people, profits, and the planet into the bottom line while evolving environmental, social, and corporate governance (ESG) reporting to lead organizations toward a greener world. The **Climate and Environmental Change** program covers the science behind the challenges facing our planet's environment and provides a broad background to address climate and environmental challenges.

> **Initiated a formal Sustainability Living Lab program** to facilitate opportunities for students to apply their skills and knowledge to real-world sustainability efforts on campus. The program aims to expand experiential learning while using the University itself as a laboratory and model for the implementation of greater sustainability practices.

> **Created a new Sustainability Commissioner position** within the Waterloo Undergraduate Student Association (WUSA), to oversee the **Sustainability Project**, previously known as the Sustainable Campus Initiative. The Commissioner's role is to support existing student groups and sustainability initiatives on campus, while identifying advocacy gaps that the University and WUSA can work to fill.

**1 NO POVERTY**
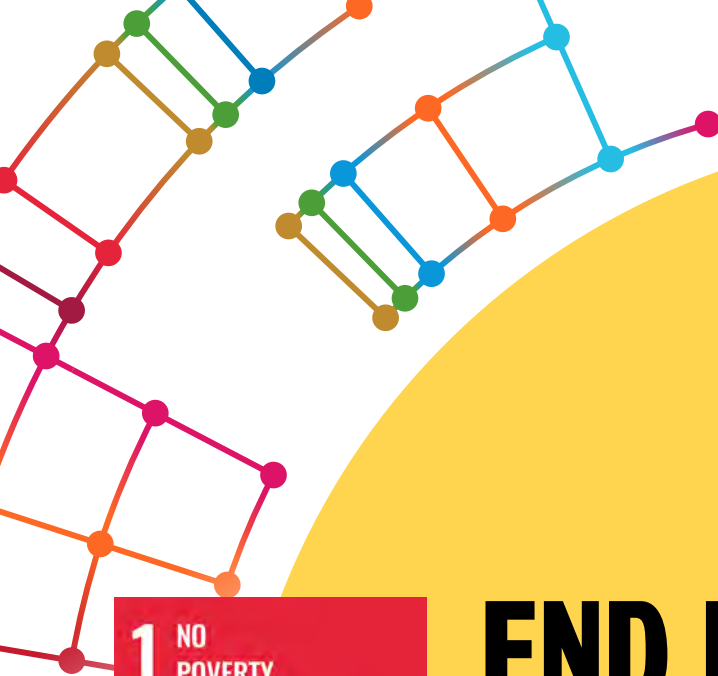
# END POVERTY IN ALL ITS FORMS EVERYWHERE

SDG 1 aims to reduce the number of people living in poverty everywhere in the world. This involves increasing access to resources, services, property, and financing while building resilience to disruptions such as climate change. At the University of Waterloo, the focus is on increasing access to higher education and building the infrastructure and institutions that support prosperity for all.

**92%** of incoming undergraduate students in 2021 received an entrance scholarship
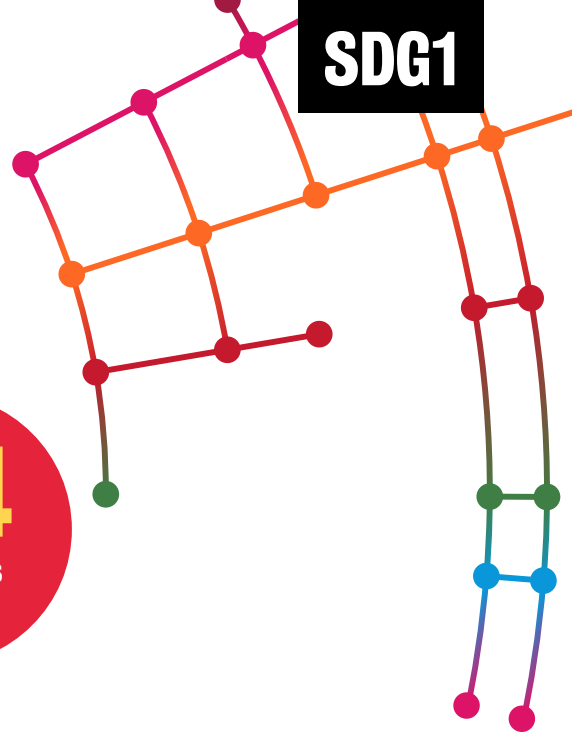
**$14,746** average student co-op work term earnings  2020–2021

**9**
faculty publishing
in SDG 1

**154**
Publications
in SDG 1

**23**
Courses covering
SDG 1 (estimate)

## Student Awards and Financial Aid

Student Awards and Financial Aid aspires to identify students with financial need and ensure that all eligible students admitted to full-time undergraduate programs have the financial assistance necessary to complete their studies.

## Bachelor of Social Work

The Bachelor of Social Work distinguishes itself through strong academics as well as a hands-on, skills-oriented approach to social work practice. The program's education is enhanced by the School of Social Work and Renison University College's missions promoting social justice and community service.

## Hungry Cities Partnership

The University of Waterloo is a partner in the Hungry Cities Partnership, a global collaboration leading ground-breaking research to better understand and respond to the causes of hunger in cities of the Global South. The partnership aims to provide solutions to the challenge of building sustainable cities, policies and programs that promote food security in cities. The Partnership supports work in China, India, Jamaica, Kenya, Mexico, Mozambique, South Africa, Ecuador, Ghana, Namibia, Qatar, and Singapore.

## Engineers Without Borders

Engineers Without Borders (EWB) at the University of Waterloo is the founding chapter of EWB Canada (c. 2000), with a goal to bring powerful ideas to life by building systems change leaders. The chapter looks to tackle important issues including poverty, climate change, and equality through technical & non-technical programs. These programs include: pro-bono technical development & consulting, fundraisers, advocacy with the Canadian government, educational events, youth outreach, and international fellowships. Through this work, EWB has taken strides to end poverty by unlocking human potential.

## ZERO HUNGER

# END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION, AND PROMOTE SUSTAINABLE AGRICULTURE

SDG 2 focuses on ensuring access to adequate healthy food while supporting resilient agriculture practices that respect workers and the land. At the University of Waterloo, implementation of SDG 2 is reflected in academic work to develop sustainable agricultural and food distribution practices worldwide while improving the access to healthy and sustainable food choices for those in the campus community.

**>30%** of all food purchases are local, Fairtrade certified, or Marine Stewardship Council certified

**FAIR TRADE CAMPUS**

**Fair Trade Campus designation**
since 2019

**39**
faculty publishing
in SDG 2

**351**
Publications
in SDG 2

**41**
Courses covering
SDG 2 (estimate)

## Our Food Future Waterloo 🔗

Our Food Future Waterloo is a joint project from the University of Waterloo and the Food System Roundtable of Waterloo Region to bring the best from research and the community to inform our path towards Food Justice in the region. The project's intent is to support networks and coalitions within the Region of Waterloo to mobilize responses to short term and long term food systems issues through research, education and partnership-building.

## Global Food Politics Group 🔗

The Global Food Politics Group is a diverse group of researchers based at the University of Waterloo working on projects that focus on the political, social, economic, and ecological dimensions of various global food and environmental issues. The Group's research aims to contribute to the development of more sustainable and equitable food systems that enhance global food security.

## Food Support Services 🔗

The Food Support Services is a non-profit service run by the Waterloo Undergraduate Student Association that provides confidential assistance and food hampers to members of the University of Waterloo community experiencing food insecurity. An average 150 hampers were distributed per month in the fall of 2021.

## Food Services 🔗

Food Services is proud to offer fresh, house-made, delicious food curated by Red Seal chefs, all while supporting the community by sourcing local and sustainable food choices, including Marine Stewardship Council certified seafood, Fair Trade coffee, and plant-forward options. Through their 'Farm to Campus Fresh' program, they support over 75 local farmers. Food Services also has a registered dietitian on staff to support the campus community in making informed and nutritious choices.

## Ecological Agriculture in China 🔗

The Ecological Agriculture in China group works in collaboration with Chinese universities to support a sustainable food system in China. This includes the expansion of ecological farming, the emergence of ecological farmers' markets, community supported agriculture farms and buying clubs, and many other initiatives addressing the food security and food safety concerns of Chinese citizens.

## Agricultural Water Futures 🔗

The Agricultural Water Futures aims to determine how Canadian agriculture and food production systems can best respond to risk and uncertainty associated with current and future climatic and socio-economic stressors. The research group identifies and assesses appropriate agricultural activities, beneficial management practices, and governance arrangements related to water quantity and quality that will ensure sustainable food supplies, healthy ecosystems, and an economically strong agricultural community.

# 3 GOOD HEALTH AND WELL-BEING

# ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL, AND AT ALL AGES

SDG 3 aims to reduce the number of preventable illnesses and deaths from all causes, including both infectious and non-communicable diseases, mental health, substance abuse, road traffic accidents, sexual and reproductive health, pollution, and more. Health research is an increasingly important part of the University's contribution, as are its health professional training programs and health and wellness programs on campus.

**Signatory to Okanagan Charter,** an international charter for health promoting Universities and Colleges

## Campus Wellness 🔗 and Wellness Collaborative 🔗

Campus Wellness (CW) provides primary medical and mental health care to students. It takes a client-centered approach to plan and implement programs and services that are respectful, responsive and adaptive. Occupational Health works closely with managers, supervisors, human resources, and individual employees to maintain, promote and restore employee health, safety and wellbeing. CW leads the Wellness Collaborative to mobilize the commitments of the Okanagan Charter. This strategy focuses on fostering personal development, supportive environments and policies for mental health and resilience, physical health, social health and belonging, spiritual well-being, and institutional commitment to wellness at all levels.

**141**
faculty publishing
in SDG 3

**1,603**
Publications
in SDG 3

**184**
Courses covering
SDG 3 (estimate)

## Public Health Program 🔗

Doctors might help a dozen or so patients a day. Public health professionals help thousands. The Public Health undergraduate program explores how social, cultural, political, and environmental conditions play a pivotal role in health – and how understanding these factors can address health challenges, including mental ill-health, non-communicable diseases, and infectious diseases.

## Optometry 🔗

Optometrists are dedicated to enhancing overall well-being by helping people see. Optometry students are trained at the highest scope of North American practice for primary and specialty eye and vision care. Recognized globally among the top five schools for research impact, Optometry is tackling the biggest challenges in vision research identified by the WHO – from fundamental biomedical research to clinical trials for sight-saving treatments – through interdisciplinary collaboration at Waterloo and beyond.

## Global Health Policy and Innovation Research Centre 🔗

The Global Health Policy and Innovation Research Centre (GHPI) is working to advance improvements in the health of populations across the world through multi-disciplinary research and policy work carried out by faculty members across the University of Waterloo in collaboration with researchers and practitioners in other organizations across Canada and the world.

## International Tobacco Control Policy Evaluation Project 🔗

The International Tobacco Control Policy Evaluation Project is the first-ever international cohort study of tobacco use, and the University of Waterloo is a contributor. Its overall objective is to measure the psychosocial and behavioural impact of key national level policies of the WHO Framework Convention on Tobacco Control. The Project is a collaborative effort with international health organizations and policymakers in 31 countries so far, inhabited by more than 50 per cent of the world's population, more than 60 per cent of the world's smokers, and more than 70 per cent of the world's tobacco users.

## Centre for Community, Clinical and Applied Research Excellence 🔗

The Centre for Community, Clinical and Applied Research Excellence (CCCARE) is a unique, multidisciplinary team of researchers, certified exercise specialists, clinical experts, graduate students and staff that strive to improve the overall health of individuals in the community through advanced research, educational opportunities, and progressive outreach programs. Their comprehensive tools and technology help to advance knowledge in preventing and managing illness and injury, while optimizing health.

# 4 QUALITY EDUCATION

# ENSURE QUALITY EDUCATION THAT IS INCLUSIVE AND EQUITABLE, AND PROMOTES LIFELONG LEARNING OPPORTUNITIES FOR ALL

SDG 4 relates to equitable access to education, skills training, and the knowledge needed to support sustainable development. These goals can be seen in the University of Waterloo's support for students, instructors, and the community in developing practices to improve learning outcomes while using grants/bursaries/scholarships and work-study programs to improve economic access to higher education.
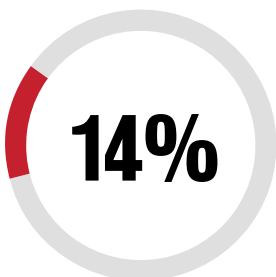
## 24.4:1

ratio of all full-time equivalent students to full time, regular faculty **2019**

## 14%

of undergraduate students graduating from a program with a required sustainability-focused course

## Co-operative Education 🔗

Waterloo's Co-operative Education program is the largest in North America and a distinguishing feature of experiential learning on campus. Through networks of over 7,100 employers across 60 countries, students from more than 120 programs have opportunities to bridge academic and workplace knowledge – challenging them to learn, grow, and contribute wherever they go. Co-op has also started a pilot project to map how students can be more aware of the SDGs and engage more deeply with them during their work experiences as a way of reflecting societal impact.

## Centre for Teaching Excellence 🔗

The Centre for Teaching Excellence (CTE) collaborates with individuals, academic departments, and academic support units to foster capacity and community around teaching and to promote an institutional culture that values effective teaching and meaningful learning. Through events, resources, new faculty support, graduate student programs, instructional and curriculum design workshops, and teaching innovation grants, CTE supports Waterloo's teaching excellence, innovation, and inquiry. CTE provides a series of online tip sheets called "Inclusive Instructional Practices" to provide guidance to instructors in this area.

## Faculty of Environment 🔗

Waterloo's Faculty of Environment is the largest and most programmatically diverse faculty of its kind in Canada. It brings over 50 years of leadership in environmental education and research, anchored in sustainable development, to the campus, community, and the world. Through pioneering new programs and learning experiences as well as cross-sectoral partnerships, Environment is equipping the next generation of sustainability leaders and mobilizing sustainability solutions across society.

## Student Success Office 🔗

The Student Success Office (SSO) aims to help students to graduate having achieved their self-identified goals while staying actively engaged both in and out of the classroom. Success means that students are ready to apply what they've learned after graduation. In 2020-2021, there were over 6,000 registrants in the student leadership program, more than 715 participants in the International Peer Community program, and over 190 Peer Mentors who connected with incoming students.

## Centre for Extended Learning 🔗

The Centre for Extended Learning (CEL) supports the design, development and delivery of online credit courses and programs for the University of Waterloo and advocates for adult, part-time and online learners. In 2021, over 400 courses and 25 programs are available fully online. Online courses increase access and flexibility, benefiting both local

**14** faculty publishing in SDG 4

**209** Publications in SDG 4

**22** Courses covering SDG 4 (estimate)

and global learners. "We've been extending learning and bringing Waterloo education to the world for more than 50 years."

## Centre for Education in Mathematics and Computing 🔗

The Centre for Education in Mathematics and Computing (CEMC) is Canada's largest and most recognized outreach organization for promoting and creating activities and materials in mathematics and computer science. It was founded in 1995 with origins dating back to the 1960s. The Centre has partnerships with groups around the world, including in the global south, providing learning resources and opportunities to compete in contests.

## Engineering Science Quest 🔗

Engineering Science Quest (ESQ) envisions a world where interest in science and engineering is common among everyone. The goal is to empower youth to be the change our world will need in the future by creating opportunities for them to increase confidence in their science, engineering and technology abilities. This is done by engaging kids in hands-on activities that serve to explore the science behind their world!

**5 GENDER EQUALITY**

# ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SDG 5 aims to end all forms of gender-based discrimination, including eliminating exploitative and harmful practices, ensuring equitable access to work and leadership positions, ensuring access to sexual and reproductive health, and recognizing the value of unpaid care and domestic work. The University of Waterloo has mentoring programs for women in under-represented fields and programs to address social and cultural norms that have been barriers to equitable participation.
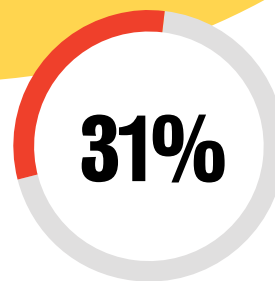
**31%** of full-time faculty are female

## 1 of 10

Higher Education Institutions globally to participate in the UN HeForShe Impact 10x10x10 commitment

**10**
faculty publishing
in SDG 5

**204**
Publications
in SDG 5

**63**
Courses covering
SDG 5 (estimate)

## Women's Centre

The Women's Centre is a Waterloo Undergraduate Student Association (WUSA) equity service that aims to create a positive and safe space for students of all genders, with a special focus on women and trans* folks. Their volunteers are trained to provide peer support with an intersectional feminist lens and can make connections with resources about sexual health, healthy relationships, mental health, and more.

## Glow Centre for Sexual and Gender Diversity

Glow Centre for Sexual and Gender Diversity is the oldest continually running university-based 2SLGBTQ+ group in Canada. Run entirely by dedicated student volunteers, Glow promotes a healthy attitude towards all sexual orientations and gender identities on the University of Waterloo campus by providing a wide variety of peer support, social events, advocacy work, and resources.

## Gender and Social Justice Program

It is the mission of the Gender and Social Justice program to foster excellent teaching and learning about social justice, broadly construed, with particular attention to the role of gender. Our students learn to put intersectional feminism into practice in diverse ways as they work to build inclusive, just, sustainable communities, locally and globally.

## Mentorship for Women in STEM

Women in Engineering (WiE) supports a mentorship program between first year students and upper year students. The Women in Math (WIM) Committee includes faculty and graduate students who work together to provide support and resources for women in Mathematics. Women in Computer Science (WiCS) is dedicated to promoting gender equity in computing by advocating for and supporting women, trans, gender-fluid, gender-queer, and non-binary students enrolled in computer science and related computing programs at the University of Waterloo.

## Sexual Violence Prevention and Response Office

The Sexual Violence Prevention and Response Office supports all members of the University of Waterloo campus community who have experienced or been impacted by sexual violence. This includes all students, staff, faculty, and visitors on the main campus, the satellite campuses, and at the Affiliated and Federated Institutes of Waterloo.

## Catalyst Grade 11 Girls Conference

The Catalyst Grade 11 Girls Conference is an exciting opportunity for grade 11 girls to participate in hands-on workshops, explore the University of Waterloo, meet engineering students, compete in a design competition, and experience life in residence!

* includes a variety of identities such as transgender, transsexual, transmen, transwomen, and others.

**6 CLEAN WATER AND SANITATION**

# ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

Improving access to safe and affordable drinking water and sanitation services is the goal of SDG 6. This includes addressing sources of pollution, increasing water-use efficiency, improving water resource management, and ensuring healthy water-related ecosystems. The University of Waterloo's Water Institute addresses many of these issues in the Canadian and global context.

## 30%
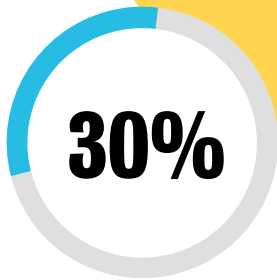
reduction in water use per square metre

since 2015

## 14

stormwater management features on the Waterloo campus including storm ponds, green roofs, and permeable pavement

## Global Water Futures 🔗

The Global Water Futures is a research initiative to find solutions that protect water quality and quantity across Canada and in the cold regions of the world. Global Water Futures will drastically change the landscape of water management with improvements to forecasting and tools that enable preparation for and management of water issues in the future in the face of dramatically increasing climate change risks.

**54** faculty publishing in SDG 6

**686** Publications in SDG 6

**54** Courses covering SDG 6 (estimate)

## *for*Water

The *for*Water Network provides new knowledge and innovation to protect drinking water from source to tap in a changing climate and to support communities to adapt to increased risks associated with changing climatic trends and natural disturbances. It does this by connecting diverse knowledge to support public policy for forest management and source water protection, technology development, utility-specific plans, and forestry best management plans.

## Water Policy and Governance Group

The Water Policy and Governance Group is a multi-university, collaborative research team based at the University of Waterloo. Its focus is water governance and water policy, emphasizing Canadian experiences. Major themes in its research program include collaborative water governance, water security, source water protection, water allocation, and adaptation to climate change. The group carries out practical, policy-relevant research that contributes solutions to these problems.

## Water Security as a Foundation for Healthy Communities and Sustainable Livelihoods

The main goals of Water Security as a Foundation for Healthy Communities and Sustainable Livelihoods project are to offer new learning opportunities for doctoral, post-doctoral and early career researchers from five low-to middle-income countries, as well as from Canada. The project aims to enrich their academic, professional, and cross-cultural experiences in the areas of climate smart agricultural systems for food security (India and Pakistan); climate-proof public health services under increasingly severe drought and flood conditions (Zambia); and safe water supply and sanitation facilities to improve the poor health status of mothers and infants (Kenya and Uganda).

## WaterTalks

WaterTalks is a lecture series, hosted by the Water Institute, run each year from September to March. Leading international and national researchers and thought leaders share cutting-edge research, inspiring dialogue and the broadening of perspectives on current water issues.

# ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

The goals of SDG 7 are universal access to modern energy services with increasing renewable energy generation and energy efficiency. The focus for the University of Waterloo has been on developing the technologies for clean energy generation and addressing the barriers to their implementation.

**18**

EV charging stations on campus available or in progress   in 2021

**>50 MWh**

of electricity generated on average per year by EV3 solar array

## Waterloo Institute for Sustainable Energy

The Waterloo Institute for Sustainable Energy (WISE) recognizes that the energy issues facing our society are complex. That's why over 100 experts are drawn from dozens of different disciplines spanning all six faculties. Energy issues also involve multiple stakeholders. The institute works closely with utilities, private-sector partners, government, and the non-profit sector in 36 countries around the world to ground their work in real-world issues. It offers their partners the full spectrum of energy research and development, education and training, and commercialization activities, as well as student internship and education opportunities regarding sustainable energy access.

**94**
faculty publishing
in SDG 7

**1,635**
Publications
in SDG 7

**59**
Courses covering
SDG 7 (estimate)



## Affordable Energy for Humanity Global Change Initiative

The Affordable Energy for Humanity (AE4H) Global Change Initiative is a global consortium of researchers and practitioners committed to ending energy poverty through the sustainable deployment of clean technology. The initiative brings members together on joint projects to scope and develop impactful interventions, and through supporting student involvement and other stakeholders in the energy access sector. The University of Waterloo is a founding partner.

## Waterloo Centre for Electrochemical Energy

The Waterloo Centre for Electrochemical Energy (WCEE) fosters collaborative and interdisciplinary research on electrochemical energy storage and conversion materials and systems. They collaborate with industry and government agencies to develop cleaner, more efficient and environmentally friendly energy technologies for portable electronics, electric vehicles, fuel cell vehicles, portable and stationary backup power supplies, and smart grid systems. These new energy technologies will protect and clean our air, water, and soil while improving the competitiveness of Canadian industry and the standard of living of Canadians.

## University of Waterloo Student Energy

University of Waterloo Student Energy is a group of students dedicated to understanding their role in the global energy transition. They enjoy learning more about clean energy through engaging discussions with faculty members and participating in energy challenges. They are excited to think of creative solutions to address clean energy access challenges all over Canada and the world. They believe that access to a reliable source of energy is essential to success in all aspects of life!

## University of Waterloo Alternative Fuels Team

The University of Waterloo Alternative Fuels Team was established in 1996 by a group of Engineering students who wanted to make a difference. With a passion for cars – designing, building, and driving them – and also awareness of environmental consequences, the team is focused on finding viable alternatives to fuel the cars of the future. They participate regularly in sustainable design competitions, including the ongoing EcoCAR3 challenge.

## District Energy System

The University of Waterloo is serviced by a district energy system, with a central plant that moves energy between buildings. Numerous investments have been made over the years to improve the efficiency of the network, including systems to recover waste heat, insulating pipes, reducing steam pressure, and installing more efficient pumps and motors. Decarbonizing the system will be an ongoing effort of Waterloo's climate action plan.

## 8 DECENT WORK AND ECONOMIC GROWTH

# PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SDG 8 relates to sustaining economic growth in a fair and inclusive manner. This includes goals for full and productive employment, access to financial services and development-oriented policies, global resource efficiency, and others. SDG 8 is reflected in the University of Waterloo's efforts to provide students with work experience and support members of the campus community in advancing their professional growth.

## 66%
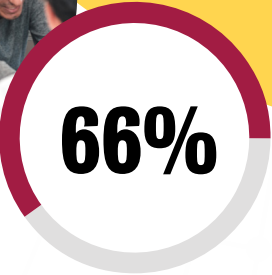
of full time equivalent undergraduate students enrolled in a co-op program

2020/2021

## #1

in Canada for graduate employment rate, QS Graduate Employment Rankings 2022

**33**
faculty publishing
in SDG 8

**426**
Publications
in SDG 8

**52**
Courses covering
SDG 8 (estimate)

## Work-Learn Institute (WxL)

The Work-Learn Institute is the only institute in the world dedicated to research on co-operative education and other forms of work-integrated learning. It was founded in 2002 on the basis that, with the largest co-operative education program in the world, they have the largest dataset to study, understand, and continue to advance its practice. The Institute has also begun mapping how student work experiences map to the SDGs as a way of reflecting societal impact.

## Organizational and Human Development

The Organizational and Human Development department is committed to advancing and supporting the personal and professional growth of University of Waterloo employees to reach their highest potential. Their mission is accomplished by creating innovative learning opportunities, cultivating collaborative partnerships, and engaging the campus community in lifelong learning.

## St. Paul's GreenHouse

GreenHouse is a social impact incubator that offers programs, opportunities and a community for students to develop problem solving skills, to form innovative ideas and make new forms of sustainable impact around social or environmental change. In partnership with St. Paul's University College, GreenHouse also hosts the Indigenous entrepreneurship training programs based on models of Indigenized business education and experiential learning.

## Waterloo Institute for Social Innovation and Resilience

The Waterloo Institute for Social Innovation and Resilience (WISIR) is committed to generating inter-disciplinary knowledge about the social innovation process in Canada and internationally – particularly the dynamics of learning, adaptation, and innovation for sustainable development. Recent WISIR activities include the incubation of the Turtle Island Institute, the Waterloo Affordable Housing Living Lab, and the Legacy Leadership Lab in support of small business conversions into social purpose organizations.

## Sustainability Certificate

Waterloo's Sustainability Certificate program is offered primarily to employees by Waterloo's Sustainability Office. The certificate builds upon the University's Environmental Sustainability Strategy's goal of embedding sustainability actions into campus culture. It recognizes that all employees have a role to play in building a sustainable campus.

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

# BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION, AND FOSTER INNOVATION

The focus of SDG 9 is on building sustainable infrastructure projects and industries while upgrading those already in existence and encouraging innovation. The University of Waterloo has deep traditions in innovation and entrepreneurship, applied research and development, and industry partnerships responding to real-world challenges.

**#1** Innovation University in Canada
McLean's 2022 ranking

**#22** in the world for venture capitalist-backed entrepreneurs
Pitchbook 2021

**$35.8M** in industry funded research and $27.2M in government matching funds 2020/2021

**56**
faculty publishing
in SDG 9

**712**
Publications
in SDG 9

**76**
Courses covering
SDG 9 (estimate)

## Conrad School of Entrepreneurship and Business 🔗

The Conrad School of Entrepreneurship and Business is an immersive educational environment for entrepreneurs. Located within Canada's most innovative university, in a region ranked among the top startup ecosystems in the world, the Conrad School is the academic engine for entrepreneurship on campus, offering programs that are *entrepreneurial by design.*

## Velocity 🔗

Velocity is an incubator for early-stage, pre-seed technology startups from the University of Waterloo and around the world. Velocity provides resident companies with access to funding, free offices and labs, and business and product development support, to help them grow and scale.

## Intellectual Property Rights Policy 🔗

The University of Waterloo Intellectual Property Rights Policy grants ownership to the intellectual property (IP) creator. It is the engine for driving commercialization success of research-based innovations and may be the most entrepreneurial oriented IP policy in North America.

## Waterloo Institute for Sustainable Aeronautics 🔗

The Waterloo Institute for Sustainable Aeronautics is the world's leading hub for sustainable aviation and aerospace research, technology, and education. They foster interdisciplinary inquiry, cross-sector partnerships, and experiential learning that builds a sustainable future.

## University of Waterloo Midnight Sun 🔗

The University of Waterloo Midnight Sun solar car team has been designing and building solar-powered electric vehicles at the University of Waterloo since 1988.

With their next car, MS XIV, they are taking on the challenge of creating a car that is both energy-efficient and practical. They believe creating consumer-oriented solar powered vehicles is an important step in achieving a more sustainable future. Midnight Sun proudly represents the University at both the American Solar Challenge and World Solar Challenge.

## Waterloo Centre for Microbial Research 🔗

The Waterloo Centre for Microbial Research (WCMR) has a mandate to promote interdisciplinary research and education in the application of microbiological principles and techniques to address environmental, industrial, economic and human health challenges. A particular strength is the application of microbiome analysis to fundamental and applied questions across multiple sectors.

# 10 REDUCED INEQUALITIES

# REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

SDG 10 aims to reduce inequalities of income, opportunity, mobility and societal inclusion through policies, regulations, monitoring, and financial aid. The focus at the University of Waterloo is on ensuring that all members of the community have equitable and affirming access to its services.

The University of Waterloo has a Cluster Hiring Initiative to hire:

## 10 + 10

**Indigenous faculty members**

**Black faculty members**

**Creation of new Associate Vice-President roles for Indigenous Relations and for Equity, Diversity, Inclusion, and Anti-Racism**

## President's Anti-Racism Taskforce 🔗 ⚙️

The objective of the President's Anti-Racism Taskforce (PART) is to address systemic racism in all its forms at the University of Waterloo, and to ensure this work is led by members of Black, Indigenous, Persons of Colour (BIPOC) communities. The Taskforce is dedicated to amplifying BIPOC voices and learning from their insight and experience. Engagement and transparency not only with these community members, but with everyone on campus, will also continue to be hallmarks of this work and all that the university does.

**21**
faculty publishing
in SDG 10

**338**
Publications
in SDG 10

**84**
Courses covering
SDG 10 (estimate)

## AccessAbility Services 🔗

AccessAbility Services is the University's centralized office for managing academic accommodations for students with disabilities. The Office works with the campus to remove barriers in the academic environment and support equitable access to education by designing and facilitating academic accommodation plans, and offering accommodation supports that increase student capacity for personal success. Disability covers a broad range of conditions that can be permanent, temporary, and suspected, including physical disabilities, learning disabilities, mental health disabilities, medical conditions, and trauma.

## Office of Equity, Diversity, Inclusion and Anti-Racism 🔗

The Office of Equity, Diversity, Inclusion and Anti-racism (EDI-R) builds, incubates and enhances EDI-R competency and capacity across campus to identify and interrupt institutional barriers and embed equity within policies, processes, environments, and experiences at the University of Waterloo.

## Conflict Management and Human Rights Office 🔗

The Conflict Management and Human Rights Office acts as a focal point and resource to all members of the university community regarding matters of harassment, discrimination, and other general forms of conflict.

## Indigenous Relations 🔗

Indigenous Relations is a central hub for First Nations, Inuit, and Métis students, researchers, faculty, and staff, along with allies within the Waterloo campus community. Additionally, the Office of Indigenous Relations provides the campus community with guidance, support, and resources to strengthen the shared vision of reconciliation. They work collaboratively on- and off-campus to not only advance the goals of the Truth and Reconciliation Calls to Action, but also to create a long-term vision for the University that is grounded in decolonization.

## Waterloo Indigenous Student Centre 🔗

The Waterloo Indigenous Student Centre is committed to providing support to Indigenous students at the University of Waterloo. The centre provides supports to Indigenous students through a holistic lens: cultural, academic, wellbeing, and social engagement. The Centre provides an environment that is supportive, respectful, inclusive, and welcoming for all Indigenous students on campus.

## Research Institute for Aging 🔗

The Schlegel-UW Research Institute for Aging is a charitable, non-profit organization dedicated to enhancing the quality of life and care of older adults. The Institute tackles some of the biggest issues facing an aging population by driving research and innovation to improve education and practice. They develop and share solutions that make a difference to benefit older adults everywhere.

## 11 SUSTAINABLE CITIES AND COMMUNITIES

# MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

SDG 11 includes equitable access to housing, basic services, transportation, and public spaces while protecting cultures, improving the resilience and sustainability of cities, and increasing civic engagement in urban planning. From supporting the next generation of urban planners to building municipal partnerships for improved flood resiliency, Waterloo is helping to shape more prosperous and sustainable cities. And it is integrating sustainable natural spaces and transportation planning into its own development as a key part of the local community fabric.

**86%** of student and employee trips to campus were by walking, cycling, transit, carpooling, or teleworking in 2018

**Warrior Home placed 2nd** in the 2020 Build Challenge Solar Decathlonfor their net-zero energy home on a Chippewas of Nawash reserve

**56** faculty publishing in SDG 11

**705** Publications in SDG 11

**119** Courses covering SDG 11 (estimate)

## Sustainable Transportation Programs 🔗

Sustainable Transportation Programs at the University of Waterloo support students and employees to walk, cycle, carpool, take transit to and from campus, or even to work remotely. Programs include transit passes for students, transit discounts for employees, bike repair facilities, secure bike parking, carpool matching, an emergency ride home program, EV charging, and more.

## School of Planning 🔗

The School of Planning at Waterloo offers undergraduate and graduate programs dealing with social, environmental, and economic sustainability issues at various scales. The programs offer insight into a unique blend of municipal, urban, and regional planning. The aim is to expose students to a number of areas of professional planning while helping them develop specific skills in their area of choice.

## Warrior Home Design Team 🔗

The Warrior Home Design Team is an opportunity for some of the University of Waterloo's brightest and most compassionate thinkers and doers to design sustainable and affordable housing. Warrior Home members develop and share their building science, design, project management, and social equity knowledge at weekly meeting and through community design projects. Members of the team represent the University at the US Department of Energy's annual Solar Decathlon competition.

## Partners for Action 🔗

Partners for Action (P4A) is an applied research network advancing flood resiliency in Canada in the face of a changing climate and extreme weather. Their collaborative approach brings together diverse stakeholders to create and share knowledge, address information needs, and drive action. Their mandate is to facilitate increased risk awareness and improved decision making to help Canadian communities become more resilient to flooding.

## Centre for Pavement and Transportation Technology 🔗

The Centre for Pavement and Transportation Technology (CPATT) strives to find solutions to help the industry and the transportation authorities in Canada to build more sustainable and resilient transportation infrastructure through the innovation in construction materials, structural design, and asset management approaches. Their research contributes to redefining the road of the future, ensuring it is sustainable, resilient, connected, adaptable, self-healing, a source of energy, smart and versatile, and with climate change being the major focus.

## Waterloo Institute for Complexity and Innovation 🔗

The Waterloo Institute for Complexity and Innovation (WICI) is a research hub that delivers transdisciplinary research and training around complex systems, such as urban environments, where the built, natural, and social aspects of life all converge.

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION**

# ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

Reducing and managing waste while promoting sustainable consumption and production is the focus of SDG 12. This includes thinking about resource use as part of a circular economy, where extraction and processing is limited, and the embodied resources find new applications at the end of a product's life. Waste reduction and sustainable procurement are priorities at the University of Waterloo.

## 29.4%
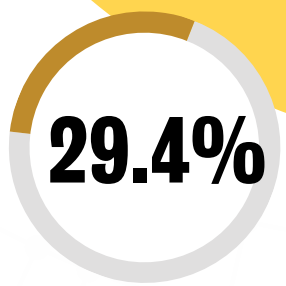
of waste is diverted from landfill
in 2020

## 25K

average uses of the Eco-Container program per month in residences (Pre-COVID)

**33**
faculty publishing
in SDG 12

**382**
Publications
in SDG 12

**65**
Courses covering
SDG 12 (estimate)

## Institute for Polymer Research 🔗

The University of Waterloo's Institute for Polymer Research (IPR) has earned an international reputation for making research initiatives pay off for a wide variety of companies. More recent initiatives include the development of sustainable solutions to generate polymers from renewable sources such as starch, cellulose nanocrystals, and cellulose-based materials (cardboard, sawdust). These polymers have the potential to either replace existing plastics obtained from petroleum or create new products for new applications.

## *Shift:* Zero 🔗

In 2017, the University committed to becoming a zero waste campus by 2035. The Shift: Zero campaign focuses on five key areas to support the transition and make behavioural change convenient and impactful: engagement and training, reducing and eliminating waste, maximizing recycling, capturing organics, and expanding reuse programs. Examples include major expansion of standardized waste receptacles, an improved sorting guide, and regular waste-related events and campaigns.

## WUSA Thrift 🔗

WUSA Thrift is a space where students can purchase or obtain clothing that's better for the planet and their wallets. The WUSA Sustainability Project aims to address the fast fashion crisis, reduce waste, and improve access to affordable clothing through a student-run thrift store.

## Sustainable Procurement Guide 🔗

The University has a Sustainable Procurement Guide, which provides key information and resources to build awareness of sustainable procurement, to inform about the sustainable options available, and to empower staff and faculty to take sustainable actions in their own departments. The guide includes specific information on a growing list of common items purchased at Waterloo, and covers disclosure, lifecycle costing, commodity targets and other dimensions of sustainable procurement for each.

# 13 CLIMATE ACTION

# TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

SDG 13 aims to increase climate change resilience, adaptive capacity and mitigation efforts through integrated policies, education, institutional capacity building, and mobilizing funding for developing countries. The University of Waterloo is a leader in climate change research, education, and planning, and is committed to aligning campus practices toward carbon neutrality.

## 2.4%

**increase in emissions since 2015** `2020`

**Signatory of the Investing to Address Climate Change:**
**Charter for Canadian Universities** 🔗

**Climate Emergency Declaration made**
`May 19, 2021`

## Interdisciplinary Centre on Climate Change 🔗

Based at the University of Waterloo, the Interdisciplinary Centre on Climate Change (IC[3]) provides a focal point for climate change research, training, and knowledge mobilization by contributing to advancements in climate change solutions worldwide. IC[3] members share information and develop new ideas and tools while strengthening connections to community, government, and economic sectors across Canada and internationally through their climate change research.

**71** faculty publishing in SDG 13

**687** Publications in SDG 13

**88** Courses covering SDG 13 (estimate)

## *Shift:* Neutral Climate Action Plan

*Shift:* Neutral is the University of Waterloo's climate action plan. Its goal is to reach carbon neutrality by 2050 and the long-term plan maps out the changes needed achieve this, with short and medium-term goals to build momentum. Its roadmap includes efforts to improve energy efficiency, integrate low carbon energy sources, and mitigate indirect emissions.

## Responsible Investment

Waterloo recognizes the impact that climate change and other sustainability issues could have on performance of its financial investments. As such, it has become a signatory to the UN Principles for Responsible Investment, the Investing to Address Climate Change Charter for Canadian Universities, and in 2021 made the commitment to reduce the carbon footprint of its endowment and pension investments; 50 per cent by 2030 with an aspirational goal of carbon neutrality by 2040.

## Master of Climate Change

Master of Climate Change is an interdisciplinary program in the Department of Geography & Environmental Management that is designed to advance training and expertise for the first generation of climate change professionals. Graduates of this program will be prepared to work in government, civil society, and local/international development on greenhouse gas emissions reduction, climate change adaptation and resilience, and societal transitions to a low carbon economy. Program alumni are now employed in a wide array of institutions helping to make progress on SDG 13 in Canada and abroad.

## Intact Centre on Climate Adaptation

The Intact Centre on Climate Adaptation is an applied research centre with a national focus within the Faculty of Environment at the University of Waterloo. The Intact Centre works with residents, communities, governments, and businesses to identify and reduce the impacts of extreme weather and climate change. To this end, the centre is an incubator of new adaptation ideas, conducting research and knowledge mobilization, and promoting initiatives aimed at de-risking the negative impacts of a changing climate and extreme weather, such as flooding, wildfires, and extreme heat.

## Understanding Climate through Games

Illuminate and Energize are games designed to help community members and the public learn about climate change. Illuminate teaches about the impacts of climate change and explores ways to reduce greenhouse gas emissions and respond to climate risks. The Energize game is a resource designed for local community partners to think about climate change and energy planning in Waterloo Region.

# 14 LIFE BELOW WATER

# CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

The goals of SDG 14 are to protect marine ecosystems from pollution, overfishing, acidification, and other human activities while increasing the sustainable use of marine resources. The SDG recognizes that our oceans are a source of economic, social, and environmental resources and that oceans play a crucial role as a global climate system regulator. The Water Institute at the University of Waterloo has many programs that address water issues, in both fresh water and oceans.

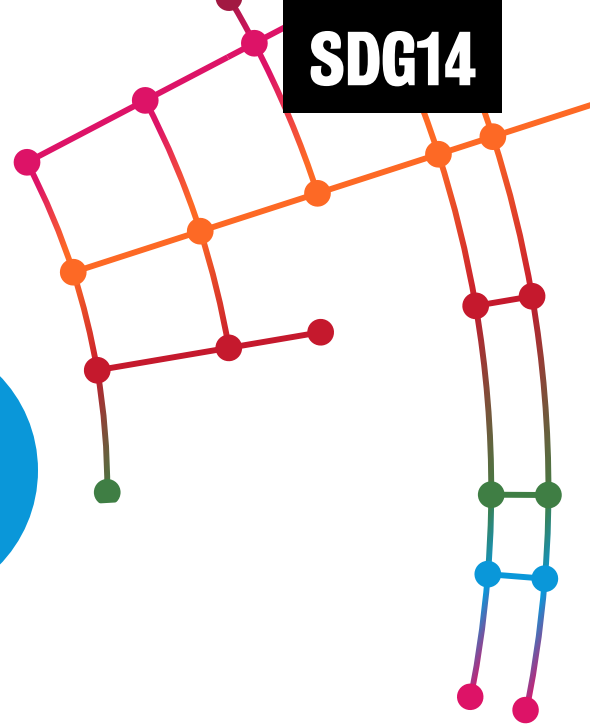MSC–Certified fish and seafood purchased across University-run operations

**23**
faculty publishing
in SDG 14

**246**
Publications
in SDG 14

**47**
Courses covering
SDG 14 (estimate)

## Water Institute

The Water Institute provides an on-campus network of excellence in water research, education, and innovation. Their researchers represent a wide breadth of disciplinary expertise with a membership of over 170 faculty members and 300 graduate students from across all six faculties. The University of Waterloo is now ranked among the world's top academic water research and education institutions, and our faculty and students are making a significant contribution in advancing the sustainable use and management of water.

## Vulnerability to Viability Global Partnership

The University of Waterloo leads the Vulnerability to Viability (V2V) Global Partnership which brings people and organizations together across physical, cultural, and disciplinary boundaries to address global change impacts on small-scale fisheries. The knowledge network currently has over 100 members from Africa, Asia, Canada, and internationally. The Field School in India provides educational outreach and training for local, national, and international communities on unregulated and destructive fishing practices.

## Collaborative Water Graduate Program

The Collaborative Water Graduate Program promotes the development of interdisciplinary perspectives on water and is delivered jointly by 11 departments and schools from across all six University of Waterloo faculties. Co-ordinated and supported by the Water Institute, the program provides students with the opportunity to study complex water problems, learning how to work in interdisciplinary teams to better understand and address these water issues.

## Environmental Change and Governance Group

The Environmental Change & Governance Group undertakes collaborative, methodologically creative, and applied research to enhance the connection between people and nature, and foster governance strategies for conditions of rapid change and uncertainty in coastal-marine and freshwater systems. Major research themes focus on small-scale fisheries and livelihoods, community-based conservation, coastal commons, and adaptation.

## 15 LIFE ON LAND

# PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, HALT AND REVERSE LAND DEGRADATION, AND HALT BIODIVERSITY LOSS

Protecting and restoring land-based ecosystems, including freshwater ecosystems, is the focus of SDG 15. The University of Waterloo not only works to protect the ecosystems found on its campus but also has research, educational, and outreach programs to promote environmental sustainability.

**100%** of grounds managed to integrated pest management principles

**109 acre**
**Environmental Reserve**
among many natural areas on campus

**27**
faculty publishing
in SDG 15

**297**
Publications
in SDG 15

**81**
Courses covering
SDG 15 (estimate)

## Natural Areas for Learning

Waterloo has several natural areas that are used for learning right on campus. The Robert S. Dorney Ecological Garden is a naturalized garden that acts as an outdoor classroom for plant identification and observation, and Waterloo's Urban Forest is a five-hectare wooded green space on campus that supports numerous habitats and is used as a teaching and research tool for many classes. The Environmental Reserve provides teaching, research, public education opportunities, protected habitat for wildlife, and a legacy for future generations.

## Environmental Engineering Program

Environmental engineers have classically been charged with preventing pollution or cleaning our air, water, and soil. The field now also considers the sustainability of how we use our land and resources in the face of climate change and biodiversity loss. Students learn how to design and implement solutions through the application of science, technology, and understanding of ecosystem services. If you want to understand and fix many of the world's environmental problems, environmental engineering is the profession to get it done!

## Biology Programs

Biology explores how species in the natural world live and interact with the environment around them. In our programs, students can study the human body, the ecology of plants and animals on land and in water, biological processes at the molecular level, and the detailed and complex interactions that take place within and among biological organisms. Understanding biology helps us maintain the rich and diverse ecosystem in which we live and helps define our place within it.

## Envirothon

Envirothon is a team-based competition for high school students. Students give a 10-minute presentation on a current environmental issue and are tested on four categories: wildlife, forestry, aquatics, and soil. Together with City of Kitchener personnel, the Ecology Lab provides training for teams and organizes the competition. The winning team goes on to test its knowledge at the provincial competition.

## University of Waterloo Science Outreach

The University of Waterloo Science Outreach team has developed several in-class workshops and on-campus activities in partnership with Let's Talk Science to complement the Ontario Science Curriculum and nurture high school students' love for science discovery. Specific topics include the diversity of living things, endangered earth, and water resource sustainability.

## Maintaining Campus Grounds

Maintaining campus grounds. Waterloo has over 1,200 acres of property, housing many managed, naturalized, and semi-naturalized spaces. The campus has phased out the use of chemical pesticides and fertilizers in broad application, and continues to develop sustainable landscaping practices such as using native and non-invasive species, improving salt management in winter, and recycling natural materials.

**16 PEACE, JUSTICE AND STRONG INSTITUTIONS**

# PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SDG 16 has goals of reducing violence, organized crime and corruption; ending abuse and exploitation; developing participatory practices and strong, transparent institutions; and protecting fundamental freedoms. Work on SDG 16 can be seen in the University of Waterloo's work on peace promotion and effective global governance while advancing an inclusive governance structure, robust policies, and ethical conduct guidelines on campus.

## 77
**Policies plus additional procedures and guidelines** guide efforts to build robust governance and work towards a just and healthy environment for the institution

Positions on the University's Board of Governors, supporting an inclusive and collegial governance model:

| **5** | **7** | **2** | **10** |
|---|---|---|---|
| Student | Faculty | Staff | Community |

**20**
faculty publishing
in SDG 16

**293**
Publications
in SDG 16

**99**
Courses covering
SDG 16 (estimate)

### Grebel Peace Incubator

The Grebel Peace Incubator advances expansive and innovative understandings and practices of peace, locally and globally. They link new ventures to social innovation tools that help unpack complex human problems. Their expertise in thinking and working politically helps new ventures engage governments and transform systems. New ventures in the incubator thrive within a culture of inclusion, collaboration, and community-mindedness.

### Balsillie School of International Affairs

The Balsillie School of International Affairs (BSIA) is an institute for advanced research, education, and outreach in the fields of global governance and international public policy. As an affiliate member of the Association of Professional Schools of International Affairs, they are a global network of scholars, practitioners, and students with a mission to develop new solutions to humanity's critical problems, to improve global governance now and in the future, and to contribute to enhancing the quality of people's lives around the world.

### Kindred Credit Union Centre for Peace Advancement

The Kindred Credit Union Centre for Peace Advancement is a dynamic space on the campus, home to peace-oriented researchers, innovators, and established organizations from the region's vibrant peacebuilding field. The common goal of advancing peace collaboratively and creatively is the lifeblood of the centre's unique working community. The centre stands as a bridge between campus and community, academics and practice, and faith and justice.

### PeaceTech Living-Learning Community

The PeaceTech Living-Learning Community is a cluster of students from diverse faculties interested in exploring the intersection of technology and peace in society through weekly meetings and activities. The community is made up of students who are residents or associates at Conrad Grebel University College.

### South Western Ontario Research Data Centre

The South Western Ontario Research Data Centre at the University of Waterloo is a computer laboratory that provides secure access to confidential microdata files from the census, various surveys, and a growing range of administrative data. Shared data is essential to strong and effective partnerships and progress on all SDGs.

## 17 PARTNERSHIPS FOR THE GOALS

# STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

SDG 17 relates to promoting partnerships that support the other SDG goals, with a particular emphasis on partnerships that mobilize resources for developing countries. There is a recognition that the work of one organization affects many SDGs and that collaborations ensure this work maximizes synergies and minimizes unintentional trade-offs. The University of Waterloo has many groups building local and global partnerships, and is a leader in global networks that explicitly work to promote the SDGs.

UWaterloo is a member of the
**Regional Sustainability Initiative** 🔗

Host and founder of the
**Sustainable Development Solutions Network Canada**

# 300+

International agreements in 55+ countries, including joint academic program, student mobility, and partnership agreements

**51**
Courses covering
SDG 17 (estimate)



## SDSN Canada 🔗

The University of Waterloo is the founder and host of Sustainable Development Solutions Network (SDSN) Canada, the national hub of an international network of universities and colleges committed to taking action to implement the SDGs. SDSN Canada collaborates with its over 60 members to help build a research agenda for the SDGs in Canada, develop new partnerships and collaboration opportunities, and integrate the SDGs into teaching. This work includes creating the Canadian SDGs Cities Index, hosting the Together|Ensemble national SDGs conference, and spearheading 16 youth hubs for the SDGs across the country.

## Waterloo International 🔗

Waterloo International engages with the world, helping to bring prominence to Waterloo's activities, to identify opportunities for Waterloo's members, and to steward meaningful connections with the world. Inclusive partnerships, at global, regional, national, and local levels, serve to advance learning, discovery, and community goals. Waterloo International is a catalyst for – and facilitator of – many of Waterloo's global links for students, staff, and faculty.

## Impact Alliance 🔗

Impact Alliance is the SDG Student Hub for the University of Waterloo, affiliated with the SDG Students Program (an initiative of SDSN Youth). It is a passionate student-led group that aims to educate, engage, and act on the United Nation's 17 Sustainable Development Goals. Youth have the power to achieve the 2030 Agenda, and the network works towards empowering them with the knowledge, skills, and pathways to action to be effective agents of change for the future.

## University Global Coalition 🔗

In 2019/20 Waterloo signed on as a founding member of the University Global Coalition, an alliance of global post-secondary institutes working in partnership with the UN and other stakeholders to create a more sustainable future for all. The coalition anchors its work on the UN SDGs, and builds partnerships through executive leaders to advance collective action on achieving the goals.

# ACADEMIC SDG CONNECTIONS

The University of Waterloo clearly has a plethora of people working to build a more sustainable world. The case studies outlined above, and the many other groups and programs not mentioned, have profound impacts that are often difficult to measure.

The graphics presented in this section provide a summary of the number of researchers, publications, field-weighted citation impact, collaborations across the globe, and courses that are directly related to each SDG.

These outputs provide insights into the sustainability expertise and innovation generated by the University of Waterloo, and areas of comparative research and educational activities and opportunities. Finally, a map of SDG collaborations highlights the international dimension of the university's research.

**FIGURE 1**  Number of researchers per SDG | 2016-2020

| SDG | Number |
|-----|--------|
| SDG1: No Poverty | 9 |
| SDG2: Zero Hunger | 39 |
| SDG3: Good Health and Well-being | 141 |
| SDG4: Quality Education | 14 |
| SDG5: Gender Equality | 10 |
| SDG6: Clean Water and Sanitation | 54 |
| SDG7: Affordable and Clean Energy | 94 |
| SDG8: Decent Work and Economic Growth | 33 |
| SDG9: Industry, Innovation and Infrastructure | 56 |
| SDG10: Reduced Inequality | 21 |
| SDG11: Sustainable Cities and Communities | 56 |
| SDG12: Responsible Consumption and Production | 33 |
| SDG13: Climate Action | 71 |
| SDG14: Life Below Water | 23 |
| SDG15: Life on Land | 27 |
| SDG16: Peace, Justice and Strong Institutions | 20 |

**Figure 1** shows a bibliometric analysis of the number of faculty names with at least three publications in an SDG between 2016 and 2020. SDG 17 is not included since partnerships to achieve the SDG goals are not easily identified through keyword searches. Limitations to this analysis include SDG-related work that is not picked up by keyword searches, researchers who may have generated fewer publications than the cutoff of 3, authors whose association with the University of Waterloo changed during that time (e.g. joined or left the campus), or researchers who do not have a Scopus ID.

Unsurprisingly, areas such as health (SDG 3) and energy (SDG 7) that are often targets for research funding, have high research engagement. Many sustainability research topics, including water-related research, produce publications that span multiple SDGs and may not therefore manifest as a prominently on this graph.

**FIGURE 2**    Number of publications per SDG | 2016-2020

NUMBER OF PUBLICATIONS PER SDG (SOLID BARS)      500      1,000      1,500

| SDG | Publications | FWCI |
|---|---|---|
| SDG1: No Poverty | 154 | 1.3 |
| SDG2: Zero Hunger | 351 | 2.53 |
| SDG3: Good Health and Well-being | 1,603 | 1.89 |
| SDG4: Quality Education | 209 | 1.53 |
| SDG5: Gender Equality | 204 | 1.55 |
| SDG6: Clean Water and Sanitation | 686 | 1.39 |
| SDG7: Affordable and Clean Energy | 1,635 | 2.52 |
| SDG8: Decent Work and Economic Growth | 426 | 2.28 |
| SDG9: Industry, Innovation and Infrastructure | 712 | 1.68 |
| SDG10: Reduced Inequality | 338 | 1.72 |
| SDG11: Sustainable Cities and Communities | 705 | 1.77 |
| SDG12: Responsible Consumption and Production | 382 | 2.12 |
| SDG13: Climate Action | 687 | 2.07 |
| SDG14: Life Below Water | 246 | 1.57 |
| SDG15: Life on Land | 297 | 2.07 |
| SDG16: Peace, Justice and Strong Institutions | 293 | 2.47 |

FIELD-WEIGHTED CITATION IMPACT (CROSS-HATCH BARS)    0.5    1.0    1.5    2.0    2.5

As seen in **Figure 2**, research publications from the University of Waterloo span all SDGs. As with the number of researchers, SDG 17 is not included because keyword searches are ill suited to identifying partnerships. The number of publications in the fields of health and energy (SDG 3 and 7) are high due in part to the availability of funding and pace of publication in these areas.

The field-weighted citation impact shows that the publications generated by the University of Waterloo are having stronger than average impacts in all fields. Field-weighted citation impact is the ratio of the citations for a publication and the number of citations expected based on global averages for that field of study. A value greater than 1 indicates a higher-than-average impact.
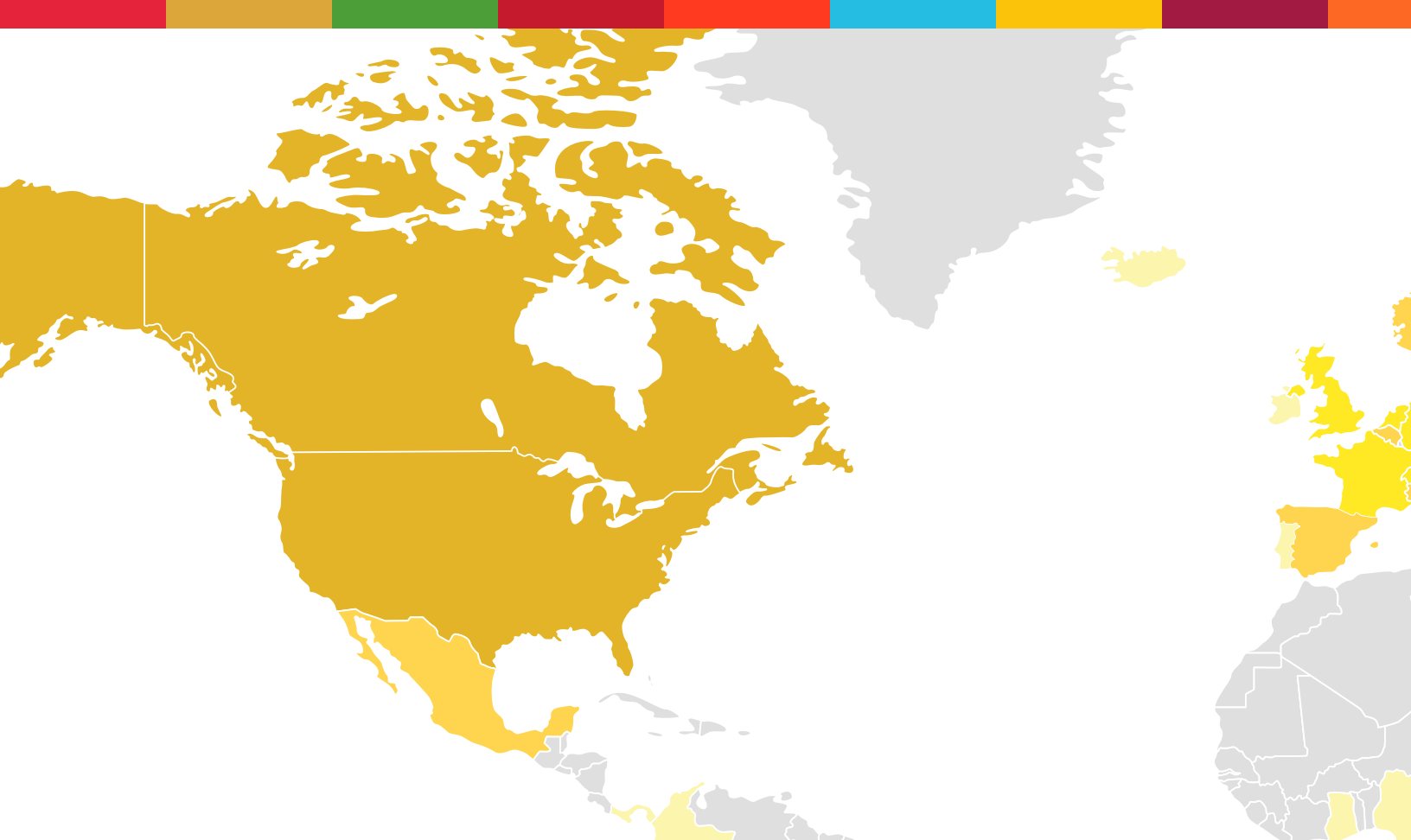
**FIGURE 3**

## Number of collaborations for SDG publications | 2016-2020

This map highlights the countries with which faculty have developed working collaborations. These collaborations were identified through joint authorship on publications. Each of the 81 countries highlighted collaborated on a minimum of ten publications between 2016 and 2020. It is noteworthy that most of the collaborations were either in developed countries or in countries with large populations (China, India, and Brazil). Notably less prominent, are collaborations with authors from Least Developed Countries where there is an urgent need to see the greatest gains in all of the SDGs.

### 81 countries collaborated on
# >10 publications

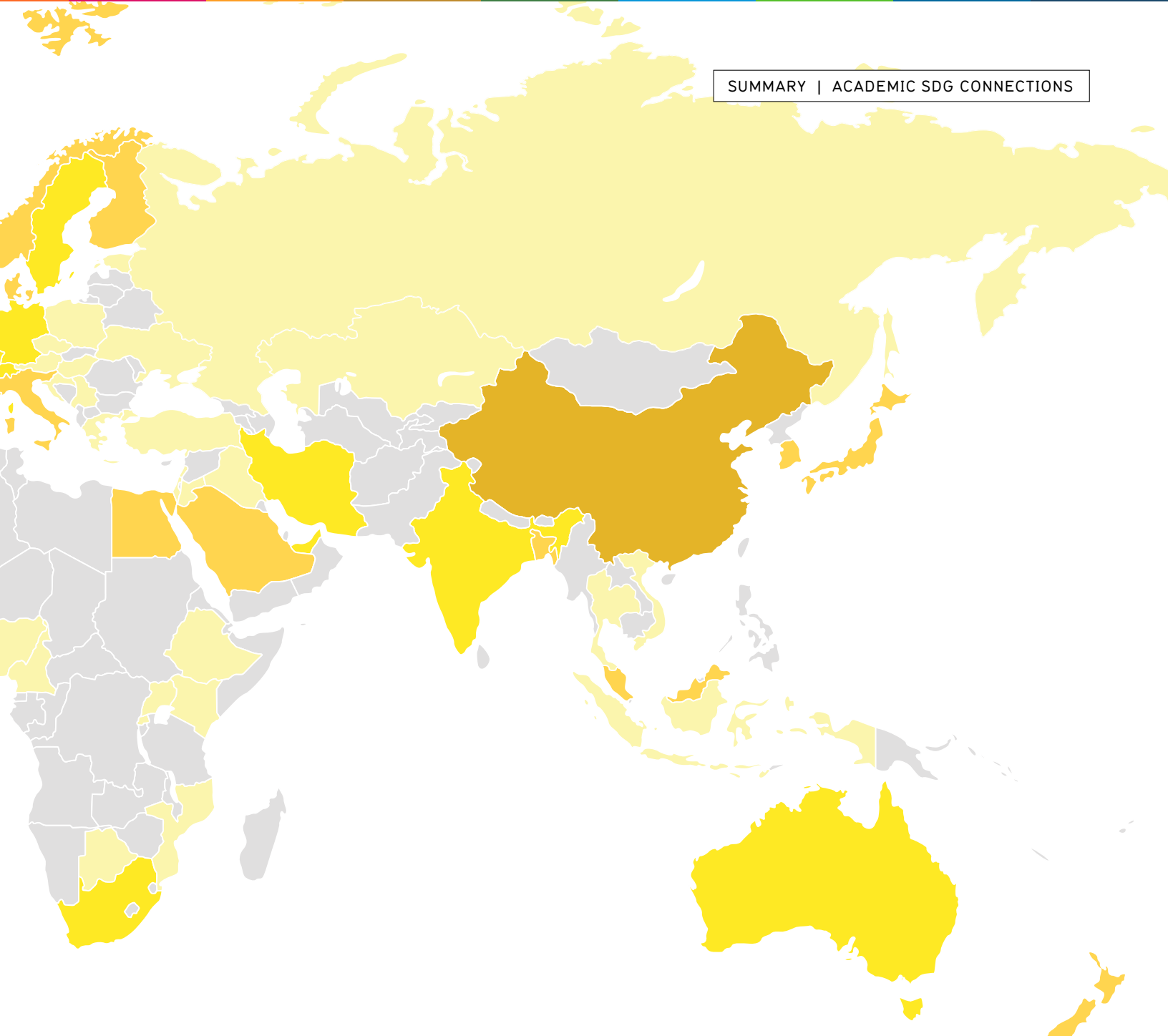**>1,000**

Canada
United States
China

**100 – 499**

United Kingdom
Australia
Germany
Iran
United Arab Emirates
Netherlands
France

India
Switzerland
Sweden
South Africa
Brazil

**50 – 99**

Japan
Saudi Arabia
Spain
Norway
Italy
South Korea
Singapore

| | | | |
|---|---|---|---|
| Egypt | Chile | Romania | Iraq |
| Denmark | Portugal | Colombia | Thailand |
| New Zealand | Pakistan | Kenya | Czech Republic |
| Finland | Qatar | Nigeria | Serbia |
| Belgium | Russian Federation | Ghana | Jordan |
| Hong Kong | Argentina | Peru | Luxembourg |
| Mexico | Israel | Kuwait | Croatia |
| Malaysia | Turkey | Estonia | Panama |
| Bangladesh | Greece | Indonesia | Sri Lanka |
| | Ireland | Ethiopia | Uganda |
| **10 – 49** | Viet Nam | Nepal | Kyrgyzstan |
| Austria | Philippines | Oman | Botswana |
| Poland | Taiwan | Hungary | Cameroon |

Mozambique
Rwanda
Ukraine
Yemen
Ecuador
Federated States
    of Micronesia
Iceland
Kazakhstan
Lebanon

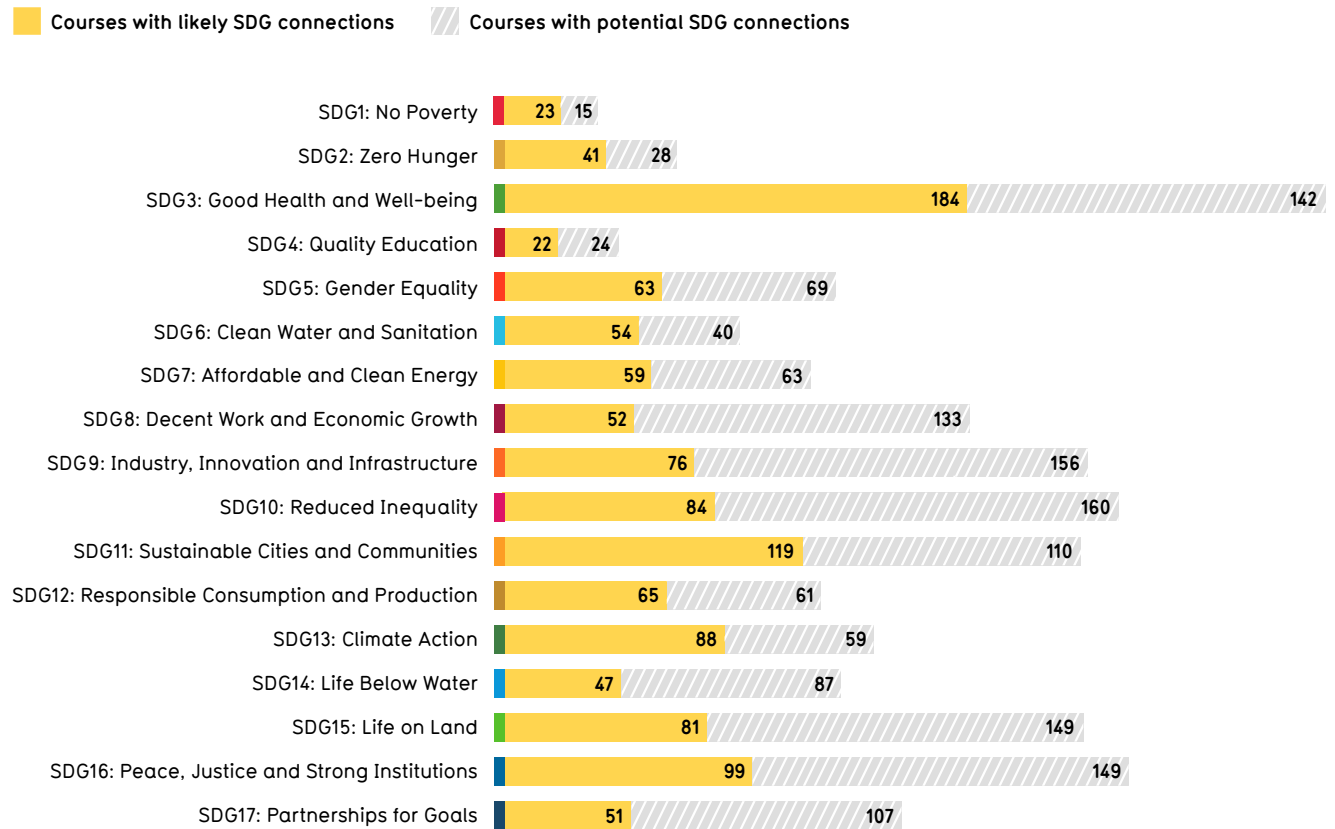**FIGURE 4** **Number of courses per SDG | 2016-2020**

◼ Courses with likely SDG connections     ▨ Courses with potential SDG connections

| SDG | Likely | Potential |
|---|---|---|
| SDG1: No Poverty | 23 | 15 |
| SDG2: Zero Hunger | 41 | 28 |
| SDG3: Good Health and Well-being | 184 | 142 |
| SDG4: Quality Education | 22 | 24 |
| SDG5: Gender Equality | 63 | 69 |
| SDG6: Clean Water and Sanitation | 54 | 40 |
| SDG7: Affordable and Clean Energy | 59 | 63 |
| SDG8: Decent Work and Economic Growth | 52 | 133 |
| SDG9: Industry, Innovation and Infrastructure | 76 | 156 |
| SDG10: Reduced Inequality | 84 | 160 |
| SDG11: Sustainable Cities and Communities | 119 | 110 |
| SDG12: Responsible Consumption and Production | 65 | 61 |
| SDG13: Climate Action | 88 | 59 |
| SDG14: Life Below Water | 47 | 87 |
| SDG15: Life on Land | 81 | 149 |
| SDG16: Peace, Justice and Strong Institutions | 99 | 149 |
| SDG17: Partnerships for Goals | 51 | 107 |

**Figure 4** above shows that all SDG topics are covered by undergraduate and graduate courses at the University of Waterloo. This is a first-pass assessment using the information available in course descriptions and SDSN Canada keyword searches, followed by a manual review of positive hits. Courses deemed very likely or likely to have SDG content had keyword matches and course descriptions had likely or potential alignment with SDG targets and indicators. Courses deemed to have possible SDG content did not have keyword matches but did have likely or potential alignment with SDG targets and indicators. A single course may be counted in more than one SDG. Limitations to this approach include the very limited content available in course descriptions, potential differences in interpretation by instructors in creating course syllabi that may place emphasis on other topics, and treating each course listing as equal, regardless of the number of offerings or course enrollment.

An estimated 14 per cent of undergraduate students are graduating from a program that requires a sustainability-focused course, based on definitions provided by the Association for the Advancement of Sustainability in Higher Education and focused primarily on environmental sustainability topics.

# SUSTAINABLE DEVELOPMENT GOALS

# SDG OPPORTUNITIES

The University of Waterloo is engaging in impactful ways on the SDGs, and there are many opportunities to grow that impact.

Research published in 2021[2], demonstrated that there is a large potential for University of Waterloo students to advance the SDGs through their co-op and internship positions. Greater student and employer awareness of the SDGs is needed if this impact potential is to be realized, as is a mechanism for measuring that impact. That work has the potential to produce graduates with the knowledge and skills to tackle our global challenges and to support our workplaces in operationalizing the SDGs.

Productive and interdisciplinary partnerships for research can amplify the impact of work performed in the various SDGs. Indeed, these partnerships are necessary because progress or innovation in one SDG has the potential to have unintended consequences for progress on other SDGs. The University of Waterloo can actively seek opportunities to build, support, and track these partnerships.

The societal challenges addressed by the SDGs are increasingly relevant for nearly all jobs. The examples are endless: businesses are being asked about their social and environmental impacts, health care is increasingly recognizing the many social and environmental determinants of health, teachers are being asked to include climate change in many courses, professional communications are ensuring more equitable language,

and more. Currently, 14 per cent of the University of Waterloo's graduates come from undergraduate degree programs that include required sustainability content. Ultimately, all graduates of the University of Waterloo would benefit from awareness of the challenges underlying sustainability and the SDGs, as well as their solutions.

The University of Waterloo is active in the wider community, offering public lectures, providing educational opportunities for elementary and secondary students, and organizing public events. There is an opportunity to explicitly make the link to SDGs in this work to raise the profile of SDGs and showcase how we can all play a role in building a better world.

The intention of the SDGs is to advance prosperity and ecological sustainability in all countries but with a particular focus on those countries that are the furthest behind in the goals. The majority of the SDG-related work at the University of Waterloo is focused on challenges of the developed world, particularly for Canada. The University of Waterloo can look for opportunities to build partnerships with institutions in developing countries and facilitate knowledge transfer into the hands of those people most able to make a difference.

[2] Ivkovi, S. S., McRae, N. (2021). Improving engagement of interns and employers with the United Nation's Sustainable Development Goals. International Journal of Work-Integrated Learning. Retrieved from ijwil.org/files/IJWIL_22_3_345_356.pdf

# CONCLUSIONS

The goal of this report was to provide a snapshot of the work the University of Waterloo is going to advance the UN Sustainable Development Goals. The case studies demonstrate how the University is contributing to each of the SDGs. This work was classified into four broad mechanisms:

**RESEARCH**          **PRACTICES**

**TEACHING**          **COMMUNITY**

The number of researchers, publications, citations and courses connected with each SDG provides a measure of the impact of this work. These graphs will be reviewed and updated on a regular basis to keep the outcomes current and to showcase progress over time.

This work is the cumulative effort of many individuals and groups. Led by the Sustainability Office, major contributions were made by the Equity, Diversity, Indigenous Initiatives and Anti-Racism team, Institutional Analysis and Planning, University of Waterloo Library, Campus Wellness, and Waterloo Undergraduate Student Association. Many eyes from groups across campus also reviewed the case studies profiled here and provided recommendations.

# METHODOLOGY

› **Key accomplishments for 2021 were identified** through event listings and Sustainability Office blog posts.

› **Representative case studies were identified** by reviewing lists of University of Waterloo institutes, programs and student groups. Web searches using key terms from the SDGs were also used to identify programs not included on those lists. The case study text was sent to the representatives of the organization or group for review.

› **Key statistics and accomplishments were gathered** from University reports and institutional assessment reports. Additional statistics and accomplishments were collected during case study research, and through direct inquiries to the Office of Research, Institutional Analysis and Planning, and Human Resources.

› **Publication data sets for each SDG were created** using preloaded Research Area entities in SciVal and were filtered to include only publications by University of Waterloo affiliated authors from 2016-2020. Search query methodologies for each SDGs are publicly available from SciVal. All publication types were included in the data sets.

The Overview and Trends modules in SciVal were used to extract the publication, author, and institution lists related to each SDG. Full details of this methodology are available by contacting the Waterloo Office of Sustainability.

› **Faculty researchers associated with each of the SDGs were identified** through the SciVal bibliometric analysis that identified University of Waterloo publications and the associated Scopus author IDs. The resulting Scopus ID list was then cross-referenced with a list of University of Waterloo faculty members supplied by Human Resources to exclude non-faculty authors.

› **Undergraduate and graduate courses related to the SDGs were identified** using keyword searches of course descriptions, followed by a manual review of the course descriptions with keyword matches to ensure accurate alignment with the SDGs. Yellow bars indicate courses that more likely to have SDG connections, and had at least one keyword hit. Grey bars indicate courses with potential SDG connections. These courses either had a keyword hit but the SDG connection needed more review, or they appeared to have a connection to the SDG topics but had no keyword hit.

# UNIVERSITY OF WATERLOO