

# Times Higher Education Impact Ranking 2020: Faculty of Engineering Research Indicator Case Study



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**WATERLOO | ENGINEERING**

# Times Higher Education **Impact** Ranking



**WHAT:** Only University ranking in the world that assesses Universities against the 17 United Nations' Sustainable Development Goals



**WHY:** Demonstrate the differences that Universities' are making in the world we live in.



**WHO:** Universities' that provide data on SDG 17 "Partnership for the Goals" AND at least three other goals AND teach undergraduates AND be validated by a recognized accreditation body



**HOW:** Universities ranked using four indicators: 1) Research 2) Outreach 3) Stewardship and 4) Teaching



**WHEN:** Ranking occurs every year- currently two cycles completed 2020 and 2019

# University of Waterloo, Ontario, Canada

**42,000**

Full and Part-time  
Undergraduate and  
Graduate Students

**9,000**

Degrees  
granted

**6**

Faculties

**1000**

Acre main  
campus

**220,00**

Alumni

**151**

Countries with  
Alumni

**\$247.7  
Million**

Research  
Funding 19/20

**16<sup>th</sup> overall**

In the world on the  
2020 THE Impact  
Ranking

**2<sup>nd</sup> overall**

In the world on SDG #1  
*No Poverty*

**2<sup>nd</sup> overall**

Across all SDGs and all Universities in Canada

# Faculty of Engineering, University of Waterloo, Canada

**A TOP 50**

Engineering school in the world  
*(QS World University Ranking 2020)*

**8,034**

Undergraduate  
Students

**15**

Bachelor  
Programs

**2,099**

Graduate  
Students

**37**

Graduate  
Programs

**13%**

International  
Students

**348**

Faculty

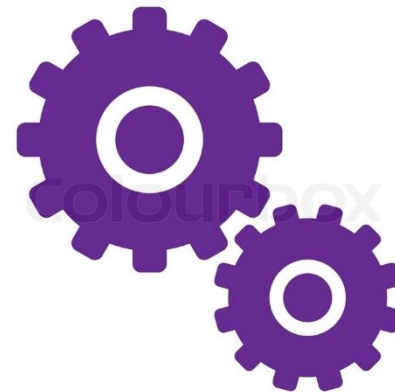
**8**

Departments

**\$96**

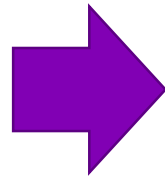
**Million**

Research Funding  
18/19



# Purpose of the Project

**Institutional Purpose:**



Identify publications and top Authors by SDG at Waterloo

**Faculty of Engineering Purpose:**



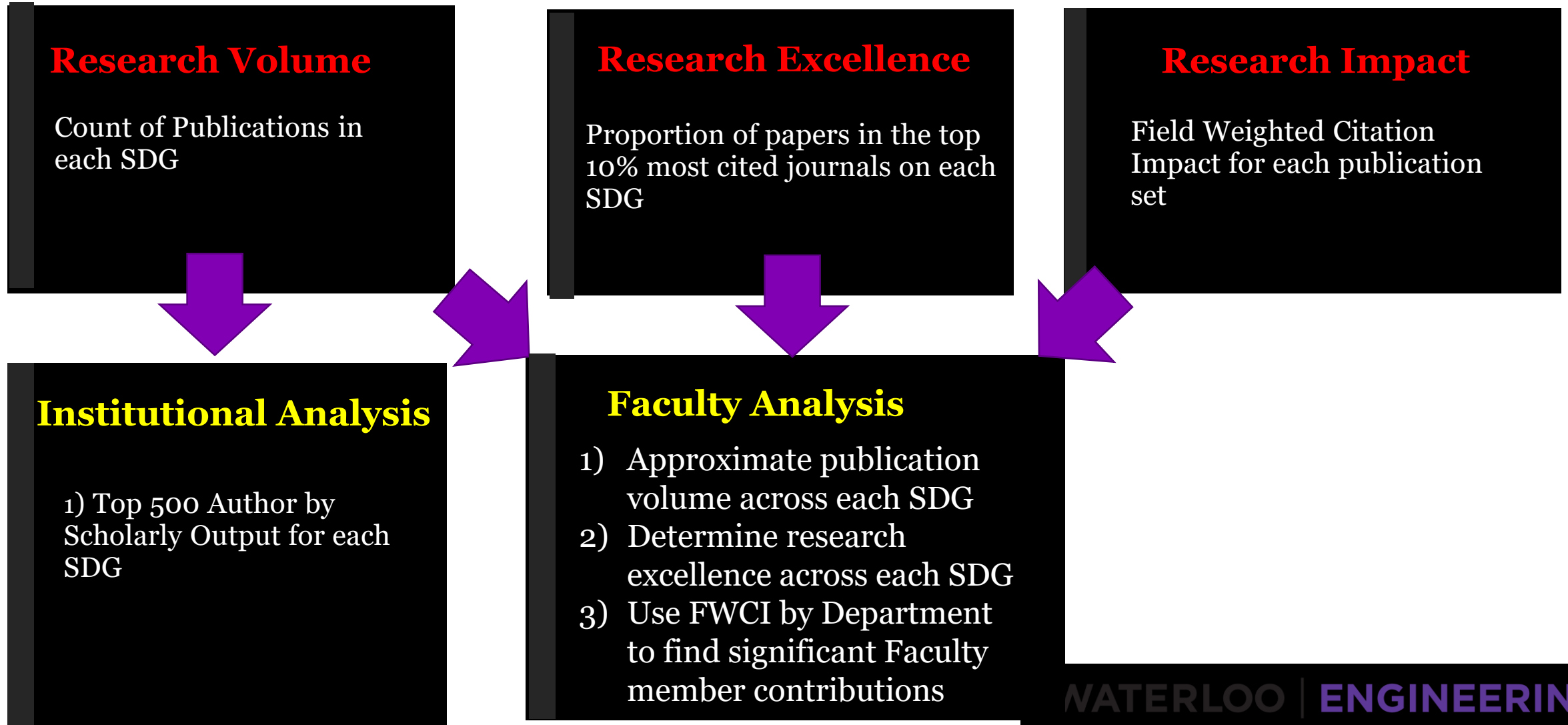
Track actual Engineering contributions to the Waterloo SDGs over time

Track Engineering Research Excellence over time

Identify Engineering Faculty members making high impact contributions to the SDG

# Project Method

## Research Indicator (Publications in Scopus 2014-2018)



# Waterloo Analysis: Creating Publication and Authors Lists for UW SDGs

SDG  
Elsevier  
Search  
String



Affiliation  
Search



Publication  
set  
uploaded to  
SciVal

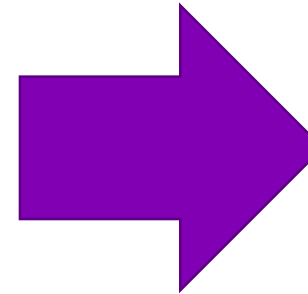


Exported  
Top 500  
Authors



Scopus

#62	SDG16_Waterloo_2014-2018	TITLE-ABS-KEY (( {actual innocence} OR {false confession} OR {armed c onflict} OR {armed conflicts} OR {civil conflict} OR {civ... View More
#61	SDG15_Waterloo_2014-2018	TITLE-ABS-KEY (( {terrestrial OR land OR inland OR freshwater } AND ( {biodivers* OR {species richness} OR bioeconom* OR ... View More
#60	SDG14_Waterloo_2014-2018	TITLE-ABS-KEY (( {marine OR ocean OR oceans OR sea OR seas OR coast* OR mangrove} AND ( {water cycle} OR {water c... View More
#59	SDG13_Waterloo_2014-2018	TITLE-ABS-KEY (( {climate action} OR {climate adaptation} OR {climate change} OR {climate capitalism} OR ipcc OR {climate €... View More
#58	SDG12_Waterloo_2014-2018	TITLE-ABS-KEY ( {environmental pollution} OR {hazardous waste} OR {hazardous chemical} OR {hazardous chemicals} OR {toxic... View More
#57	SDG11_Waterloo_2014-2018	TITLE-ABS-KEY (( {city OR cities OR {human settlement} OR {human s ettlements} OR urban OR metropoli* OR town* OR r... View More
#56	SDG10_Waterloo_2014-2018	TITLE-ABS-KEY ((( {equality AND ( {economic OR financial OR socio-ec onomic} ) OR ( {inequality AND ( {economic OR financi... View More
#55	SDG9_Waterloo_2014-2018	TITLE-ABS-KEY (( {industrial growth} OR {industrial diversification} OR {infrastructural development} OR {infrastructural investr... View More



SciVal

# Faculty of Engineering Analysis

SDG Elsevier  
Search String



Engineering  
Department  
staff lists



SDG Publication  
sets by  
Department  
uploaded to SciVal



Scopus



SciVal

Benchmarking tab used to load  
Waterloo and Department  
publication sets for each SDG



SciVal

Multiple metrics used for 1)  
Scholarly output 2) Count of  
Top 10% most cited Journals  
3) Exported longitudinally



Excel workbooks created for  
each SDG and Waterloo  
publication sets created  
separating out Engineering  
publications by Departments

Microsoft Power BI  
used to visualize results





# Engineering Power BI Times Higher Education (THE) Impact Ranking Report: Comparative Publication Share

## Comparative Publication Count by Sustainable Development Goal

**(SDG)** Click on each goal to see the count of publications for each goal attributed to Waterloo compared to other Universities.

- [Affordable and Clean Energy](#)
- [Clean Water and Sanitation](#)
- [Climate Action](#)
- [Decent Work and Economic Growth](#)
- [Good Health and Well-Being](#)
- [Industry, Innovation and Infrastructure](#)
- [Life Below Water](#)
- [Life on Land](#)
- [Peace, Justice and Strong Institutions](#)
- [Responsible Consumption and Production](#)
- [Sustainable Cities and Communities](#)
- [Zero Hunger](#)

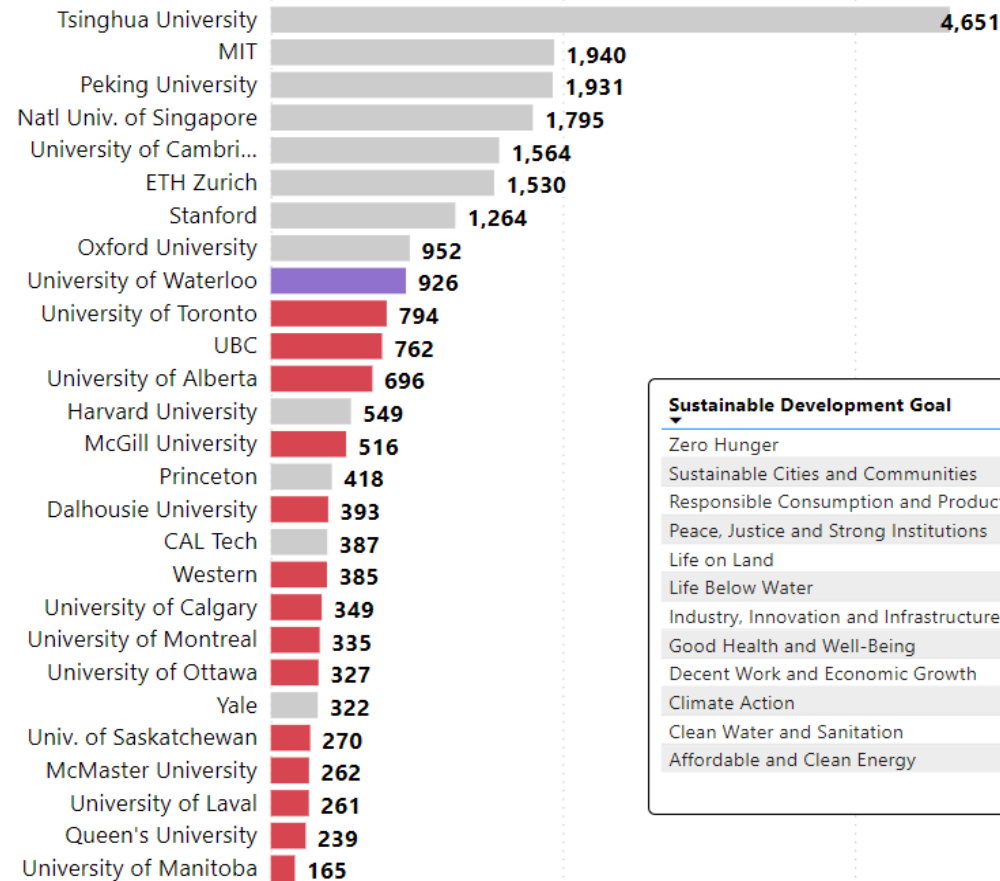
U15 Universities and Universities with top global research ranking in the THE 2020 World University ranking are shown.

The top University in each SDG is always shown first (no matter which Region).

SDGs that are not shown had fewer than 2 University of Waterloo publications. SDG 17 did not have a comparative research component.

\* Natl Univ. of Singapore

## Comparative Publication Count



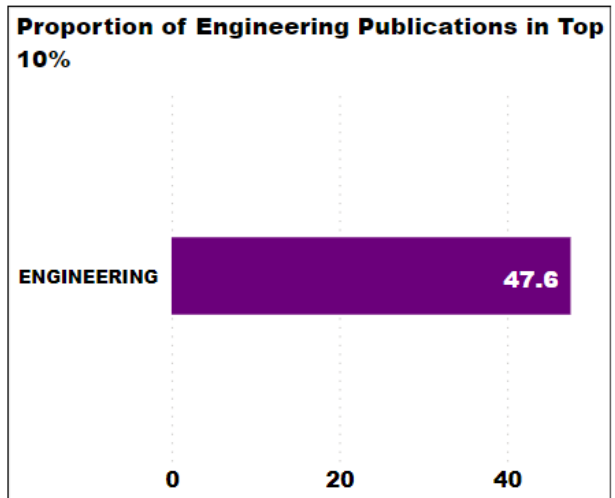
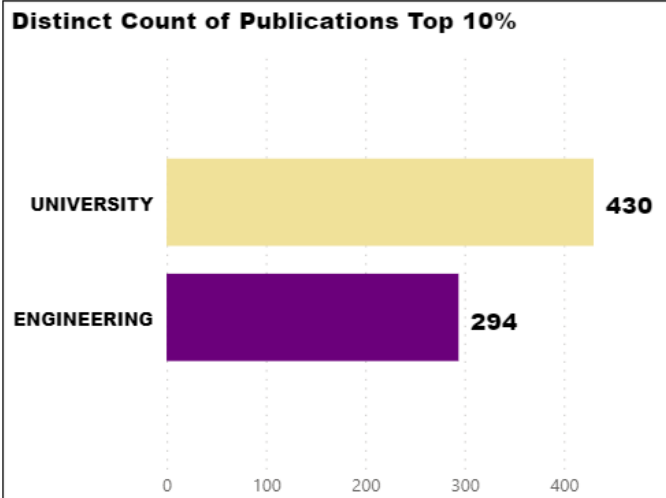
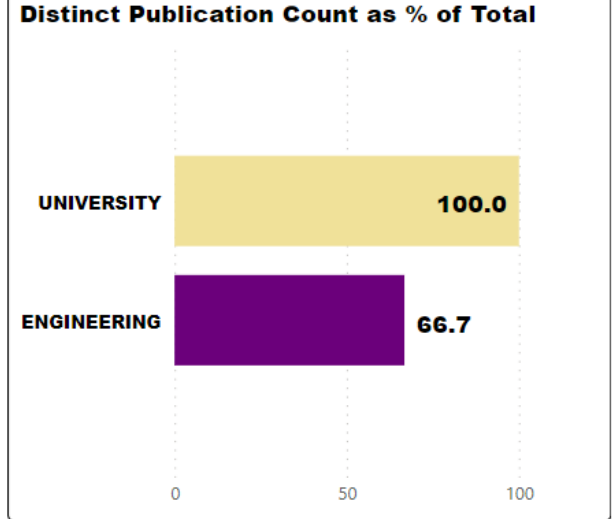
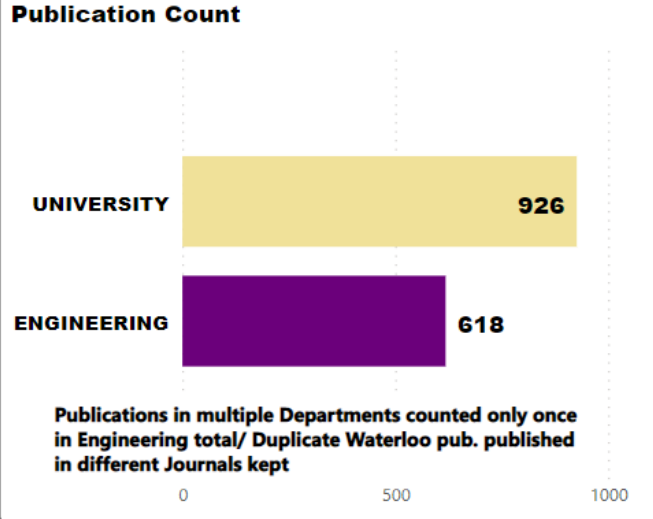
Sustainable Development Goal	Total Publication Count
Zero Hunger	87,192
Sustainable Cities and Communities	129,383
Responsible Consumption and Production	77,668
Peace, Justice and Strong Institutions	168,762
Life on Land	106,112
Life Below Water	101,028
Industry, Innovation and Infrastructure	36,549
Good Health and Well-Being	3,316,104
Decent Work and Economic Growth	85,505
Climate Action	171,947
Clean Water and Sanitation	43,086
Affordable and Clean Energy	356,966

# Engineering Power BI Times Higher Education (THE) Impact Ranking Report: Publication Share/Research Excellence

**Overall Statistics for Each Sustainable Development Goal (SDG)** Click on each goal to see proportion of publications for each goal attributed to Engineering compared to the whole University.

- Affordable and Clean Energy
- Clean Water and Sanitation
- Climate Action
- Decent Work and Economic Growth
- Good Health and Well-Being
- Industry, Innovation and Infrastructure
- Life Below Water
- Life on Land
- Peace, Justice and Strong Institutions
- Responsible Consumption and Production
- Sustainable Cities and Communities
- Zero Hunger

Publications in this data include University of Hertfordshire affiliations-see Report overview.



# Engineering Power BI Times Higher Education (THE) Impact Ranking Report: Publications

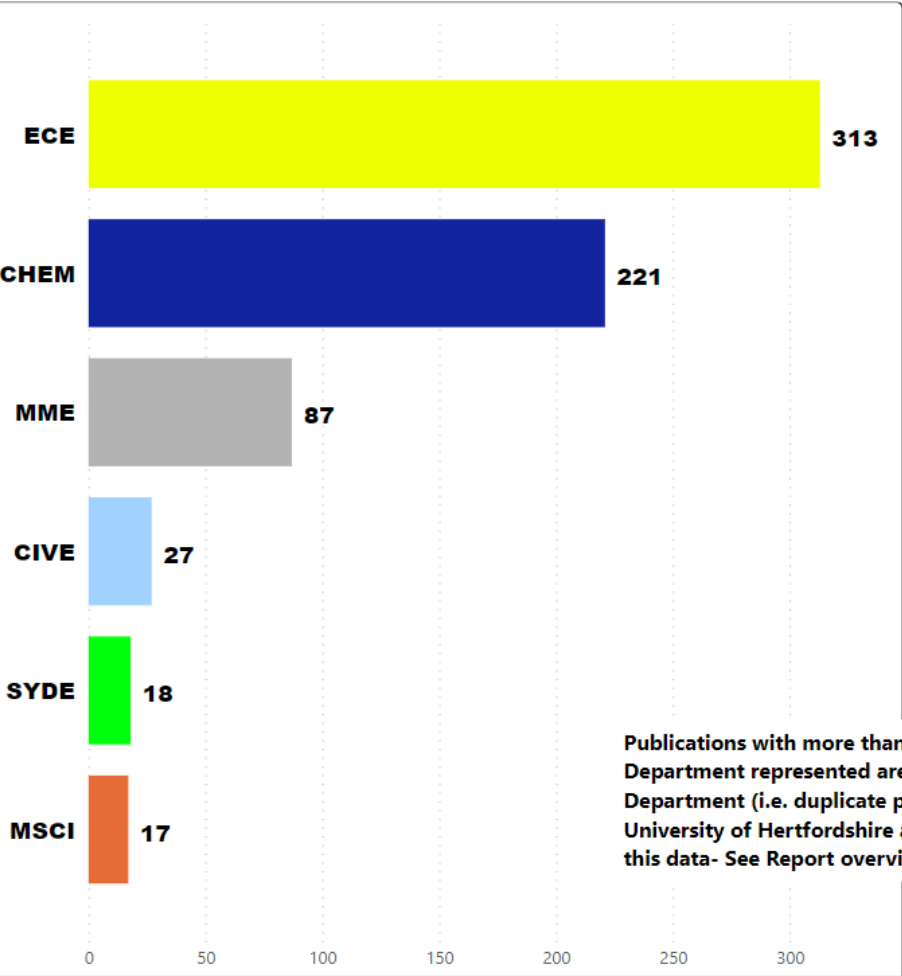
- 1) Select SDG which populates the data per Department.
- 2) Select Departments to analyze and Total or Top 10% publications.
- 3) Right click on Department and show point as a table.
- 4) See all publications in that year.
- 5) Click three dots in top right corner to see sort options.
- 6) Sort ascending or descending.
- 7) Move right on slider to see Abstract hyperlink.
- 8) Export data as csv. file

- Affordable and Clean Energy
- Clean Water and Sanitation
- Climate Action
- Decent Work and Economic Growth
- Good Health and Well-Being
- Industry, Innovation and Infrastructure
- Life Below Water
- Life on Land
- Peace, Justice and Strong Institutions
- Responsible Consumption and Production
- Sustainable Cities and Communities
- Zero Hunger

- CHEM
- ECE
- MSCI
- CIVE
- MME
- SYDE

- Publications
- Top 10%

**Publications by Sustainable Development Goal and Department**



Publications with more than one Engineering Department represented are kept in each Department (i.e. duplicate publications). University of Hertfordshire affiliations also in this data- See Report overview.

# Analysis Results: Engineering Faculty Members contributed Approx. 30% or more of all Waterloo publications on the following SDGs:



# Engineering Faculty Member publications had Approx. 30% or more of their publications in the 10% most cited Journals on the following SDGs:

