Sustainability Report 2017
From Small Steps To Giant Leaps

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

tcd.ie/provost/sustainability

Contents

This report covers the 2017 calendar or academic year (Sep. 2016 – Aug. 2017) unless otherwise stated. It is based on the most accurate and applicable data available at the time of writing. All feedback on this report is welcome and actively encouraged by contacting us on mailto: sustainability@tcd.ie

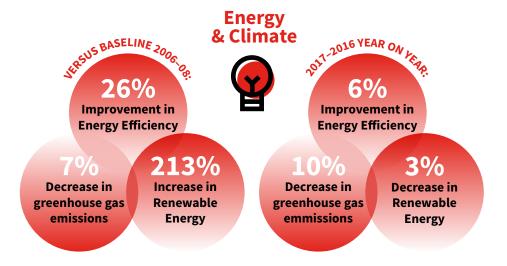"Climate change is a fundamental problem that we must solve and not merely pass on to the generations to come"

Mary Robinson

Small Steps To Giant Leaps:
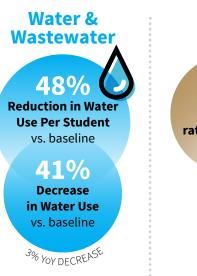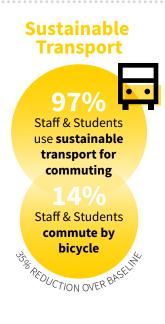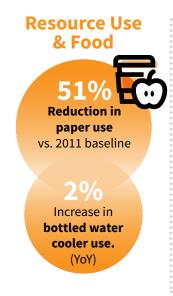## 2017 Highlights

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Energy & Climate

VERSUS BASELINE 2006–08:

26% Improvement in Energy Efficiency

7% Decrease in greenhouse gas emissions

213% Increase in Renewable Energy

2017–2016 YEAR ON YEAR:

6% Improvement in Energy Efficiency

10% Decrease in greenhouse gas emmissions

3% Decrease in Renewable Energy

Water & Wastewater

48% Reduction in Water Use Per Student vs. baseline

41% Decrease in Water Use vs. baseline

3% YOY DECREASE

Waste & Recycling

46% Recycling rate maintained

4% Increase in waste/person

5% Increase in waste generated (YoY)

5% Decrease in hazardous waste

Sustainable Transport

97% Staff & Students use **sustainable transport for commuting**

14% Staff & Students **commute by bicycle**

35% REDUCTION OVER BASELINE

Resource Use & Food

51% Reduction in **paper use** vs. 2011 baseline

2% Increase in **bottled water cooler use.** (YoY)

Trees & Biodiversity

1700+ Trees across University grounds
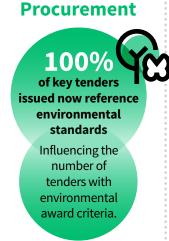
Campus Pollinator Plan Launched

Education & Research

Staff, Student & Residents Sustainability guides launched

Improving the campus as a smart living lab via links with Dublin City.

Green Procurement

100% of key tenders issued now reference environmental standards

Influencing the number of tenders with environmental award criteria.

Communication & Student Involvement

15th Annual Green Week. University's GreenPages website updated.

Provost's Advisory Committee on Sustainability & Low Carbon Living.

For further details please visit the trinity greenpages website **www.tcd.ie/provost/sustainability**

Introduction

Trinity College Dublin, the University of Dublin, is Ireland's highest ranked university with an international reputation for research and scholarship, and for the success of its graduates in many fields. Trinity's major activities are carried out on a beautiful historic campus located in the heart of Dublin, with health sciences also located at St James's Hospital and Tallaght Hospital. In addition there is a 5 acre technology campus located at Grand Canal Dock. Trinity has a community of 17,000 students, approximately 3,000 staff and over 100,000 alumni. With a tradition of scholarship spanning more than four centuries, Trinity is home to talented and inquiring minds, a liberal education, and research conducted at the frontiers of disciplines.

Sustainability has been at the heart of Trinity for a very long time. The late Professor Simon Perry originally founded the University's green campus committee in 1993 as a means for staff and students to raise campus environmental issues and to propose

innovative solutions. Building on this initiative the University published its first Sustainable Development policy in 2008 and in 2013 Trinity was awarded its first Green Flag award for campus sustainability. Trinity's five-year strategic plan (2014-2019) further committed the University to becoming an institutional leader in sustainability. To add a further impetus to sustainability the Provost's Advisory Committee on Sustainability and Low Carbon Living was launched in 2017 whose membership included Student Union and Graduate Student Union representatives, as well as general student activists.

This is our third annual Sustainability Report and it is entitled "*FROM SMALL STEPS TO GIANT LEAPS*". While our first reports focused on our continuous journey towards sustainability and how we connect each aspect of sustainability in a holistic manner, this year's report focuses on how each of us can make small and large actions to improve sustainability. Connecting the dots between all our sustainability metrics ensures we do not improve one component of sustainability at the expense of another such as reducing carbon emissions

at the expense of air quality. One of the key focuses of our sustainability strategy remains to inspire people, in particular our students, to move forward on the path to a more sustainable future. We want to inspire all our Trinity community including our students, staff, alumni, surrounding communities and the over one million visitors we welcome to our campus each year. We also aim to inspire and collaborate with our academic peers, city neighbours and the global academic community to which we belong.

This report covers the nine key sustainability areas we identified as part of our Green Flag campus award in 2013 and reaffirmed as part of the Green Flag renewal in 2016. These aspects include energy, carbon, waste, water, transport, resource use, green procurement, sustainability education, research, and entrepreneurship, and student /community involvement. Each aspect is further detailed in each section of this report and we hope to prove we are walking the walk and not just talking the talk when it comes to sustainability leadership.

Provost's Welcome Message

This is our third annual Trinity College Dublin sustainability report. It is written for the Trinity community of students, staff and alumni, and our external stakeholders. It highlights our collective achievements made to date as well as the challenges we face ahead. For each objective in the report, a target or targets has been set and you can measure our progress against it. You can also learn how you can contribute towards making them a reality.

 As I have said previously, I think of the words of our great graduate, Edmund Burke, when we talk about our sustainability challenges: "Nobody made a greater mistake than he who did nothing because he could only do a little." I believe that every little contribution brings us a step closer to our goal of a more sustainable future. In this way

it is up to all of our college community to help us meet our objectives and targets.

With your help, I look forward to our great university providing leadership, education and research that will help us all meet the challenges of sustainability in the years ahead.

Patrick Prendergast
Provost

Provost's Advisory Committee on Sustainability

Policy, Strategy & Progress

Our key sustainability drivers are the University's Sustainability Policy (**tcd.ie/about/policies/assets/pdf/sustainability-policy-15112017.pdf** updated in 2017) and the University's 5 year strategic plan (2014 -2019: **tcd.ie/strategy/strategic-plan-201419.pdf**). The following are the key sustainability extracts from the strategic plan, which follow the definition of Sustainable Development established by the UN Brundtland Commission, which states "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Our baselines and targets are based on our maintenance of Green Flag status. Baseline years vary based on available data and national targets, and we will envisage future targets to be adjusted to coincide with the University's 5 year strategic plan.

Mission C:

Fearlessly engage in actions that advance the cause of a pluralistic, just, and sustainable society.

Goal: C8.1 Sustainable Campus

Trinity aspires to be a global leader in university sustainability. The college's properties comprise a significant and integral part of the Dublin conurbation. Trinity has a responsibility to conduct its activities in a manner that protects and enhances the environment, conserves natural resources, reduces greenhouse gas emissions, and supports society as a whole. Much progress has been made in these areas since 2008, marked by the award of the Green Flag campus status in 2013 for which Trinity committed to a series of objectives for energy and carbon emissions, waste management/litter reduction, water and waste-water management, sustainable transport, resource use, biodiversity, green procurement, education and research, communication and student involvement. Our objective is to move further towards becoming a sustainable campus, a key measure of which will be to become the first university in Ireland to join the eminent group of visionary universities constituting the International Sustainable Campus Network (ISCN).
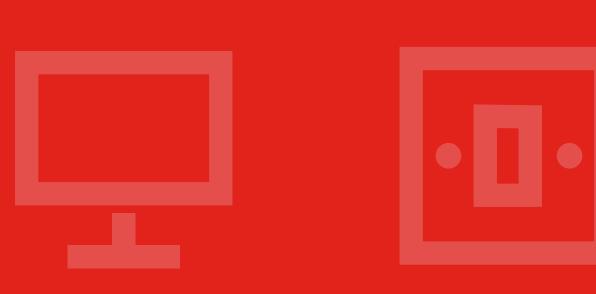
We will achieve this objective by:

— Publishing an Annual Sustainability Report, including carbon, energy, waste, transport and water consumption data

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— Ensuring, through the Estates and Infrastructure Development Plan, that all new buildings (in particular our E3 development), refurbishments, and purchases comply with and, where possible, exceed, energy-efficiency standards

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— Promoting research into, and teaching on, sustainability issues as well as promoting the campus as a living laboratory

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— Setting up a Sustainable Campus Advisory Group and appointing a sustainability champion

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— Undertaking sustainability audits and engaging campus users in sustainability targets

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— Working towards developing an environmental management system and an energy management system

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— Publishing a carbon footprint and action plan for reducing carbon emissions

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— Fostering links with Dublin City Council's 'Greening the City' and with national and EU smart city and other relevant initiatives.

....

Goal: C7.3
Relationship with the City

Promoting environmental sustainability, in partnership with Dublin City Council's 'Greening the City' initiative and developing, via the Estates and Infrastructure Development Plan, a campus infrastructure in line with this objective.

1. **Energy, Climate Change & Greenhouse Gas Emissions**

Our Objectives Are To:

01. Use Energy Efficiently

02. Increase the Use of Renewable Energy (Onsite and Offsite)

03. Reduce Greenhouse Gas Emissions (Direct and Indirect)

04. Prepare for Climate Change (Mitigation and Adaptation).

Our Targets Are:

⬆ 33% Increase in Energy Efficiency by 2020

➡ 14% Year-on-Year (YoY) Increase in Renewable Energy Use Until 2020

⬇ 2% Year-on-Year Decrease in Greenhouse Gas Emissions Until 2020

➡ 80% Reduction in Greenhouse Gas Emissions by 2050

⬇ To Create a Climate Change Action Plan.

STATUS:

⬆ On Track   ➡ Close to Track   ⬇ Off Track

Our Progress:

Trinity has improved its energy efficiency indicator by 26% against the 2006-08 baseline and improved 6% YoY. Renewables now account for over 8% of energy consumed, primarily via grid-based renewables. 2017 greenhouse gas emissions have decreased by 7% since the baseline, the first year we have dropped below this baseline. This decrease is against an increase in built area of almost 19% since the benchmark period. We will need to increase our efforts in tackling greenhouse gas emissions by further improving energy efficiency, engaging campus users, using energy storage and increasing onsite renewables in order to meet our interim goal of a 2% annual reduction to 2020 and to stay on track towards our long term 2050 target. Ireland's national renewable electricity target of 40% by 2020 will help Trinity in reducing its greenhouse gas emissions but further measures will be required under energy efficiency, renewables deployment and building upgrades as well as behavioural changes. For more information about Trinity's energy progress, please visit the Sustainability GreenPages website.
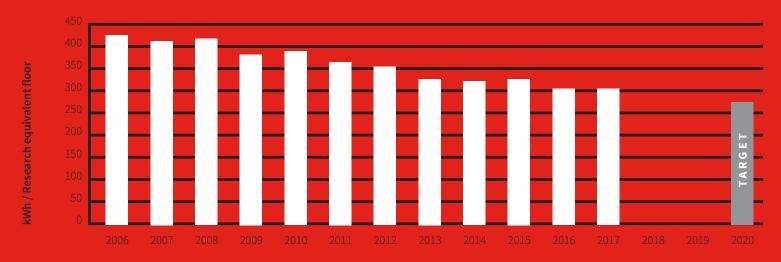
Annual Highlights:

Trinity has continued to roll out a number of energy saving projects during the year as well as benefiting from previous energy efficiency upgrades. There are a number of solar water heating panels on roofs across the University including on the residences in New Square, the Pavilion and the Lír. Projects completed in 2017 included installing high efficiency LED lighting in a number of locations across the campus, improved building management controls and chiller/pump upgrades. We are also aiming to expand our carbon emissions data to include fugitive emissions and other scope 3 emissions such as air travel.
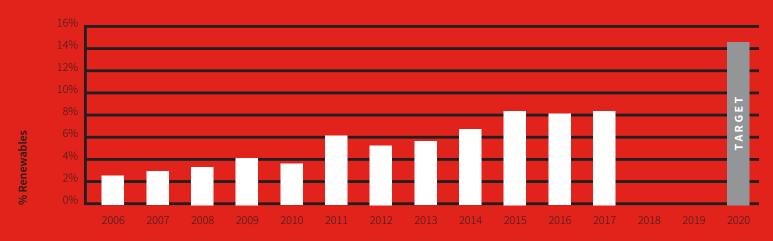
Get Involved & Learn More:

— Always purchase energy savings equipment and lighting (aim for A+ rated or better).

— Why not volunteer for the Green Campus committee, staff/student sustainability networks or organize a carbon awareness event for the annual Trinity Green Week.

— Report any energy saving ideas you might have, no matter how small, to **sustainability@tcd.ie.**

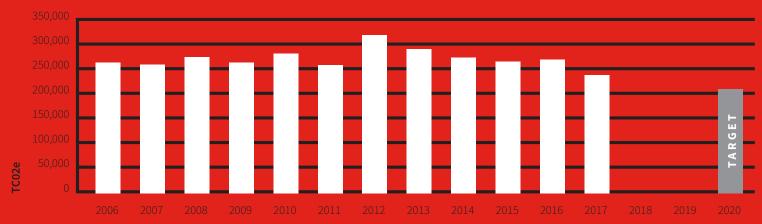# Energy & GHG Statistics

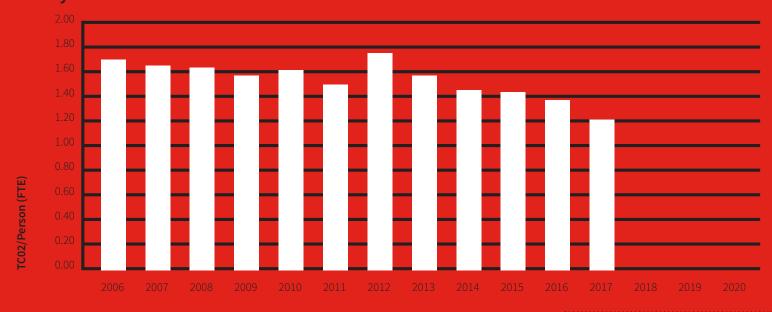## Trinity Energy Efficiency Indicator

Trinity Renewable Energy %

Energy & GHG Statistics

Trinity Carbon Footprint

TC02e

350,000 — 300,000 — 250,000 — 200,000 — 150,000 — 100,000 — 50,000 — 0

2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

TARGET

Trinity Carbon Indicator

TC02/Person (FTE)

2.00 — 1.80 — 1.60 — 1.40 — 1.20 — 1.00 — 0.80 — 0.60 — 0.40 — 0.20 — 0.00

2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

2. **Waste, Recycling & Litter Reduction**

Our Objectives Are To:

01. Reduce Waste Generation/
Prevent Waste

....

02. Increase Recycling

....

03. Eliminate Waste to Landfill and Reduce
Energy Recovery

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04. Have Zero Litter

....

05. Reduce Hazardous Waste.

....

Our Targets Are:

⬇ 10% Decrease in Total Waste Generated
by 2020

....

⬆ 50% Recycle for Municipal Solid Waste
by 2020

....

➡ 10% Reduction in Hazardous Waste
by 2020.

....

⬆ 100% of University Users to be Within
100m of a Litter Bin by 2012 (Achieved
2012)

....

⬆ ZERO Waste direct to Landfill by 2015
(Achieved 2012)

....

STATUS:
⬆ On Track   ➡ Close to Track   ⬇ Off Track

Our Progress:

Trinity has maintained a municipal solid waste recycling rate of 46% and remains within touching distance of our 50% target. We have sent no municipal waste direct to landfill since 2012, with most non-recyclable waste being converted into Refuse Derived Fuel. However, we still face challenges as our overall waste generation continues to grow in particular for WEEE (waste electrical and electronic equipment). We continue to aim to apply a materials management approach to our procurement and waste management systems, as they have a direct influence on each other. We are continually improving our data capture of our waste streams and aim to collect and report on construction & demolition waste (currently captured by our construction contractors). We are also focused on eliminating litter and disposable single-use plastics while embedding cradle-to-cradle material management into our design processes.

Annual Highlights:

Trinity is continuing to expand its bin-less office system across the campus. This places responsibility with the office user to segregate their waste and bring it to the recycling bins near their office. We have designated some of our outdoor solar compacting bins into recycling bins as well as rationalised the number of bins on campus. Hazardous waste levels have dropped for the first time since reporting began which is a great improvement.
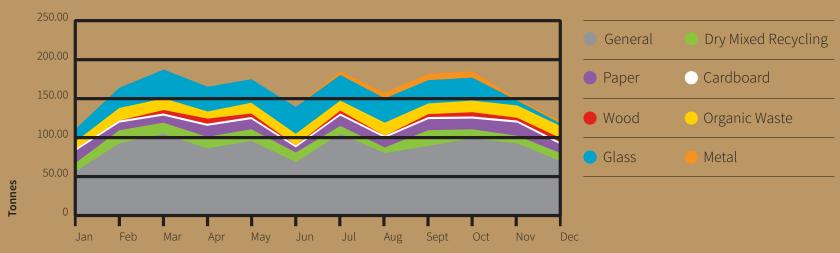
Get Involved & Learn More:

— Did you know most waste can now be recycled once it is contamination free? Visit the Trinity recycling page or map for what can be recycled and where.

— If it's not broke, don't fix or replace it. Most items that do break can usually be fixed/repaired saving time, money and resources.
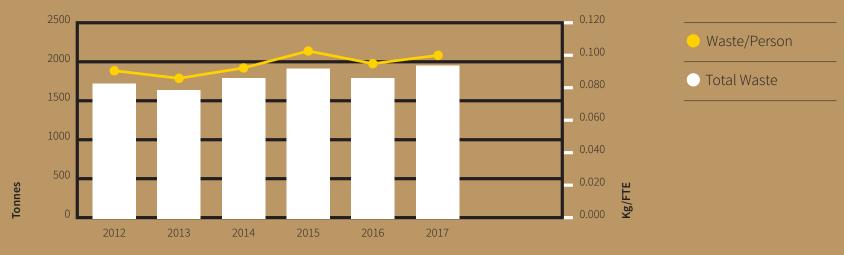
— Think contamination. Just one coffee cup emptied into a recycling bin can mean none of the waste in the bin is fit for recycling.

— One man's trash is another man's treasure. Getting rid of old items such as clothes, computers or furniture? Try giving them to a charity shop such as St. Vincent DePaul (SVP) or try trading them online. End of year clear-outs can be passed onto next year's students. Remember, it all helps.
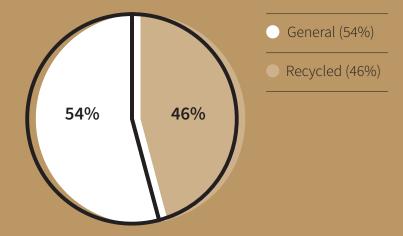
Waste Statistics

Trinity 2017 Waste Streams

Legend:
- General
- Dry Mixed Recycling
- Paper
- Cardboard
- Wood
- Organic Waste
- Glass
- Metal

Y-axis: Tonnes (0 – 250.00)
X-axis: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec

Trinity Annual Waste Totals

Legend:
- Waste/Person
- Total Waste

Left Y-axis: Tonnes (0 – 2500)
Right Y-axis: Kg/FTE (0.000 – 0.120)
X-axis: 2012, 2013, 2014, 2015, 2016, 2017

Waste Statistics

Trinity 2017 Waste Streams

- General (54%)
- Recycled (46%)

Trinity Hazardous Waste Totals

3. Water & Wastewater

Our Objectives Are To:

01. Reduce Water Use

....

02. Increase Onsite Water Use

....

03. Increase Water Reuse & Recycling

....

04. Decrease Wastewater Generation

....

05. Improve Wastewater Quality

....

Our Targets Are:

⬆ 45% Decrease in Water Consumption Per Student by 2020

....

➡ 5% Increase in Onsite Water (groundwater and rainwater) Use by 2020

....

⬇ 10% Increase in Water Reuse by 2020

....

➡ 10% Reduction & Quality Improvement in Wastewater Released by 2020.

....

STATUS:
⬆ On Track   ➡ Close to Track   ⬇ Off Track

....

Our Progress:

Trinity has decreased its water use by 41% since the 2010 baseline, equivalent to a 48% reduction per full time student equivalent. The University used the equivalent of 15,700 litres of water per student (43 litres/day/student) over 2017. The University has a continuous leak detection programme to identify and repair major leaks in the campus' piping network. Several laboratories use closed loop water coolers, which do not discharge water to sewer.

These have been instrumental in the reductions achieved. All new buildings/major renovations include water efficient fixtures and fittings such as dual flush toilets, low flow showerheads and auto-stop taps. Further use of rainwater and local groundwater are actively being investigated.

Annual Highlights:

Trinity used just under 263 million litres of water in 2017, a small 3% increase on 2016. Rainwater harvesting systems are in the Trinity Biomedical Sciences Institute and the refurbished residences in House 38 and 40 as well as all new buildings in construction. A state-of-the-art water based hockey pitch is installed at the sports facilities in Santry, which uses groundwater and a closed loop water recycling system. The rugby pitch in College Park resurfaced in 2016 has required additional watering, which continued in 2017. There was little change in rainwater runoff due to similar rainfall levels over the year.
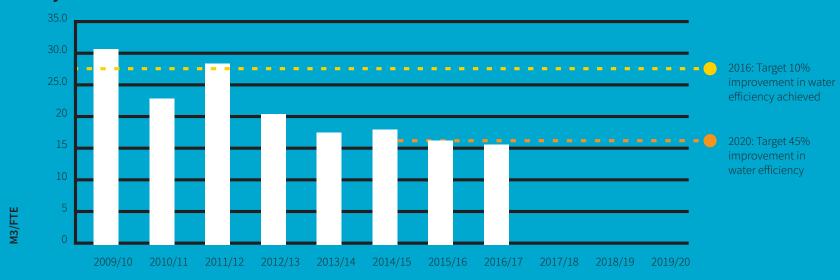
Get Involved & Learn More:

— Be more water efficient by carrying a water bottle with you and refilling it at water fountains rather than buying bottled water. One litre of bottled water consumes between 1.4 – 3.7 litres during manufacturing (visit Trinity's water efficiency page for more ideas).

— Only use dishwashers, washing machines and other water consuming devices when they are full.

— Turn off taps in labs and at home when not actively in use and save up to 41 litres of water per minute.

— Never flush chemicals, oils or hazardous substances down the drain. They could block pipes, cause leaks or damage wildlife and the environment.

— If you find a leaking tap or tap with too high a flow rate, don't ignore it. Report it to sustainability@tcd.ie.
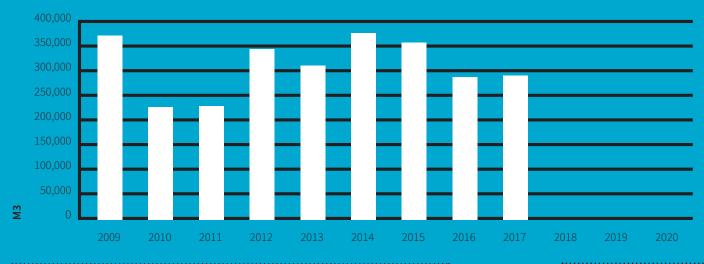
Water Statistics

Trinity Water Use Per Student

2016: Target 10% improvement in water efficiency achieved

2020: Target 45% improvement in water efficiency

Total Rainwater Received

4. Sustainable Transport
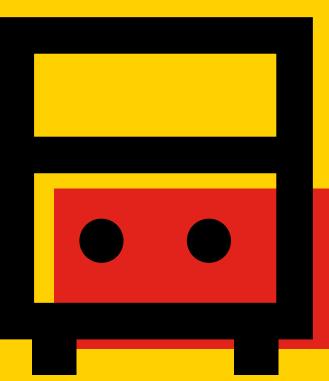
Our Objectives Are To:
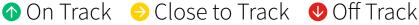
01. Increase Use of Sustainable Transport

02. Increase Renewable Energy Use in College Transport

03. Reduce Car Use

04. Promote Cycling.

Our Targets Are:

⬆ Maintain Over 90% Use of Sustainable Transport to 2020

⬆ 10% Increase in Renewable Energy in Transport by 2020

⬆ 5% Reduction in Single Occupancy Car Trips by 2020

⬇ 10% Increase in Bicycle Use by 2020.

STATUS:

⬆ On Track   ➡ Close to Track   ⬇ Off Track

Our Progress:

A travel survey (early 2018) is the most up-to-date data source. Trinity staff and students have increased their use of sustainable transport to 97% since the 2011 baseline, a 4% improvement, with 14% travelling by bike and 28% walking. Only 3% travel by car and only 2% are single occupancy vehicle users. The smarter travel survey is carried out every 2-3 years among staff and students (national smarter travel programme). The University campus has access to some of the best public transport in Ireland and has a very limited amount of car parking. Due to this, Trinity has one of the best sustainable transport rates for a university in the world. The impacts of international travel on the University's footprint is still being assessed and will be detailed in future reports. It is likely measures will be required to reduce or offset these emissions.

Annual Highlights:

Trinity continues to run a number of awareness campaigns around sustainable transport on campus and via its smarter travel website. There are a number of projects to improve the amount of cycle parking available on the campus including trialling new bike parking racks. However, according to the latest travel survey cycle use has decreased from 22% to 14% (35% reduction over 7 years). There is anecdotal evidence this could be due to student rent increases pushing students to living further away from the campus but is countered by increases in people walking. The University is promoting the use of zero emission vehicles by providing two electric vehicle charge points for staff to charge their vehicles and is intending to use electric vehicles in its fleet. Approximately 3% of fuel (energy content) consumed in University owned vehicles was from renewables (biofuels) as per the national biofuel targets.

Get Involved & Learn More:

— Why not try cycling/walking to college once or twice a week. It's a great way to keep fit and there are plenty of cycle friendly facilities available.

— Instead of driving or flying to meetings/ events, see if you can telecommute using videoconferencing such as Skype, Google Hangouts, FaceTime, GoToMeetings, Zoom etc.

— There is a range of financial incentives for sustainable travel such as bike-to-work tax breaks, tax incentive travel cards and grants for Electric Vehicles (EVs).

— Please visit https://www.tcd.ie/ collegehealth/promotion/travel/ for more on sustainable transport for the campus.

Transport Statistics

2018 Travel Survey

Walked
28%

Bus
27%

Train
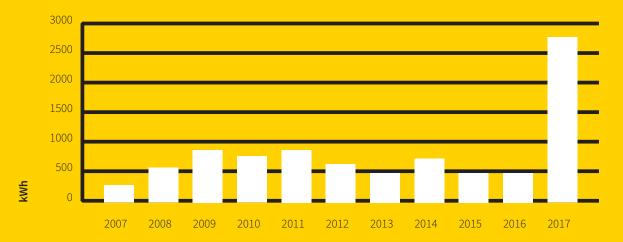17%

Cycled
14%

Luas
11%

Car (alone)
02%

Car Pool
01%

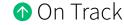## Renewable Energy in Transport

5. Resource Use & Sustainable Food

Our Objectives Are To:
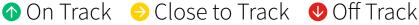
01. Reduce Paper Use

02. Increase Sustainable Food Use

03. Reduce Bottled Water Use (large 19 litre bottles)

04. Reduce Disposable Material Use.

Our Objectives Are To:

↑ 20% Decrease in Paper Use by 2020

→ 50% Food to Meet 1 of 4 Sustainability Criteria (outlined on GreenPages) by 2020

↓ 50% Reduction in Bottled Water Use by 2020

→ 50% Reduction in Disposable Materials by 2020

STATUS:
↑ On Track   → Close to Track   ↓ Off Track

Our Progress:

Trinity has reduced its purchased paper use by over 50% since the 2011 baseline and uses almost 11.5 million pages each year. There are a number of catering outlets on campus and continuing work on promoting sustainable food options is progressing with most food now meeting at least one of our four sustainability criteria. There has been a 21% increase in bottled water use on campus since the baseline in 2011 (2% YoY), however further roll out of mains fed water fountains is on-going to help address this increase. A review of disposable items available on campus is on-going and options to promote reusable items.

Annual Highlights:

Trinity has continued to reduce paper use in 2017 due to an additional number of processes going paperless, the increased use of electronic documents and through awareness campaigns. The annual Trinity Green Week continued to run awareness events around sustainable food and the catering department offer a number of vegetarian and healthy food options as part of their daily menus. There is now an extensive network of piped water fountains for use across the campus and this is continuing to be expanded. Reusable coffee cups are now available at most coffee stalls and provide a discount to users over disposable cups. The Buttery and Perch joined the Conscious Cup Campaign in 2017, to promote discounts on all hot drinks for people using reusable cups. The students also commenced a plastics free campaign to eliminate single use plastics from the campus.
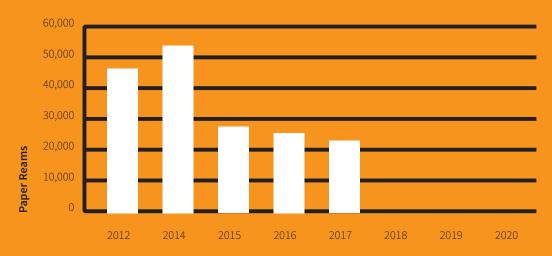
Get Involved & Learn More:

— Use e-documents and don't print unless you really need to. Always print double sided and try reusing old single sided prints for scribble paper.

— Use the water fountains on campus to refill your bottle and bring your own reusable mug for coffee/tea to get a discount for using it.

— Why not give catering suggestions for sustainable food using their feedback forms. You could also try a daily healthy vegetarian specials.

— Avoid using disposable materials such as plastic cups, plates and cutlery from offsite catering and instead keep ceramic cups, mugs, etc. in your work kitchen or carry reusable travel cutlery.

Resource Use Statistics

Trinity Paper Use

Trinity Bottle Water Use (large 19 litre office water)

6. Biodiversity & Trees

Our Objectives Are To:

01. Increase Tree Numbers

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02. Increase Green Areas

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03. Increase Biodiversity

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Our Objectives Are To:

⬆ 10% Increase in Number of Trees by 2020

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➡ Maintain and Improve Green Areas by 2020

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➡ 5% Increase in Biodiversity Rich Areas by 2020.

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STATUS:
⬆ On Track ➡ Close to Track ⬇ Off Track

....

Our Progress:

Trinity has over 1,700 trees across its estate including a small woodland at its Santry sports grounds. Our 2017 resurvey showed we continue to increase the number and diversity of trees which provide numerous services including producing oxygen, creating habitats, sequestering CO_2, fixing nitrogen, distilling water, reducing flooding, creating a renewable fuel/material and improving campus aesthetics. In the period 2012-2017, the amount of green area of the University's estate has increased by 0.3%, biodiversity areas have increased and the number of trees increased ~25%. The University campus has some of the most well recognised and historic trees in Ireland. It also has its own botanic gardens in Darty for research purposes.

Annual Highlights:

Trinity acquired a significant new sports area in 2017 (Iveagh Sports Grounds) with additional green areas. We also continued to promote the new campus pollinator plan with a blog page called Campus Buzz. An area between the Pavilion and the rugby pitch is continuing to be allowed to grow with reduced management further improving the biodiversity rich areas on the campus. As part of the development plan for the new business school, a biodiversity rich green wall has been incorporated into the development. We continue to implement the hundred-year management plan for trees across the University estate.

Get Involved & Learn More:

— Plant a tree. As the Chinese proverb says, "the best time to plant a tree was 20 years ago, the second best time is now".

— Support wildlife by avoiding the use of pesticides and chemical fertilizers in gardens and lawns where possible. Try to include a little wild area in your garden.

— Enjoy some local honey. Buying locally sourced honey helps support beekeepers and their pollinating bees.

— Try to incorporate green roofs and walls into new construction projects or even keep a few office plants if space is limited.

— If you want further information on the trees of Trinity, read the "Trees of Trinity College Dublin" book available in the Library shop.
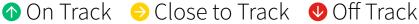
7. Green Procurement

Our Objectives Are To:

01. Increase Environmental Awareness of Suppliers

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02. Increase Green Criteria in Tender Marking

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03. Improve Use of Whole Life Cycle Costing.

....

Our Objectives Are To:

⬆ 100% Tenders Requested to Submit Environmental Information by 2020

....

➡ 10% Increase in the Number of Tenders with Green Award Criteria by 2020

....

➡ Maintain or improve levels of sustainable criteria used in category management.

....

STATUS:
⬆ On Track   ➡ Close to Track   ⬇ Off Track

....

Our Progress:

Trinity continues to promote sustainability throughout its supply chain. This includes day-to-day purchases, teaching/research equipment and capital projects. The University's strategic plan via the Estates and Infrastructure Development Plan commits all new buildings, refurbishments and purchases to comply with and, where possible, exceed, energy-efficiency standards. We also strive to incorporate further sustainability into building design. In the technical specifications of each individual item of equipment, we often detailed particular "green" requirements, such as:

— Biannual supplier maintenance and management;
— Sustainability criteria in food/drinks catering tenders;
— Light bulb LED purchasing;
— Hazardous waste procurement management.

Annual Highlights:

Trinity has a standard environmental information clause in all its directly issued procurement tenders. We are also promoting award marks for sustainability criteria around whole lifecycle costs. Trinity has also promoted the placement of sustainability-based award criteria in university sector collaborative procurement initiatives concerning the Laboratory & Research expenditure category. In 2017 an IT system for reusing unwanted furniture on the campus was investigated and an energy performance contract initiative developed to improve the results and cost effectiveness of energy efficiency upgrades.

Get Involved & Learn More:

— What will you do with what you are buying at the end of its life? Make sure you think cradle-to-cradle for lifecycle of purchases.

— Think before buying. The item you need may already be in your department, elsewhere on campus or available from a reuse website. Find out more on the Trinity Sustainable Procurement Green Page.

— If you want to see if there are any sustainable alternatives for your purchase, contact the Trinity procurement office directly.

— Buy A-rated lab appliances and for home appliances to reduce energy use.

8. Education, Research & Entrepreneurship

Our Objectives Are To:

01. Induct all College Users into the Green Campus

02. Increase Sustainability Focus in Courses Taught

03. Support Sustainability Research

04. Support Sustainability Focused Entrepreneurship.

Our Objectives Are To:

➡️ 100% Staff and Students Inducted into Green Campus by 2020

⬇️ 10% Increase in Sustainability Course Content by 2020

➡️ Promote and Increase the Use of the Campus as a Living Lab by 2020

➡️ Create an Annual Sustainability Award (i.e. Green Carpet Awards) by 2020

⬆️ Increase and Support Entrepreneurship in Area of Sustainability by 2020.

STATUS:
⬆️ On Track   ➡️ Close to Track   ⬇️ Off Track

Our Progress:

Trinity continues to foster the next generation of environmental leaders by supporting the creation of new sustainability-related curricula, research, and cross-disciplinary opportunities such as via the Green Campus Committee. We are continuing to work towards inducting all our campus users into our green campus programme, including the million plus tourists the campus receives each year. There are a number of educational courses and research centres with sustainability at their core including the Trinity Centre for Biodiversity Research (TCBR) and the Trinity Centre for the Environment. Trinity has also set 'Smart, Sustainable Planet' as one of its key research themes. We are continuing to investigate learning modules for staff/students on sustainability.

Annual Highlights:

Trinity ran one of its first freely available open online courses (https://www.tcd.ie/OnlineEducation/free-online-course/) entitled "Achieving Sustainable Development". This allowed students from around the world the opportunity to explore the challenges of sustainable development and the UN SGDs. We continued a number of broad curriculum courses in the area of sustainability including Planet Earth and the Idea Translation Lab. These are open as an optional course to most undergraduates. We now provide a sustainability guide to all campus residents as part of their welcome induction, as well as to new staff as part of their welcome pack. We are continuing to facilitate the campus as a living lab and continually updated the greenpages sustainability website with sustainability data throughout the year. The University continued to win major research grants in the sustainability area and highlight them to the community.

Get Involved & Learn More:

— Visit the sustainability greenpages website to induct yourself into the green campus programme (**tcd.ie/provost/sustainability/**).

— If you have a suggestion for increasing the sustainability focus of your chosen subject, ask your lecturer if it could be included in future teaching.

— If you are interested in research in the area of sustainably, contact the Research Office (**tcd.ie/innovation/contact/**)

— Launchbox, Trinity's accelerator for student start-ups, is always looking for sustainable startup ideas. Why not apply on **launchbox.ie** and join the list of previous sustainable start-ups including FoodCloud and LabCup.

9. Communication, Student Involvement & Transparency

Our Objectives Are To:

01. Increase the Number of Green Events and Attendees on Campus

02. Increase Green Events Run by College Societies/Clubs

03. Meet all Requests for Access to Information on the Environment

04. Report on all Environmental Aspects

05. Increase the Use of Trinity Green Pages Website.

Our Targets Are:

⬆ Maintain or Improve Levels of Sustainable Events by 2020

⬆ 10% Increase in Number of Societies Participating in Green Events by 2020

⬆ 100% Fulfilling of Requests for Information on the Environment (On-going)

⬆ Develop and Launch Annual Sustainability Report by 2016 (achieved 2016)

⬇ 5% Increase in Visitors to GreenPages Website by 2020.

STATUS:
⬆ On Track   ➡ Close to Track   ⬇ Off Track

Our Progress:

Trinity has continued to increase the number of sustainability events held during the University Green Week, the longest running university Green Week celebration in Ireland. Student led societies and clubs continue to participate strongly in events in particular the Trinity Environmental Society. The University's Information Compliance Office continues to support applications for access to information on the environment and fulfilling legal compliance. The annual reporting mechanisms have now been established and will continue for producing the annual Trinity Sustainability Report.

Annual Highlights:

Trinity ran its 15th annual Green Week, with dozens of events highlighting sustainability. It also ran a green awareness day in the first term focused on plastics reductions. The University successfully retained its Green Flag in 2017. All requests for information on the environment continued to be met by the University. This sustainability report continues to fulfil the target of producing an annual sustainability report for the University. A Sustainability Guide was created for the first time in October, and was emailed by the Provost to all campus members. 5,000 paper copies (printed on 100% post consumer recycled paper) were issued to freshers and residents in rooms on campus. The Trinity GreenPages website was significantly updated towards the end of 2017, renamed the "Sustainability – Green Pages" and its location moved to the Provost's website to highlight its importance. It is also mobile enabled to allow easier use by students. We also created a simple "Submit A Suggestion" feature to collect stakeholder feedback. The two new buildings in construction will be BREEAM excellent rated for sustainability.

Get Involved & Learn More:

— If you are involved in a society or sport club why not organise a sustainability event for your members.

— Why not volunteer for the Green Campus committee or organize an event for the annual Trinity Green Week.

— Visit the Trinity Sustainability - GreenPages website to learn more about what you can do (https://www.tcd.ie/ provost/sustainability/).

Gaps & Challenges

There are a number of areas we hope to improve on as we report on our sustainability journey. This section of the annual sustainability report has been included to help us outline to the Trinity community, areas where we are facing challenges and gaps in the data we collect and report on. It is part of our transparency objectives to highlight where we think we can improve the accuracy or content in the future. It should also prove useful to other institutions to highlight challenges they might also experience in reporting on sustainability in their own organisations.

— Fugitive emissions from refrigerant gases (HCFCs) are usually lost when equipment fails and vents the gases to atmosphere. We are currently working with our contractor in the area to collate this data on an annual basis.

— Embodied carbon. We are currently investigating how we can account for the carbon emissions associated with the embodied carbon in materials used in construction projects on the campus. This becomes more important as newer buildings become more energy efficient and the embodied carbon in materials used becomes more significant. We will also endeavour to look at the embodied carbon in our purchases including food, drinks, paper and other consumables.

— The majority of renewable energy consumed in the campus comes via grid-based renewables, which contribute, to electricity supply in Ireland. We also are limited in purchasing green electricity sources by government procurement rules.

— Carbon emissions from travel. We are currently investigating how much carbon is emitted as a result of staff taking flights for work purposes. This is a significant challenge for Universities, in particular around participating in international projects and conferences. We do not currently generate commuter carbon emissions data for staff and students travelling daily to University.

— We report on carbon in total emissions and in an indicator (per full time equivalent). This helps to show how sometimes our absolute carbon emissions grow but on a per capita basis we can still be improving.

— We do not currently include construction and demolition (C&D) waste in our statistics. This waste is generally very heavy and usually 100% recycled. While this would skew our recycling rates upwards significantly, it does not reflect how people are disposing of their waste in general and so, when the data becomes available, will be reported on separately.

— We do not currently report on wastewater or indoor air quality. This is an area we hope to improve on in future possibly as part of our living lab initiative.

— While the numbers of people walking has increased, our numbers of cyclists continues to decrease. This is possibly due to students living further away from the campus meaning fewer can avail of cycling as a commuting choice. As cycling numbers continue to increase in the city in general, our cycling parking infrastructure continues to come under pressure from internal and external users.

— The majority of renewable energy in transport comes from biofuel blended at a national level for use in meeting Ireland's biofuel obligations around renewable energy in transport.

— We have found quantifying the sustainability of food served on the campus problematic based on difficulties with available data and definitions of sustainability. We will continue to work with our catering departments to better quantify sustainability.

— Trinity has recently lost some of its oldest and most famous trees. While we endeavour to protect and enhance our trees on campus, sometimes due to age and disease, we continue to lose some of our most iconic trees.

— Collecting data on the sustainability content of all courses and research carried out across the University has been challenging, as no central repository for this information has been found. We continue to investigate practical ways to gather and improve this information.

— Keeping staff and, in particular, students engaged in sustainability initiatives is difficult especially as students change each year. How we communicate and reach them is also changing rapidly with technology so we continue to experiment with the best ways to reach all our community.

Our Journey

A Brief History of the Sustainability Actions in Trinity College Dublin – The University of Dublin.

1979	Trinity Environmental Sciences Unit created.
1990s	Focus on improving recycling of waste on the campus.
1993	First recorded minutes of the College Recycling Committee (CRC).
1998	Establishment of Trinity Centre for the Environment.
2000s	CRC renamed College Recycling and Environment Committee (CREC).
2003	First student led Green Week event held.
2007	Drafting of University Sustainable Development Policy.

2008 Trinity Sustainable Development Policy approved by Board.

2012 CREC Renamed the Green Campus Committee (GCC) as part of Green Flag application.

2013 Trinity applied for and awarded Green Flag Award for campus sustainability.

2015 Trinity reapplies for Green Flag Award for Campus Sustainability and GCC student led co-chair position established.

2016 Trinity publishes its 1st Annual Sustainability Report and the Board approves it.

2017 Provost's Advisory Committee on Sustainability and Low Carbon Living established & Sustainability Policy approved.

2018 Admitted to the International Sustainability Campus Network (ISCN

Roll of Honour

Special thanks to all our contributors who make Trinity a more sustainable place to live, work, play and learn, in no particular order:

Maura Dougherty, Michele Hallahan, Simon Benson, David Hackett, Kezia Wright, Catherine Coxon, Aine O Gorman, Karen McCord, Monica Alcock, Ben Hartnett, John Parnell, John Gallagher, Aiden O'Neill, Alex McKee, Moira O'Brien, Lynn Ruane, Kieran McNulty, Karen Dumbsky, Laurence Gill, Alan Campbell, Patrick Prendergast, Ronald Russell, Sarah McCormac, Jane Stout, Paul Mangan, Moria Bailey, Joe Borza, Pat McDonnell, Edward Tully, Philip Coffey, Daragh Hanley, Paula Murphy, Simone Cameron-Coen, Joseph O'Gorman, Cliona Ni Shuilleabhain, Martina Mullin, Iain Cunningham, Lisa McNeilly, Anneka Lawson, Jennifer Maxwell, Brendan Leahy, Anne-Marie Looney, Stephen Lee, Michael Scholz, Sharon Campbell, Cathal O'Donnell, Kieron McGovern… and the many, many others that have contributed to Trinity's journey to sustainability.

Go Raibh Maith Agat.

Web: **tcd.ie/provost/sustainability**

If you have any questions or would like to know more, feel free to contact us: **sustainability@tcd.ie**

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Annex 1
International Sustainability Campus Network (ISCN) Report

Principle 1:

To demonstrate respect for nature and society, sustainability considerations should be an integral part of planning, construction, renovation, and operation of buildings on campus. A sustainable campus infrastructure is governed by respect for natural resources and social responsibility, and embraces the principle of a low carbon economy. Concrete goals embodied in individual buildings can include minimizing environmental impacts (such as energy and water consumption or waste), furthering equal access (such as nondiscrimination of the disabled), and optimizing the integration of the built and natural environments. To ensure buildings on campus can meet these goals in the long term, and in a flexible manner, useful processes include participatory planning (integrating end-users such as faculty, staff, and students) and life-cycle costing (taking into account future cost savings from sustainable construction).

Topics	Goals and Initiatives		Results		
Priority topics (with units of measurement)	**Objectives and targets** (for…	**Key Initiatives** (in reporting year, and /or planned for the following and beyond)	**Baseline**	**Performance 2016**	**Performance 2017**
Resource use					
Water Consumption (m3)	Reduce water use by 51% by 2020 compared to 2009/2010 levels	On-going leak detection and water management programme. Water awareness campaign as part of annual Green Week.	441,945 m3 (30.3 m3 per person per year) (2009/2010)	42% Reduction. 255,000 m3 (15.6 m3 per person per year)	41% Reduction. 263,000 m3 (15.6 m3 per person per year)
Rain/Grey Water Consumption (m3)	Increase onsite water generation by 5% by 2020.	Rainwater harvesting on Biosciences Building & in New Square. No new initiatives.	Zero (2009/2010)	Estimates based on rainfall levels for 2016.	Reduction based on estimates for rainfall levels in 2017.
Energy (kWh)	Improve energy efficiency by 33% by 2020 (public sector target) compared to 2006-2008 baseline.	Various energy efficiency projects on-going including better heating controls, LED lighting, energy efficient equipment, insulation retrofits & behavioural campaigns.	416 kWh / Research Equivalent Floor Area (2006/2008)	327 kWh / Research Equivalent Floor Area (21% saving versus baseline)	307 kWh / Research Equivalent Floor Area (26% saving versus baseline)
Renewables and Combined Heat and Power (kWh)	Increase renewable energy use to 14% by 2020	Use of grid electricity to facilitate grid based renewables. Onsite solar water panels.	3% energy from renewables (2006/2008)	8% energy from renewables	8% energy from renewables

Resource use (cont.)					
Paper Reduction	Reduce paper consumption by 20% by 2020	Numerous processes going paperless including board meetings and SU meetings.	47,363 Reams (2011 Baseline)	25,782 Reams	23,048 Reams
Waste, recycling, local emissions, and non-compliance					
Total waste produced (tonnes MSW)	Reduce total waste by 10% by 2020	Binless office system expanded and source separate bins installed in buildings. Behaviour & training.	1,595 tonnes (2012 Baseline)	1,850 tonnes	1,989 tonnes (8% increase)
Hazardous Waste	Reduce total hazardous waste by 10%	Labcup trial rolled out to help prevent purchase of chemicals already in stock. Training on reducing contamination in hazardous waste bins.	42,270 kg (2012 Baseline)	48,890 kg	46,670 kg (4.5% decrease)
Research/IT facilities and sustainability					
Green Data Centre	Reduce Energy and GHG emissions	Award winning Green Data centre opened in 2014.	NA	On-going monitoring.	On-going monitoring.
Users					
Stakeholder engagement	Increase visitors to green pages website	Annual Green week held and investigation of induction into student orientation.	3,000 users on green pages (2013 Baseline)	1,224. Being updated due to website revamp.	670 visitors. New website being developed.

Building design aspects					
Sustainable Building Standards	Increase campus as a living lab.	New building designed to excellent standard and near zero energy buildings.	NA	2 significant building projects still in design stage. Business School and Oisin House residences.	2 significant building projects in construction stage. Business School and Printing House Square (Oisin House) residences. E3 centre in design stage.
Campus Strategic Plan	Green, energy efficient campus.	All new buildings aim to meet or exceed building energy codes.	NA	New buildings in planning.	New buildings in planning.

Principle 2:

To ensure long-term sustainable campus development, campus-wide master planning and target-setting should include environmental and social goals. Sustainable campus development needs to rely on forward-looking planning processes that consider the campus as a whole, and not just individual buildings. These processes can include comprehensive master planning with goals for impact management (for example, limiting use of land and other natural resources and protecting ecosystems), responsible operation (for example encouraging environmentally compatible transport modes and efficiently managing urban flows), and social integration (ensuring user diversity, creating indoor and outdoor spaces for social exchange and shared learning, and supporting ease of access to commerce and services). Such integrated planning can profit from including users and neighbors, and can be strengthened by organization-wide target setting (for example greenhouse gas emission goals). Existing low-carbon lifestyles and practices within individual campuses that foster sustainability, such as easy access for pedestrians, grey water recycling and low levels of resource use and waste generation, need to be identified, expanded and disseminated widely,

Topics	Goals and Initiatives		Results		
Priority topics (with units of measurement)	**Objectives and targets** (for…	**Key Initiatives** (in reporting year, and /or planned for the following and beyond)	**Baseline**	**Performance 2016**	**Performance 2017**
Institution-wide carbon targets and related achievements					
Carbon Emissions (tCO2e)	Short Term: reduce carbon emissions by 2% year-on-year. Long Term: reduce carbon emissions by 80% by 2050.	See energy efficiency. Investigating use of electric vehicles in fleet. Review of climate change plan.	25,947 tCO2e (2006-2008) 1.7 tCO2e / full time equivalent	26,928 tCO2e (+4% from 2006-08) 1.4 tCO2e / full time equivalent	24,158 tCO2e (-7% from 2006-08) 1.2 tCO2e / full time equivalent
Master Planning					
5 Year Strategic Plan	Sustainable Development	Implementation of sustainability elements of strategic plan & updating of sustainable development policy.	2009 – 2014 TCD Strategic Plan.	On-going.	Sustainable Development policy updated and renamed Sustainability Policy.
Campus Development Plan	Sustainable Development	In development.	NA	Master plan in development.	Master plan in development.
Transportation					
Transportation initiatives	Promote sustainable transport.	Review strategy and set objectives and targets to increase the sustainability of business travel.	1,700 bicycle spaces (2011)	Not counted (run every two years due to resourcing).	1,615 bicycle spaces (decrease of 6% from baseline).

Food					
Stakeholder engagement	Promote sustainable food.	Student led talks on sustainable food and food waste. Support for trinity start-up FoodCloud.	Not recorded.	Catering investigating improving sustainable food.	On-going catering investigating improving sustainable food.
Food purchase	Promote sustainable food.	Reduce pre-consumer and post-consumer waste.	None.	On-going.	On-going. Free water available in catering areas.
Land-use and biodiversity					
Sustainable Building Standards	Enhance campus biodiversity	Green roofs on campus at arts block, Long Room Hub and Biomedical Sciences Institute.	Green roofs.	None added.	None added.
Pollinator plan	Enhance campus biodiversity	Campus pollinator plan being drafted.	NA	Drafted.	Completed and published. naturalscience.tcd.ie/pollinator/

Principle 3:

To align the organization's core mission with sustainable development, facilities, research, and education should be linked to create a "living laboratory" for sustainability. On a sustainable campus, the built environment, operational systems, research, scholarship, and education are linked as a "living laboratory" for sustainability. Users (such as students, faculty, and staff) have access to research, teaching, and learning opportunities on connections between environmental, social, and economic issues. Campus sustainability programs have concrete goals and can bring together campus residents with external partners, such as industry, government, or organized civil society. Beyond exploring a sustainable future in general, such programs can address issues pertinent to research and higher education (such as environmental impacts of research facilities, participatory teaching, or research that transcends disciplines). Institutional commitments (such as a sustainability policy) and dedicated resources (such as a person or team in the administration focused on this task) contribute to success.

Topics	Goals and Initiatives		Results		
Priority topics (with units of measurement)	**Objectives and targets** (for…	**Key Initiatives** (in reporting year, and /or planned for the following and beyond)	**Baseline**	**Performance 2016**	**Performance 2017**
Topical Integration					
Sustainability in Courses	Increase sustainability focus in courses.	Sustainability is taught to undergraduates via the broad curriculum programme and via some course content i.e. engineering.	NA.	2 relevant broad curriculum courses open to undergraduates in area of sustainability. On-going review of general course content.	2 relevant broad curriculum courses open to undergraduates in area of sustainability. On-going review of general course content.
Sustainability Training	Induct all college users into Green Campus.	Induction for new staff and for Campus residents includes promotion of campus sustainability.	None.	Continuing to be expanded.	All new staff inducted into sustainable campus initiative.
Sustainability Focused Courses	Increase courses with sustainability education.	Review of all current courses and those with sustainability at their core.	NA.	Review continuing Including running open online courses in area.	Review continuing. New open online courses in sustainable development launched.

Social Integration					
External Organisations	Increase green areas	Linking with the Dublin City Council Greening the City initiative.	0	Continued contact with DCC.	Biannual meeting at executive level to discuss synergies and opportunities.
Green Campus Committee (GCC)	Increase the number of green events on campus.	The GCC run the annual green week for the university with events held each day to raise sustainability awareness across the campus community.	21 (2011)	Data collection under review.	Increase in green events during the annual green week.
Research & Education projects on Laboratory/IT facilities and sustainability					
LabCup software – chemical management trial.	Facilitate living lab & support sustainable start-ups.	LabCup was trialled in the campus to help reduce hazardous waste generation and improve safety.	0.	Further roll out and expansion.	Embedded and training for staff.

Commitments and resources for campus sustainability					
Green Campus Committee (GCC)	Student involvement.	The GCC is made up of staff and student volunteers (approx. 20 people) who run the annual Green Week and the University's Green Flag programme.	NA	The Green flag award and status was successful for another 3 years.	The Green flag award interim review (retained).
Green Campus Co-ordinator	Running Green Flag reporting.	Data collection, TCD GreenPages website updates and reporting.	1	Additional external support provided.	Additional external support provided via communications support.
Sustainability Task Force	Joining ISCN & annual sustainability reporting.	Initial database creation for sustainability data including energy, waste, water, transport, etc.	NA	Research into creation of TCD Sustainability Task Force is continuing with the development of its scope and composition. Due to report directly to the University's Provost.	Application to ISCN commenced. Annual report 2017. Provost Advisory Group Established.

Annex 2
Green Flag Campus Report

This annex is used to provide any additional material required for the annual update to An Taisce for the Green Flag campus programme.

01. Green-Campus Committee
tcd.ie/provost/sustainability/greencam-puscommittee/

02. Environmental review
tcd.ie/provost/sustainability/initiatives/

03. Action plan
See section 1 – 9 of the annual sustaina-bility report.

04. Monitoring and evaluation
See section 1 – 9 of the annual sustaina-bility report.

05. Link to learning on campus
tcd.ie/provost/sustainability/re-searcheducation/ & tcd.ie/OnlineEduca-tion/free-online-course/

06. Informing and involving campus and wider community
tcd.ie/provost/sustainability/initiatives/communicationstudentinvolvement-transparency/

07. Green Charter
tcd.ie/provost/sustainability/policies/