



University College Cork World's First Green Campus

**A TRADITION OF
INDEPENDENT
THINKING**



Our Journey

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Director of Buildings and Estates

25th November 2015

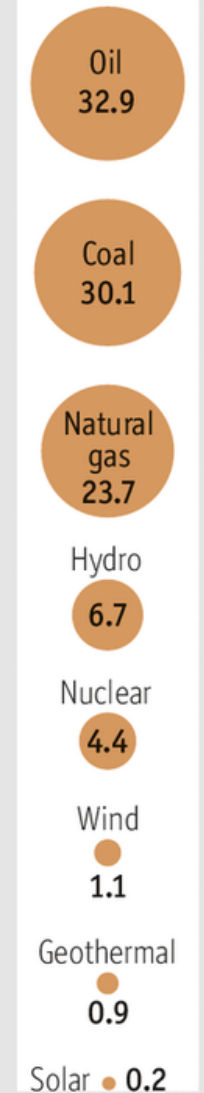
- Global context
- UCC
- Green campus – the beginning and growth
- Achievements and awards
- External validation
- Future ambitions
- Conclusion

The way we live now

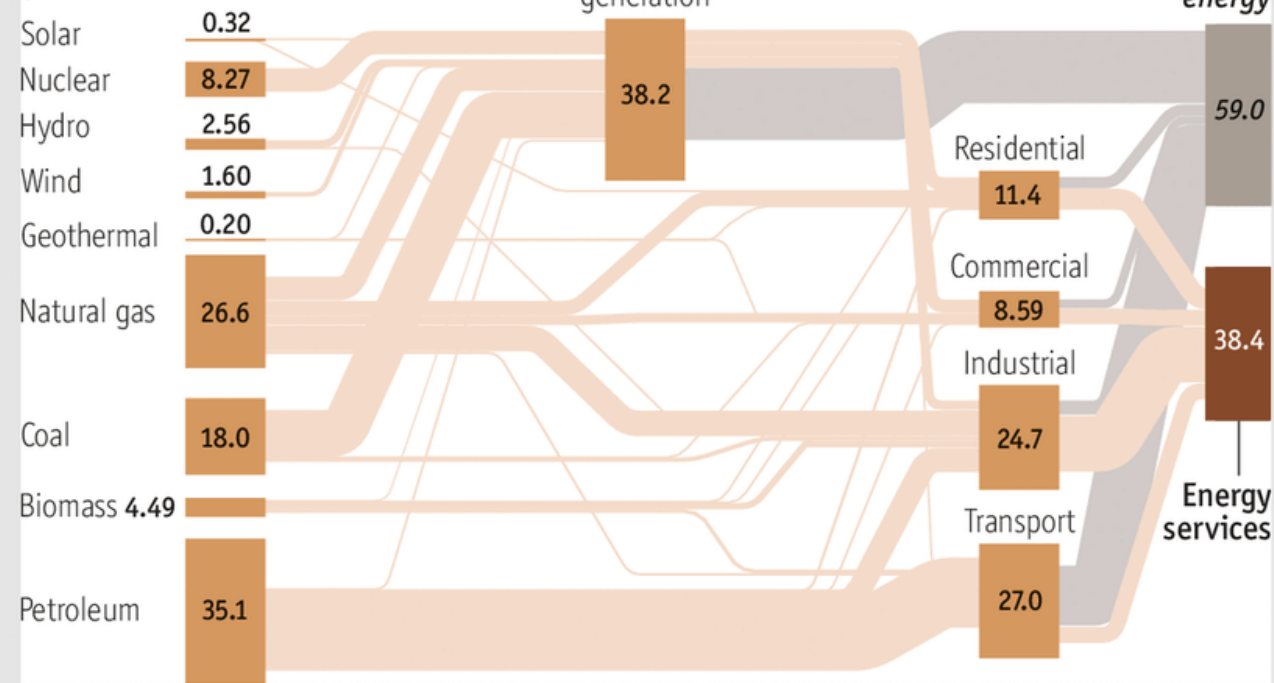
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Energy

Consumption
by type, 2013
% share of total

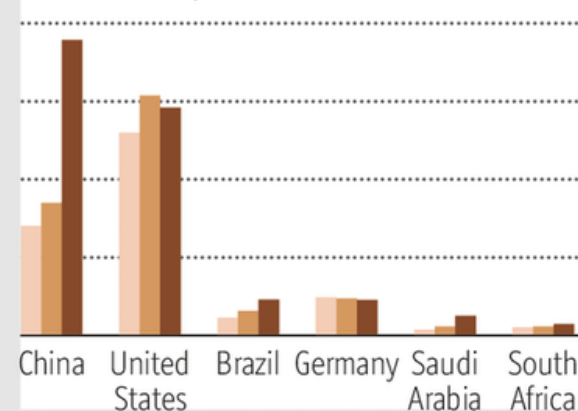


United States' use*, 2013
quadrillion BTUs



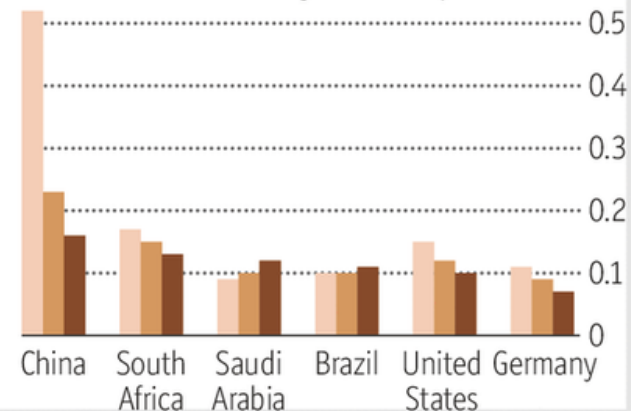
Consumption

tonnes of oil equivalent, bn



Intensity

kilograms of oil per unit of GDP†

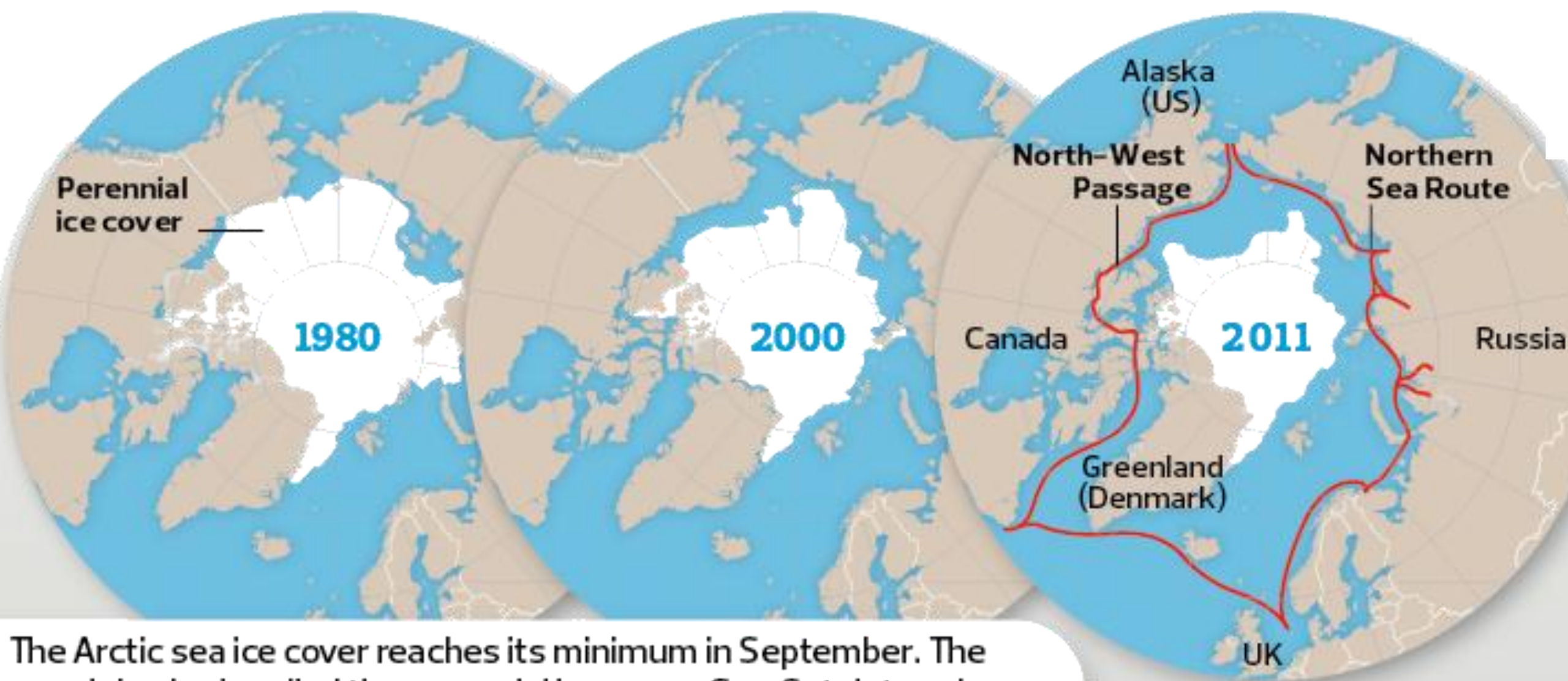


Sources: BP; Sanford C. Bernstein; LLNL; Enerdata

*Estimate †Purchasing-power parity



SHRINKING ICE CAPS



The Arctic sea ice cover reaches its minimum in September. The remaining ice is called the perennial ice cover. CryoSat determines variations in its thickness so total ice volume can be worked out

SOURCES: ESA, NSIDC, BIST

Student Led- Research Informed- Practice Focusses



UCC'S STRATEGIC PLAN

- “UCC will further develop itself as a ‘Green University’ by reducing energy consumption and waste, aided by our academic expertise across campus”
- Our values “We are committed to the intellectual growth, social formation and welfare of our students!”

TIMELINE FOR GREEN CAMPUS

THE BEGINNING

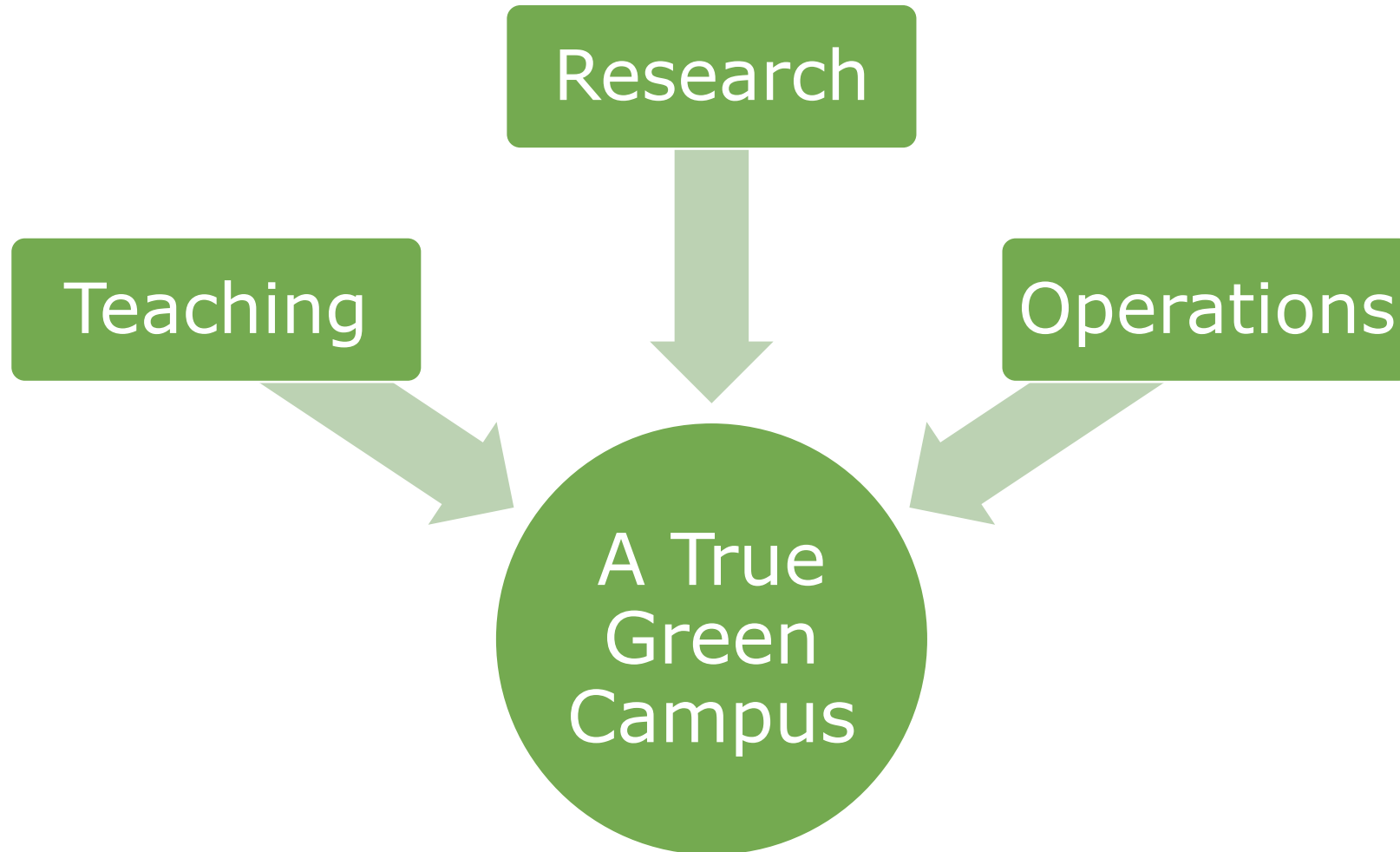
- UCC Environmental Society was reconstituted in 2006. **Student led.**
- Many **students** had come from Green Schools and were ambitious.
- Could it be done on the scale of a University?
- Contact made with An Taisce.
- Pilot 'Green campus' initiative.

INITIATION

- **Student** contact made with Buildings & Estates.
- **Student-University Management Committee** established.
- Project begins.



WHAT DOES A GREEN CAMPUS MEAN TO UCC



ACHIEVEMENTS SINCE 2007

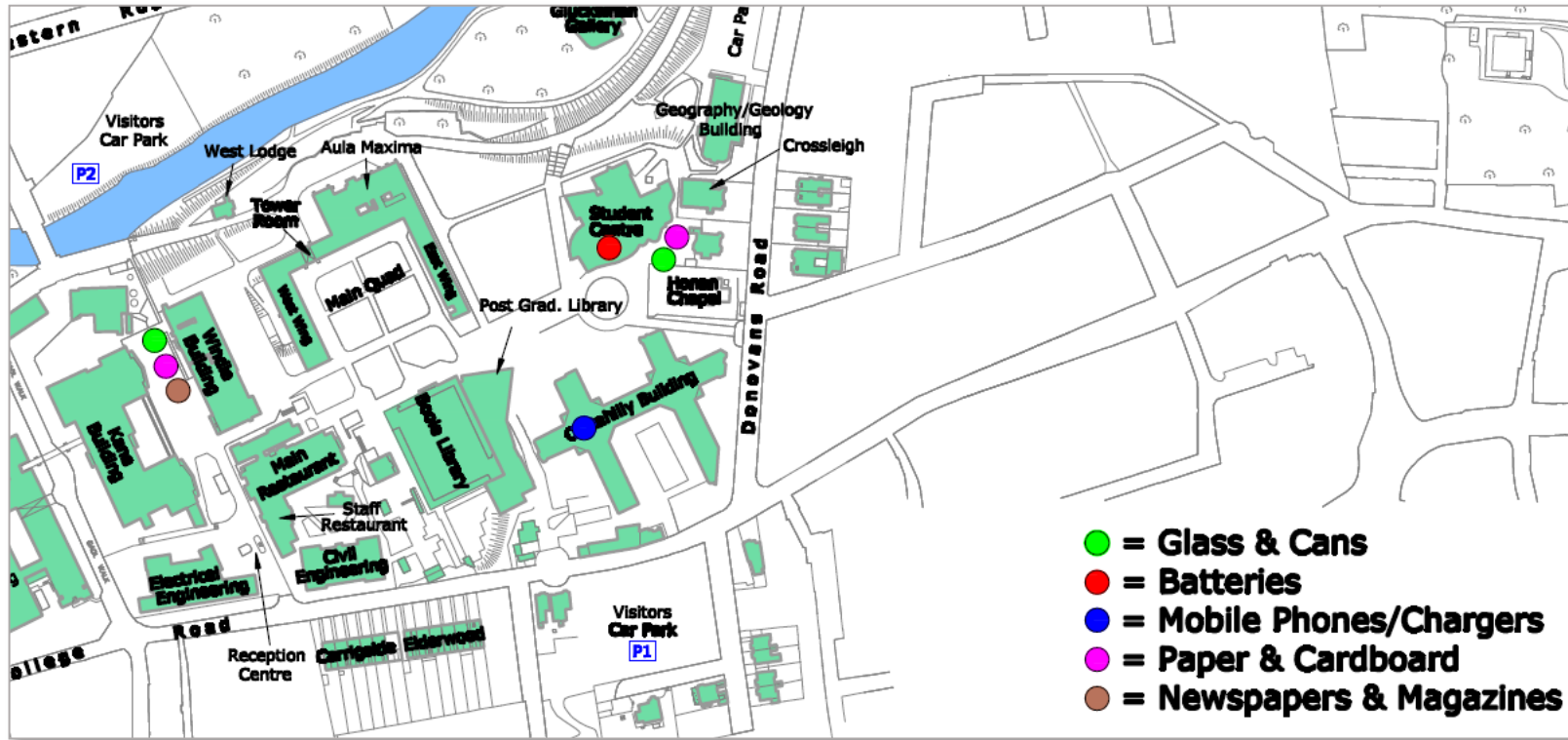
- **Recycling** rate increased from 21% in 2007 to 75% in 2013.
- 9% decrease in total **energy** consumption.
- A saving of over 750,000 m³ of **water**.
- A saving of over €1M in **waste** costs.
 - Food waste is now separated.
 - New mowers to mulch grass back into the soil.
 - All leaves and branches are composted and used on campus.
 - Waste kitchen oil is used to run two UCC vans.
- **Cycling** to work rate increased from 6% in 2007 to 12% in 2012.
- **Green purchasing** is now part of all tender contracts

Waste

- Recycling rate has increased from 21% to 75%
- Over 1015 tonnes diverted from landfill since program began
- University saved €731K in cumulative waste costs
- Food waste is now separated
- New mowers to mulch grass back into the soil
- All leaves & branches are composted & used on campus
- Waste kitchen oil is used to run two UCC vans



RECYCLING FACILITIES ACROSS CAMPUS



TRAVEL

- **UCC Campus Bike Scheme:** 14 bicycles at 7 locations around campus. More to come.
- **Park and Ride:** UCC first University in Ireland to operate P&R.
- **Car Pooling Scheme:** with dedicated parking provided.
- **UCC Commuter Plan** with full-time Commuter Plan Manager.
- **Environmental improvement** to encourage walking, cycling and public transport options to and around campus locations.
- High quality **Slí na Sláinte** routes linking to campus.
- Significant increase in **bicycle** facilities.





ENERGY

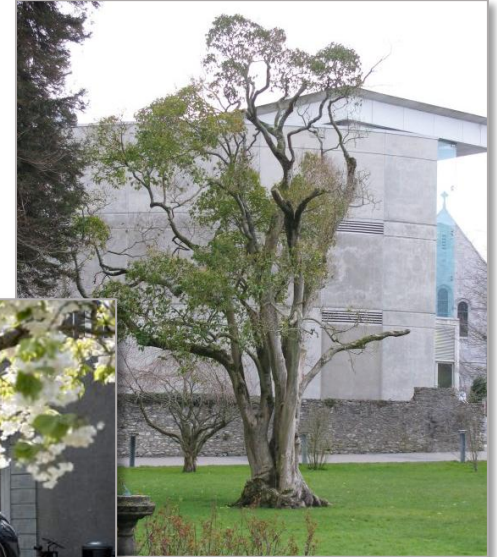
- First university in the world and first public sector body in Ireland certified from ISO50001.

ENERGY POLICY:

- Reduce energy and water usage.
- Educate our students and staff on energy and water management.
- Document and publish all information to achieve improvements.
- Uphold legal requirements regarding energy use.
- Continuously improve our performance and systems.
- Effectively utilise energy efficient products and services.

BIODIVERSITY

- Development of a 5 year tree planting schedule.
- Students and staff are growing organic food in polytunnels.
- Staff training provided on biodiversity.
- Campus habitat map produced.
- The Ogham Alphabet was planted by students.
- A Japanese Dry Garden has been planted.
- A Tree Inventory and Management Plan was developed
 - GPS mapping of all trees.
 - Interactive map of significant trees.



3763 Irish Yew



Taxus baccata

'Fastigiata'

Descendant of the 2 seedlings planted in Florencecourt
Co.Fermanagh.

University College Cork



RENEWABLE ENERGY

- **Wind turbine** at Distillery Fields provides power to the nearby Cooperage Building.
- **Solar panels** on the O'Rahilly Building converts daylight into electricity which is used in the building.
- **Solar water** heating system on the O'Rahilly Building provides hot water for the restrooms in the building.
- Energy **research** is ongoing across the university including:
 - The School of Biological, Earth & Environmental Sciences
 - The Environmental Research Institute
 - The Beaufort Research Facility



CAPITAL PROJECTS: Building design & performance



Post Graduate Library

- Absorption Chiller
- Steam from CHP (free)
- SEI Grant (€165,000)

Glucksman Gallery

- GSHP
- Grey Water
- SEI Grant (€73K)



CAPITAL PROJECTS: Building design & performance

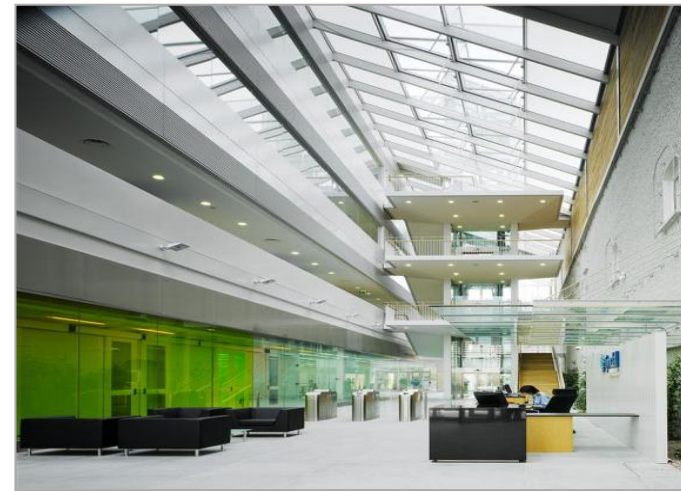


Environmental Research Institute

- Solar energy
- Natural ventilation
- Daylighting
- Breeam assessment
- SEI grant (€ 300k)

Tyndall National Institute

- Solar Thermal
- Process Cooling Heat Recovery Loop
- Data Centre Heat Recovery



It takes...

10 liters
of water to make
one sheet of PAPER

40 liters
of water to make
one slice of BREAD

70 liters
of water to make
one APPLE

80 liters
of water to make
one INDUSTRIAL PRODUCT

91 liters
of water to make
half a kilogram of PLASTIC

120 liters
of water to make
one glass of WINE

140 liters
of water to make
one cup of COFFEE

1,300 liters
of water to make
one kilogram of WHEAT

4,800 liters
of water to make
one kilogram of PORK

10,855 liters
of water to make
one pair of JEANS

15,500 liters
of water to make
one kilogram of BEEF

16,600 liters
of water to make
one kilogram of LEATHER







TEACHING & LEARNING

- A University **Environmental module** approved as a direct result of the Green Campus Initiative.
- 35 **courses** relating to the Environmental at UCC. E.g.
 - BSc in Env. Management
 - Certification of BSc in Env. Management & Science
 - BE Energy Engineering
 - MEngSc Sustainable Energy
 - GREP Eng Energy Systems
- Over 35 **conferences** and events per annum with an environmental theme.



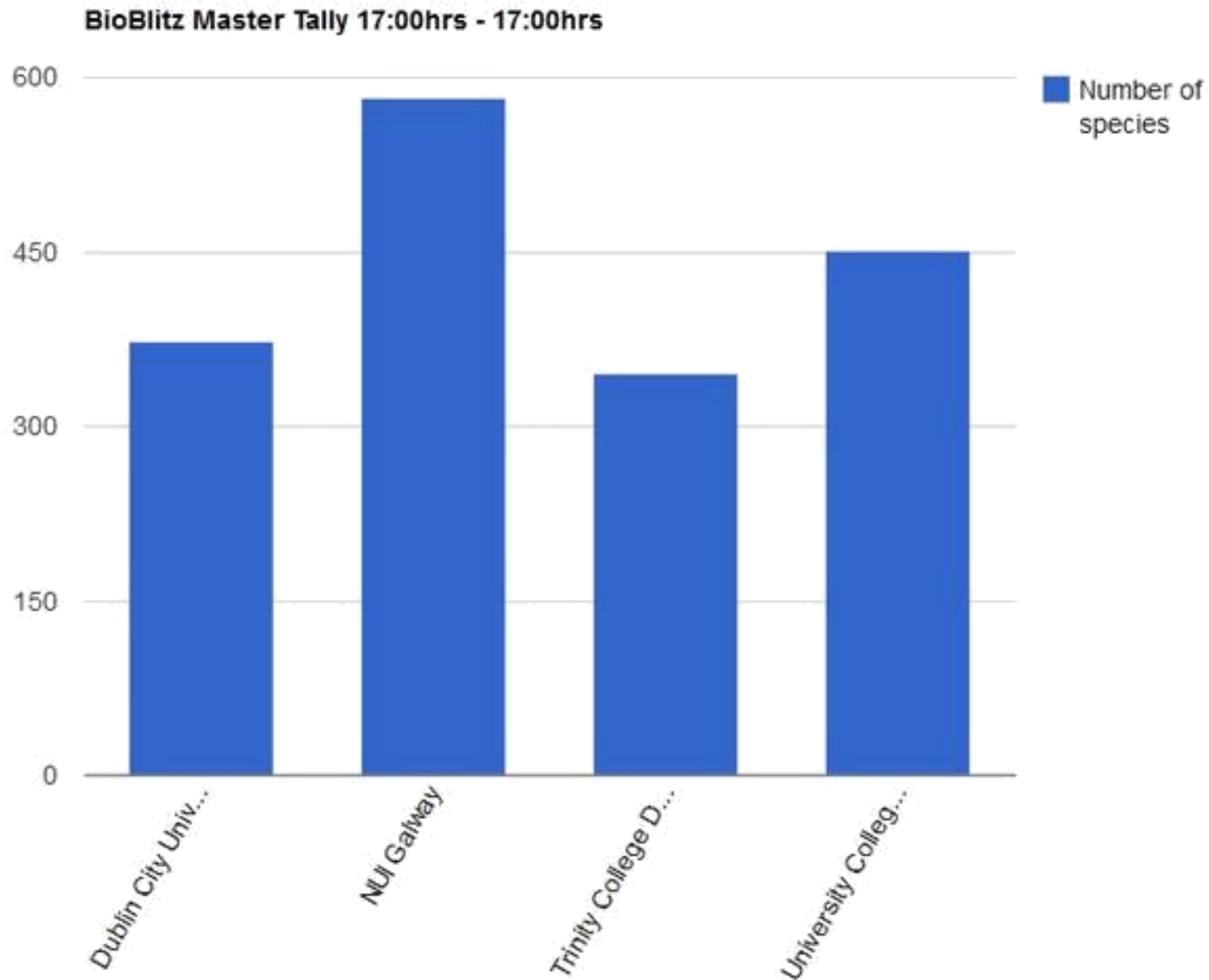
IRELAND'S BIOBLITZ 2014 Event based learning



IRELAND'S BIOBLITZ 2014- Event based learning



IRELAND'S BIOBLITZ 2014- Event based learning



CLIMATE CHANGE CONFERENCE 2015



TEACHING & LEARNING

- Writing Camp



RESEARCH & INNOVATION

- *Circa.* €20M secured annually for environmental and sustainability research
- >200 research papers published on environmental and sustainability research.

- **KEY CENTRES**

- Environmental Research Institute
- Beaufort Laboratory
 - HMRC
 - CMRC
 - SERG
- Tyndall (Enabling Technologies)
- Internal Engineering Research Centre

THEMATIC RESEARCH AREAS:

- Sustainable Energy & Environmental Engineering
- Environmental Chemistry
- Environmental Microbial Genomics
- Biodiversity & Ecotoxicology
- Marine & Freshwater

AWARDS



GREEN FLAG

First in the world to achieve (2010)
First to retain (2013)

AWARDS



Cork Environmental Forum (CEF)
Environmental Award 2013



First third level institution worldwide to
achieve the ISO 50001 energy standard.



IBEC Environment Awards



2nd place worldwide.
Only Irish institution in the
top 50.

EXTERNAL VALIDATION

- UCC is the first university in Ireland to calculate its **carbon footprint**.
- **Bench marked** against peers internationally.
- **Carbon emissions** analysed annually.
- **Carbon sequestration** programme in operation.



AMBITIONS

- Electricity charge points for electric cars
- Bat boxes to be installed on campus
- Roll out stage of ISO14001
- On-going energy improvements
(wind turbines, photovoltaics etc.)

KEY INGREDIENTS

- Students
- Practitioners and managers
- Researchers
- An Taisce and other external agencies



*Team work – all working together at the highest level through
collaboration and engagement*



University College Cork

World's First Green Campus

[*www.ucc.ie/en/greencampus*](http://www.ucc.ie/en/greencampus)