

HIGHER EDUCATION AND RESEARCH FOR
SUSTAINABLE DEVELOPMENT (HESD)

HIGHER EDUCATION
AND SDG 13:
CLIMATE ACTION
THROUGH UNIVERSITY
TEACHING, RESEARCH
AND COMMUNITY
ENGAGEMENT

**SDG 13:
CLIMATE ACTION**

13 CLIMATE
ACTION



Acknowledgements

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This publication forms part of IAU's work on the priority theme: Higher Education and Research for Sustainable Development (HESD)

International Association of Universities (IAU) / International Universities Bureau. IAU provides a forum for building a worldwide higher education community, promotes exchange of information, experience and ideas, contributes, through research, publication and advocacy to higher education policy debate.

Higher Education and Research for the Sustainable Development Goals: SDG 13: Climate Action

Editors:

Hilligje van't Land, PhD

Secretary General, International Association of Universities
h.vantland@iau-aiu.net

and

Stefanie Mallow

Programme Officer, International Association of Universities
contact@iau-hesd.net

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Helena Jovani

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International Association of Universities (IAU)
UNESCO House, 1, rue Miollis
75732, Paris cedex 15 - France

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THE IAU GLOBAL CLUSTER ON HESD PUBLICATION SERIES

Universities engaged for Sustainable Development Goal 13 : Climate Action



Universities around the world are mobilising for the climate. Today, universities and other higher education institutions, their leadership, academic and administrative staff and student bodies are stepping up their action.

IAU develops a series of initiatives to showcase and network actions with a dual major set of goals:

- I. Network initiatives to build new synergies and increase capacity to act while informing higher education more broadly and inviting more universities and other higher education institutions to get involved;
- II. Provide evidence to policy and other decision makers as to the power of higher education teaching and research to inform future policy making.

The IAU call for papers on University action for the climate resulted in the submission of a wide variety of papers on diverse actions, from the University of the West Indies to Dublin University College; from the University of Makerere to Griffith University; initiatives taking place in Cyprus, Malaysia, Peru, Costa Rica, India, Lithuania, Uganda, Ireland, Japan, the USA, Jamaica, Australia. Not only have universities replied; you will also read about organisations' initiatives in Europe building synergies between European institutions and involving the student community in concrete initiatives and actions for the future.

This publication is more an appetiser than an end in itself and we look forward to receiving a growing number of submissions on detailing examples of engagement with SDG13. These could be integrated in the next iteration of this publication and will be shared on the IAU Global Portal on HESD.

IAU will publish similar issues briefs/briefs/reports/papers on all the other SDGs. Please see this as an open Call for contributions presenting and reporting on SDG related actions. We will be pleased to work with you to showcase the power and means deployed by universities around the world to transform the world for the better.

The initial publication that will be ready in Spring of 2019 will be launched officially at the United Nations High Level Political Forum 2019, in New York.

We hope you enjoy the publication.

Stefanie Mallow & Hilligje van't Land

Programme Officer & Secretary General
International Association of Universities (IAU)

IAU'S WORK ON AGENDA 2030 AND SDG 13: CLIMATE ACTION

THE INTERNATIONAL ASSOCIATION OF UNIVERSITIES IN A NUTSHELL

Founded in 1950, the International Association of Universities (IAU) is a global association of higher education institutions (HEIs) and university associations. IAU's mission's is to strengthen higher education worldwide by providing a global forum for institutional and association leaders to discuss, examine and take action on issues of common concern.

IAU is a membership organisation, which brings together **650 higher education institutions and national and regional associations from every region in the world**. Benefits of membership include a global forum for networking; scholarly and reference publications; original research reports; opportunities to get involved in projects; and access to advisory services at preferential rates. IAU facilitates collective action for advocacy and develops statements on important issues in higher education. The Association upholds the values of academic freedom and institutional autonomy, while promoting greater accountability, institutional responsibility and effectiveness, and the ideal of knowledge made accessible to all through collaboration, commitment to solidarity and improved access to higher education.

IAU STRATEGIC PLAN

The IAU pursues a 4-year Strategic Plan. The **IAU Strategic Plan 2016-2020** was adopted at the 15th IAU General Conference, in Bangkok, Thailand, in November 2016. It is built around 4 thematic priorities:

- Values-based leadership in higher education
- Internationalization of higher education
- Higher education and research for sustainable development
- Technologies and the impacts on HE

IAU International and General Conferences systematically dedicate sessions to issues pertaining to HESD; IAU President, Secretary General, Members of the Board and Members from around the world advocate for HESD at conferences, seminars and other events; IAU is active in networks and initiatives, and fosters partnerships and constructive inter university dialogue to advance HESD. The IAU Global Portal on HESD was developed and is maintained to showcase university actions and connect initiatives around the globe.

IAU'S WORK ON HIGHER EDUCATION and research FOR SUSTAINABLE DEVELOPMENT – IAU IS ENGAGED WITH UN AGENDAS

IAU has promoted sustainable development since 1993. In that year, the Association created a task force of higher education leaders from around the world to define higher education's role in addressing the recommendations of the UN commissioned **World Commission on Environment and Development: Our Common Future** (1987), the 'Brundtland Report'. This led to the drafting and adoption of the **IAU Kyoto Declaration on Sustainable Development** (1993) in which the IAU called

"universities world-wide to seek, establish and disseminate a clearer understanding of Sustainable Development – 'development which meets the needs of the present without compromising the needs of future generations' - and encourage more appropriate sustainable development principles and practices at the local, national and global levels, in ways consistent with their missions".

Ever since, IAU has taken an active part in fostering the role higher education and research plays in the development of teaching, research, campus and community engagement initiatives. These initiatives aim to educate new kinds of leaders engaged for the transformation of our world and for sustainable development for today and tomorrow.

IAU followed and debated outcomes of the **UN Earth Summits**, including the first Earth Summit in Rio, the World Conference on Sustainable Development known as the Johannesburg Summit, and **Rio + 20 UN Conference on Sustainable Development**.

IAU played a strong role in the UN Decade on Education for Sustainable Development, led by UNESCO. It is in that context that IAU drafted and adopted the **IAU Iquitos Statement on Higher Education for Sustainable Development** (2014) which in particular calls for greater integration of the different world knowledge systems to identify better solutions to sustainable development issues we face today around the world. It was presented at the **UNESCO World Conference on ESD in Aichi Nagoya**, at the end of 2014.

In September 2015, the world saw a new milestone in reaching "the future we want", with the unanimous adoption of "**Transforming Our World: The 2030 Agenda for Sustainable Development**", by the UN General Assembly. It offers a new integrated and globally shared roadmap and set of goals for all nations to embark on. While all **17 identified Sustainable Development Goals (SDGs)** are important, SDG 13 – climate action - is one of the most pressing ones.

IAU's renewed commitment to HESD in 2018-19: the IAU Global Cluster on HESD

In 2018, in support of Agenda 2030, IAU launched a new project that brings together universities from across the world to engage with the SDGs. 16 universities have taken the lead on one of the SDGs, SDG 17 being led by IAU. The lead institutions bring together a set of satellite universities each time representing the five continents; together they form the **IAU Global Cluster on HESD** and work across Agenda 2030 on initiatives which have both local and global resonance. **SDG 13: Take urgent action to combat climate change and its impacts** is led by the University of the West Indies, in the Caribbean.

Climate action at IAU in Paris

The IAU Secretariat is based at UNESCO in Paris. It is committed to supporting the SDG 13 targets, in particular by trying to decrease its carbon footprint. All Members on staff reach the office using public transportation, by foot or by bicycles. The Association has invested in online communication tools to avoid unnecessary travel to conferences and meetings. In addition, IAU staff takes the train to conferences and meetings whenever feasible. Recycling is improving in Paris and the IAU secretariat keeps advocating for a plastic free future.

UNIVERSITY OF THE WEST INDIES

Climate Studies Group Mona

The University of the West Indies (UWI) is a dynamic, international institution serving the countries of the Commonwealth Caribbean since 1948. Its faculties offer a wide range of undergraduate, masters and doctoral programmes with well over 40,000 students registered. The institution represents the oldest of its kind within the region and has been responsible for producing outstanding leaders who have made remarkable contributions to regional development. The University has 4 campuses in Jamaica, Barbados and Trinidad and the Open Campus with faculty and staff from 40 countries and collaborative links with 160 universities globally.

The vision of the University is to be an excellent global university rooted in the Caribbean. Accordingly the

mission of The UWI is to advance learning, create knowledge and foster innovation for the positive transformation of the Caribbean and the wider world. The UWI has seven priority focal areas that are closely linked with the priorities identified by the Caribbean Community (CARICOM) and takes into account issues relevant to the region including environmental issues, health and wellness, gender equity and the critical importance of innovation.

<http://www.uwi.edu/index.asp>

Contact Person(s):
Tannecia Stephenson

Email Address:
tannecia.stephenson02@uwimona.edu.jm

IAU GLOBAL CLUSTER ON
HESD LEADER FOR SDG 13

13 CLIMATE ACTION



Photo: West Indies

UNIVERSITY OF THE WEST INDIES

Climate Studies Group Mona



The University is committed to preparing the Caribbean region to meet the United Nations Sustainable Development Goals (SDGs). A number of undergraduate and postgraduate programmes and courses on offer address one or more of the SDGs. These include Gender and Development, Renewable Energy Technology and Management and Natural Resource and Environmental Management. Short courses and workshops are also facilitated that allow capacity building of the greater populace. Additionally, there are centres and institutes established within the UWI whose mandate relate to one or more of the SDGs. Some of these include the Climate Studies Group Mona (CSGM), Institute for Sustainable Development (ISD), Institute for Gender and Development Studies (IGDS), the Centre for Resource Management and Environmental Studies (CERMES), and the cross-campus UWI Resilience Working Group (UWIRWG).

ISD: The ISD was established in 2006 to assist Caribbean Countries in addressing issues of sustainable development and to promote, foster, reinforce, and facilitate efforts to achieve sustainable development in the Caribbean region for the benefit of present and future generations. The mandate of the ISD is to play a leadership role in capacity building and improving the coordination of environmental and sustainable development activities in the region.

IGDS: The mission of the IGDS is to produce and disseminate knowledge on gender-related issues in the Caribbean in support of The UWI's Mission and to enhance Caribbean development. Aside from the programmes on offer, the Institute initiates collaborative research projects that address the relationship of gender to all areas of society and pursues a programme of outreach activities that includes seminars, workshops and networking events.

CERMES: The mission of CERMES is to make a significant contribution to sustainable development in the Caribbean region and includes providing guidance, consultancy and professional services to regional governments, non-governmental organizations and the private sector on environmental matters; taking the lead in hosting and coordinating regional environmental initiatives and projects; and heightening public awareness on matters of environmental importance through outreach activities. In addition it offers two taught postgraduate programmes in Renewable Energy and in Natural Resources Management.

UWIRWG: The UWI Resilience Working Group is established as a technical advisory body to contribute to and guide the development of a resilience culture at the University. It will also serve as a feedback mechanism for internal proposals to advance Resilience in UWI and within the communities it serves.



Climate Studies Group Mona (CSGM) was established in 1994 by Professor A. Anthony Chen, as a means of promoting research about the drivers of Caribbean climate. The mission is:

- To investigate and understand the mechanisms responsible for (i) the mean climate and (ii) extremes in climate in both Jamaica and the wider Caribbean.
- To use this understanding to predict climate on a seasonal and annual basis;
- To promote awareness of global warming.
- To determine how anthropogenic climate change will manifest itself in the Caribbean region;
- To investigate the potential for exploiting renewable energy resources;
- To investigate and promote the advantageous uses of climate knowledge in socio-economic sectors of relevance for the Caribbean.

Regional Contribution

The CSGM has produced numerous papers providing fundamental theories governing Caribbean climate e.g. how the interplay between tropical Pacific and Atlantic sea surface temperatures conditions the region for rainfall through the year. The CSGM also began coordinating a multi-country collaborative initiative (initial genesis in 2003), which continues to today, and which is the only consistent source of downscaled climate information for the Caribbean. The availability and analysis of this data has significantly altered the region's ability to articulate the future evolution of its vulnerability to climate change and to posit positions on global climate action needed for its future survivability.

Contribution to Regional Policy

Consequently, the CSGM's work has become the underpinning for regional policy and planning with respect to climate change. For example, the climate projections are central to CARICOM's Regional Framework for Achieving Development Resilient to Climate Change. The projections have also been used in several Caribbean countries' Second and Third National Communications to the United Nations Framework Convention on Climate Change (UNFCCC), and as design guidelines for numerous large-scale multi-lateral funded infrastructure projects in the region which require a climate resilient component. The research of the CSGM has also led to numerous cross-disciplinary partnerships exploring among other things the economics of climate change (e.g. the European Commission on Latin American and the Caribbean 2011 reports), and the impacts of climate on a number of sectors including agriculture, health, water resources and tourism.

Two recent projects of note are the Pilot Programme for Climate Resilience (PPCR) – Caribbean Regional Track and the Caribbean 1.5 Project. The former is a US \$10.39 million project funded by the Inter-American Development Bank (IDB) through the Climate Investment Funds (CIF), and managed by the UWI which is implementing targeted strategies to support the building of climate resilience in the region. These include enhanced climate monitoring and climate data capture, bathymetric mapping, further climate modelling using a supercomputer installed at UWI Mona (dubbed 'SPARKS'), designing climate change communication approaches, and developing sector interventions in agriculture and health. The Caribbean 1.5 Project, funded by the IDB (through the PPCR project) and the Caribbean Development Bank (CDB) is providing the scientific basis for the Caribbean's global position captured in the slogan "1.5 to Stay Alive". The funded research is showing that for the region, there is more than a reasonable



basis for arguing that an increase of no more than 1.5 degrees Celsius above the pre-industrial temperature levels can be tolerated by 2100, if the region is to remain viable. The project is collaborative (45 regional climate scientists from 6 countries and 11 regional institutions) and coordinated by the CSGM. Results to date were presented at the 23rd Global Conference of the Parties (COP23) held in Germany in November 2017.

Impact Assessment

One of the key elements of the work of the CSGM is partnering with key agencies and institutes to ascertain the impact of climate change on some essential sectors and livelihoods. One of the current projects includes an investigation of climate change impacts on agriculture in partnership with the Caribbean Agricultural Research and Development Institute (CARDI) that is also facilitated under the PPCR. Impact studies undertaken in this initiative include an exploration of crop production using crop simulation modelling; an investigation of climate change induced heat stress on livestock; and the development of a cross-cutting perception-based tool-the Vulnerability Reduction Assessment (VRA)- that has been used to set baselines and measure progress towards improved climate resilience and reduction of vulnerability.

Capacity Building

No less significant is the fact that the CSGM has been the training ground for a cadre of emerging regional climate scientists and has attracted numerous visiting experts and international meetings to UWI and grant funding for the University. In part through the work of the CSGM, the University of the West Indies has been positioned as a centre of regional thought and expertise with respect to climate change science. Not surprisingly, then, the work of the CSGM has been cited in the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report, and both the former and current Directors (Prof. Chen and Prof. Taylor respectively) have served as authors on IPCC reports. Prof. Chen was also a part of the IPCC's Nobel Prize winning team of authors. Dr. Tannecia Stephenson also serves on a special commission of the World Meteorological Organization and is a member of the team coordinating the Caribbean and Latin America's participation in the international CORDEX (Coordinating Regional Climate Downscaling Experiment) programme. She too has recently started as an invited IPCC author for its Sixth Assessment Report.

The work of the CSGM over the years has not only altered the way climate change is spoken of in the Caribbean context, but is also significantly contributing to making the region resilient to climate change.



MAKERERE UNIVERSITY

Centre for Climate Change Research and Innovations (MUCCRI)

Makerere University is a premier public University in Uganda and is one of the most prestigious universities in Africa. The University is composed of 10 Constituent Colleges with 38,000 students (52% male and 48% female) and over 1,600 academic staff. Makerere University's Vision is: 'to be a leading institution for academic excellence and innovations in Africa'. The core functions of the University are training research and innovations, which enormously contribute to sustainable development of Uganda and the region.

It is also a member of the Least Developed Countries Universities Consortium on Climate Change

(LUCCC), a South-South collaborative network of up to 10 universities based in LDCs that aims at enhancing research and education capacity and proficiency in climate change in their respective countries to empower them to build resilience.

<https://www.mak.ac.ug>

Contact Person(s):
Dr. Revocatus Twinomuhangi

Email Address:
rtwinomuhang@gmail.com
levtwin@rts.mak.ac.ug

Link(s) to Action:
<http://www.muccri.mak.ac.ug>

Photo: Lake Victoria, Uganda

MAKERERE UNIVERSITY



MAKERERE UNIVERSITY

Centre for Climate Change Research and Innovations (MUCCRI)

Makerere University Centre for Climate Change Research and Innovations (MUCCRI) is a centre of excellence that engages in climate change education/training, research, knowledge management and community outreach.

MUCCRI works with academia and researchers, government institutions, civil society, donors, communities and private sector to conduct action research, training, innovations and knowledge management in the following fields:

- climate impact assessment and modeling;
- climate information and early warning systems,
- climate smart agriculture;
- ecosystem-based adaptation;
- community based adaptation,
- climate resilient cities,
- climate finance.

The actions are geared at influencing policy and practices that can increase climate resilience and green growth. MUCCRI conducts short term trainings for technical staff, practitioners and communities on the "need and the how" of integrating climate change and sustainable development practices in planning, programmes and projects to resilience, reduce vulnerabilities and promote green growth. They are also integrating climate change and SDGs in university

curricula so as to produce graduates and human resources that can foster achievement of the global sustainable development and climate change agenda. Through action research and student internships, they work with communities and private sector to develop, test and apply effective climate smart solutions. MUCCRI is engaging the youth in its works through a climate change youth programme and is coordinating the Uganda Climate Change Champions Network (UCCN).

Action Goals:

To strengthen climate change education, research, innovations, information, and knowledge management in the university, country and the region.



Climate change is a major cause for exogenous pressures affecting urban areas in multiple ways. In particular, the frequency and intensity of heat waves and flash floods are increasing, and are a cause of important environmental, social and economic losses, including life losses.

Nature-based solutions (NBS) can provide sustainable and cost-effective approaches that can reduce more effectively the impacts of climate change related events, compared to engineering solutions. The option of NBS is less expensive and more beneficial for the environment and life quality in urban areas. NBS such as urban parks and gardens act as carbon sink, reduce the thermal influence of concrete material (e.g. microclimate regulation, air cooling) and decrease the damages induced by flash floods, facilitating water infiltration. These measures can reduce the impacts of urban areas on climate change, and the vulnerability of the population to heat waves and the destruction capacity of heavy rainfalls.

Action Goals:

To evaluate the potential of NBS to mitigate the impacts of extreme events in Vilnius and Kaunas. The action is divided in three goals:

- 1) Identification of NBS potential and demand,
- 2) Development of a stakeholder capacity building model to support understanding, management and enhancement of NBS
- 3) Transfer the knowledge obtained to students.

Mykolas Romeris University (MRU) is an international university located in Vilnius and Kaunas, Lithuania. Modern, creative and entrepreneurial academic community, MRU is a leading university in social sciences and interdisciplinary research in Lithuania.

MRU has a full membership of the international higher education organizations: International Association of Universities, European University Association, European Association for International Education, European-Asian Knowledge Consortium Social Technologies for Smart and Inclusive Society, and more.

<https://www.mruni.eu/en/>

Contact Person:
Paulo Pereira

Email:
paulo@mruni.eu



To achieve the vision of a sustainable university, all stakeholder groups should be invited to contribute. However, the compartmentalisation of universities makes it often difficult for people to collaborate across departmental boundaries. This is a problem, since sustainability efforts remain constrained to small islands of activity. We need to create bridges across those.

A Green Office is a sustainability hub that informs, connects and supports students and staff to act on sustainability. It also realises its own ideas to embed sustainability in education, research, and operations. For example, Green Offices co-organise sustainability events, conduct overviews of sustainability courses, co-design new courses, lobby for waste separation and solar cells, or advise student groups and staff who want to act on sustainability.

The first Green Office was established at Maastricht University in 2010. Since then, the model has been replicated by 35 universities across Europe, and won the UNESCO-Japan Prize on Education for Sustainable Development. The model is freely available to everyone via www.GreenOfficeMovement.org

Action Goals:

- 1. Inform students and staff about the importance of the Sustainable Development Goals, and to connect people who are already active and support them in running their projects.
- 2. Work with staff and academics to embed the Sustainable Development Goals into education, research, and operations, as well as university policy.

rootAbility is a non-profit social business, building a movement of students and staff who mobilize institutional support for sustainability projects and initiatives in higher education. They spread the "Green Office Model" as an open-source solution to mobilize institutional support for sustainability projects and initiatives. They support existing Green Offices (GOs) and other initiatives through workshops, a learning network, an annual summit, a sustainability assessment framework and a behaviour change and engagement programme. rootAbility convenes students and staff who worked in or volunteered with GOs in their Alumni Network.

www.rootAbility.com

Contact Person(s):
Felix Spira

Email Address:
Felix.Spira@rootAbility.com

Link(s) to Action:
www.GreenOfficeMovement.org



ASSAM DON BOSCO UNIVERSITY



Eco-Friendly Campus

ASSAM DON BOSCO UNIVERSITY

Nature-Based Solutions to Reduce Climate Change Impacts in Urban Areas

The Assam Don Bosco University is the first university in the English speaking world of the global family of the renowned Don Bosco society present across 132 countries in the service of the educational and developmental needs of 15 million young people.

The University is also a member of the Commonwealth Association of universities (ACU), International Association of Universities (IAU) and Association of Don Bosco Institutions of Higher Education (IUS).

The University has been set up a response to the felt educational needs of the people of North East India and offers relevant study programmes with a focus on research and social

commitment through the Schools of Technology, Humanities and Social Sciences, Commerce and Management, Life Sciences, Fundamental and Applied Sciences. Its modus operandi is characterized by the distinctive educational philosophy and methods of Don Bosco institutions worldwide.

<http://www.dbuniversity.ac.in>

Contact Person(s):
Fr.(Dr.)Stephen Mavely

Email Address:
mavely@dbuniversity.ac.in

Link(s) to Action:
www.dbuniversity.ac.in/Eco-Friendly-Campus.php

The Assam Don Bosco University is creating and sustaining an Eco-Friendly campus with clear-cut goals and priorities in the management of water resources, energy resources and consumption, preservation of flora and fauna, conservation of eco-systems and wildlife and productive use of land.

1. Agroforestry and conservation of biodiversity:

In its endeavour to address rural poverty reduction and conservation of healthy ecosystems, Assam Don Bosco University has embarked on a plantation drive spread over 190 acres of its campus at Sonapur, Kamrup District, Assam. The variegated cropping of tea, coconut, rubber, cocoa, cashewnut, ginger, and turmeric will be established as livelihood projects within the scope of demonstration farms, and will nurture the setting up of Farmers' Cooperatives in the 42 villages in the vicinity of the University campus.

Agroforestry provides a different land use option as compared with traditional arable and forestry systems. It is a practice that supports the environment and makes better use of environmental resources.

2. Grid connected roof top solar voltaic power projects:

Assam Don Bosco University has worked out a plan to utilize the rooftop terraces continuously exposed to sunlight to place solar panels for generating photovoltaic electric power. The plan is to feed the national electric power grid with the power generated from the rooftop solar panels without having to store the energy in batteries. The connection will be done through a reversible meter so that the meter reading will increase when the university consumes power from the

national grid, and decrease when the university's rooftop solar power system feeds the national grid with the power generated from the solar panels.

3. Water Conservation and Supply management:

The University has spent enormous resources to ensure sustainable management and use.

- It has created a major reservoir spread over 10 acres with an average depth of 30 feet by tapping a small stream passing through the campus and the many natural springs in the adjoining creeks.
- It has created 5 minor reservoirs, each of an acre or more in area and 15 to 20 feet in depth by the creation of bandhs around existing, permanent springs.
- While the reservoirs help in water harvesting, storm water management and replenishment of ground water table, the University has also invested in five deep-bore wells to supply drinking water through a network of three water tanks with a capacity to store 7,00,000 litres at a time.
- The master plan of the campus provides for three more check dams to ensure that the water resources in the campus are well-controlled, managed and utilized.

Goals of Actions

- Ensuring the conservation of biological diversity and the protection of an eco-sensitive area by adopting sound and sustainable development,
- Ensuring an institute-wide commitment to the adoption of renewable energy .
- Encouraging the University community to pilot and promote sustainable solutions through teaching,

- research and extension, which tackle live issues of the campus and its adjacent communities.
- Promoting and protecting the natural and semi natural habitat of existing species in the campus to ensure their survival and growth.
 - Harnessing the traditional knowledge and practices of local communities and involving them in the conservation and sustainable use of these resources.

Photo: © Assam Don Bosco University



GRIFFITH UNIVERSITY

Pacific EcoAdapt

Griffith is one of Australia's leading comprehensive research universities with more than 20 research centres

and institutes. In addition to building a base of intellectual capital through basic research, Griffith emphasises the translation of research outcomes into products, services, policies - things that can change the way we live, hopefully for the better. Griffith research tackles local and global challenges, providing solutions that will help ensure a more robust, equitable and environmentally

sustainable society to be enjoyed by future generations.

<https://www.griffith.edu.au/>

Contact Person(s):
Prof Brendan Mackey

Email Address:
b.mackey@griffith.edu.au

Link(s) to Action:
<https://www.griffith.edu.au/research/research-excellence/griffith-climate-change-response-program/research-projects/projects-in-the-pacific>

Photo: Vanuatu Islands

GRIFFITH UNIVERSITY

Pacific EcoAdapt



This project aims to identify appropriate adaptation interventions in the coastal zone of Pacific island states in the face of a rapidly changing climate.

Griffith University is investigating on Tanna Island, Vanuatu, in collaboration with the Tafea Provincial Government, the advantages and limitations of ecosystem-based adaptation (EbA), soft- engineering approaches that use natural processes and hard-engineered solutions such as concrete sea walls. Coastal adaptations need to be evaluated in terms of their impacts on ecosystems and biodiversity, the extent to which they disrupt natural processes, and the

benefits they provide for the sustainable livelihoods of local communities, in addition to their effectiveness in protecting built assets from climate risks.

The first step is to develop a comprehensive understanding of the socio-ecological system, identify all major risks to ecosystem integrity and community wellbeing, understand the underlying causal linkages, and consider a broad sheet of adaptations strategies under a set of plausible scenarios. Adaption options need to be feasible, robust, cost-effective, socially acceptable, and culturally appropriate.

Action Goals:

The goal is to identify adaptation options that are robust, cost-effective, socially acceptable, and culturally appropriate given possible future conditions, mindful that the efficacy of adaptation interventions must be considered on the socio-ecological system, and that there are lessons to be drawn out for other Pacific communities.



UNIVERSITY OF COSTA RICA

Action for the weather

The University of Costa Rica is a public higher education institution, dedicated to teaching, research and social action. Through these activities, it contributes to the transformations that society requires. The exchange of researchers, professors and undergraduate and graduate students in different universities around the world has allowed a successful research development with 1,500 active researchers in different fields,

among these climate change and its effects.

<https://www.ucr.ac.cr>

Contact Person(s):
Hugo Hidalgo León Ph.D

Email Address: hugo.hidalgo@ucr.ac.cr, hugohidalgoleon@gmail.com

Link(s) to Action: Geophysical Research Center (www.cigefi.ucr.ac.cr)

Photo: Volcán Arenal

UNIVERSITY OF COSTA RICA



UNIVERSIDAD DE COSTA RICA

Action for the weather

The geophysical research center of the University has carried out research determining climate characteristics, climate variability and projections of climate change in both Costa Rica and Central America. It offers a monitoring service for atmospheric conditions and lightning detection through its website. In addition, research has been carried out in conjunction with the Sustainable Development Research Program on climate change and water resources. The researchers of this program have also focused on climate change and urban development and infrastructure. Other research groups do it in mitigation of climate change for agriculture, livestock,

food security, forest biosystems and carbon neutral. The Environmental Pollution Research Center has proposed to be a national reference laboratory for the determination of greenhouse gases as a strategy for Costa Rica's climate change, and its commitment to carbon neutrality and the ECO-competitiveness of the agricultural sector.

Action Goals:

To study the characteristics of climate change in Costa Rica and the Central American region through the use of physical models to carry out actions to mitigate climate change on water resources, agriculture, livestock, biodiversity and food security.





TUFTS UNIVERSITY

Partnership between Tufts University and Greentown Labs

Tufts is a leader in American higher education, distinctive for its success as a moderately sized university that excels at research and providing students with a personal experience. Its unique combination of research and liberal arts attracts students, faculty and staff who thrive in its environment of curiosity, creativity and engagement. Tufts University is committed to providing transformative experiences for students and faculty in an inclusive and collaborative environment where creative scholars generate bold ideas,

innovate in the face of complex challenges and distinguish themselves as active citizens of the world.

www.tufts.edu
environment.tufts.edu

Contact Person(s):
Benny Kim

Email Address:
benedict.kim@tufts.edu, bkim@greentownlabs.com

Link(s) to Action:
environment.tufts.edu/initiatives/greentown-labs/

Photo: Flooded New Orleans, 2005



TUFTS UNIVERSITY



Partnership between Tufts University and Greentown Labs

In the fall of 2017, Tufts University and Greentown Labs, a clean technology incubator, signed a memorandum of understanding (MOU) to bring together the research and educational capabilities of Tufts University and the entrepreneurship ecosystem of Greentown Labs.

This partnership establishes Tufts as a Gigawatt partner of Greentown, gives Greentown startups access to Tufts Core Facilities across all Tufts campuses, and opens up collaborations between the cleantech community of Tufts and Greentown. The partnership agreement also establishes a Tufts-Greentown Liaison Fellow position to help foster the relations between students, faculty, researchers, entrepreneurs, and thinkers in the clean technology field.

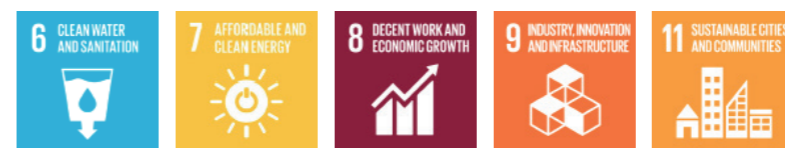
To date, Tufts and Greentown have been able to

collaborate in the following ways:

- Multiple Tufts student consulting teams have been working with Greentown member companies,
- Tufts and Greentown have jointly planned events bringing together the networks of both university and incubator,
- and several startups with Tufts University's IP have been identified to become members of Greentown Labs.

Action Goals:

The goal of this partnership is to develop a relationship with Greentown Labs to support Tufts' educational, research, and technology translation goals. Tufts and Greentown will share their collective expertise, resources, and networks to support educators, entrepreneurs, and researchers committed to climate action.



DUBLIN INSTITUTE OF TECHNOLOGY

Designing a photovoltaic charging station for solar powered electric vehicles.

At Dublin Institute of Technology (DIT), innovation is tradition, producing generations of leaders in a range of fields from sciences and health; business; law; social sciences; tourism & hospitality; the creative & visual arts to engineering & the built environment. The lively City-Centre campuses, including the new research and innovation hub at Grangegorman, are home to more than 20,000 students from Ireland and abroad, creating a culturally diverse and stimulating learning and research environment. DIT will soon join forces with IT Tallaght and IT Blanchardstown to form a Technological University catering

for the Greater Dublin Region and beyond. Three physical campuses and a fourth digital campus will create an incomparable institution of higher learning offering wide-ranging opportunities to many more generations of leaders in the years to come.

www.dit.ie

Contact Person:
Claire Connell

Email:
claire.connell@dit.ie

DUBLIN INSTITUTE OF TECHNOLOGY



Designing a photovoltaic charging station for solar powered electric vehicles.

The future is renewable: Solar powered buggies on the Grangegorman campus

Fossil fuels such as coal, gas and oil provide more than 80% of the world's energy. Finding sustainable alternatives to tackle global warming, reduce greenhouse emissions and produce new forms of homegrown energy are all on the national agenda in Ireland and beyond. There is a general consensus among the scientific community that to stop global warming and reduce emissions, we need to transform our energy systems by using more low-carbon sources such as wind, solar and geothermal.

Ayda Esfandyari, a PhD student at the Dublin Institute of Technology (DIT), is determined to help meet some of those targets. Originally from Iran, Ayda has been living in Ireland since her teens. She became interested in renewable energy while studying for her Master's in Energy Engineering at University College Dublin. In 2014, she jumped at the opportunity to undertake a doctorate at DIT under the supervision of Professor Brian Norton, the President of DIT and an internationally acknowledged expert in solar energy research.

Ayda is working on designing a Photovoltaic (PV) solar charging station for battery electric vehicles. The charging station currently powers two light-weight electric vehicles, which are used daily by the Estates staff in Grangegorman to transport goods from building to building, to patrol the campus at night, and to respond to accidents quickly. On a campus spanning 73 acres and bustling with events, conferences and day-to-day activities, the buggies are in constant use.

"Battery Electric Vehicles (BEVs) have been recognised as the ideal solution for lowering CO2 emissions in the transport sector and helping to achieve a sustainable future," says Ayda. EU and government policies around solar energy are moving towards the idea of 'self-consumption,' encouraging individuals and businesses to generate solar energy to meet the demands of their own electricity and heating needs.

"This is where Europe is going," explains Ayda. "This is where the targets are pushing towards. We generate the solar energy from the panels and store it in an optimal manner in a Battery Energy Storage System (BESS) which is part of the charging station design. Then we use that energy when we need it. We have periods where there is less demand so we're over-generating, or my storage is full because it's been a very sunny day, and we feed that energy into other buildings on campus. The energy never goes to waste."

The energy demand for the buggies is served by a combination of direct solar energy, the PV stored solar energy from the BESS unit, and energy from the main electricity grid. The goal is to utilise the solar-generated electricity as much as possible and switch back to the grid as little as possible.

Ayda hopes that this charging station will help to contribute towards EU targets for renewable energy. "This charging station has zero emissions on the solar generation side and the vehicles have nearly zero emissions on the demand side."

The project has a lot of scope for wider application. Ayda is working on optimising the charging station as much as possible with a view to adapting the prototype to different contexts. The plan is to add more buggies to the system in the future. The charging station could also potentially be used in commercial companies or in developing countries. "We are working on finding the best way to operate a system like this in a cost effective manner. Once we have optimized the system, we'll look to partner with industry with a view to commercialisation."

DIT is working hard to make the Grangegorman campus as sustainable as possible. "Green thinking permeates the planning of the whole campus," says Professor Brian Norton, President of DIT. The Institute plans to include solar panels on all new buildings on campus. The buildings are designed to be naturally ventilated and make optimal use of natural light, so that less electric lighting is needed. Grangegorman is a city campus, serviced well by public transport, and currently 93% of DIT students and staff use sustainable means of transport to get to campus. DIT was recently announced as among the top 10% most sustainable universities in the UI GreenMetric World University Rankings, a global initiative aimed at encouraging colleges to develop sustainability policies and projects.

Ayda's research falls under the aegis of the Dublin Energy Lab (DEL), an interdisciplinary research centre that is one of the leaders in science and engineering energy research in Ireland, consisting of 90 researchers from across DIT. "Research gives me a pulse, it challenges me, it makes me feel alive. I feel like I'm young and I'm contributing to finding renewable energy sources and hopefully making the world a better place. That's everyone's dream."

This article first appeared on the Dublin Institute of Technology website.



UNIVERSITY OF MALAYA

The University of Malaya (UM), Malaysia's first university, was established with the merging of the King Edward VII College of Medicine and the Raffles College. It consists of the University of Malaya Medical Centre (UMMC), two academies, twelve faculties, four institutes, and three Centres of Excellence that comprehensively encompass medicine, science, technology, social

sciences and humanities. In addition, six research clusters have been established to place the university at the forefront of new knowledge and discoveries. UM is currently placed at rank 114 in the QS Global World Ranking.

<https://um.edu.my/>

Photo: Rice Fields in Malaysia

UNIVERSITY OF MALAYA



Eco Campus Initiative

UM Eco-Campus initiative aims to develop a novel campus-wide sustainability framework with direct support from the University of Malaya Living Labs' outputs, which contributes toward minimizing harmful environmental impact in campus especially by decreasing the amount of carbon emission, to bring UM with another leapfrogging record to be as one of the leading eco-friendly campuses in Malaysia and in the world. UM Eco-Campus initiatives covers

mainly, but not limited to, the grounds of University of Malaya's main campus of 803.63 acres. UM Eco-Campus via UM Living Labs is the first project of its kind in UM and in Malaysia that enables the integration of Research & Development, demonstration and deployment of sustainability solutions on the grounds, promoting multi-inter-and-transdisciplinary research, and befits the need of community for a better campus environment.

UM as a Living Lab

ACTION-ORIENTED & TRANSLATIONAL RESEARCH
to provide sustainable solutions to the campus



From laboratory research



To real life solutions



Categorization of research projects according to

8 Core Pillars of UM Eco-Campus Blueprint

- Landscape management and biodiversity
- Waste management
- Water governance
- Energy management
- Transportation system management
- Green procurement
- Educational management - Environment & climate change
- Change Management, participation, & communication

In line with UI GreenMetric & Sustainable Development Goals (SDGs)

Carbon Abatement Module for UM Eco Campus

This specific living laboratory project aimed at reducing University of Malaya's climate change and urban heat island (UHI) impact by integration of solar photovoltaic (PV) systems and Vertical Greenery System (VGS). The idea is to simultaneously generate clean renewable energy by converting untapped solar energy into electricity and reduce micro-climatic temperature of the campus with carbon sequestration potential of VGS. A four parking lots car park prototype was developed in combination with VGS and PV system in UM. *Epipremnum aureum* (Money plant) was used for living walls as it is easy to be grown in water. The prototype was further provided with electrical cable and associated devices such as power outlet, light control sensor and LED tube lights. The results showed that VGS could reduce the air temperature at an average of 0.1°C to 2.1°C and reduced relative humidity at 0.1% to 9.3%. The absolute humidity increased at 0.1-9.3%, while the dew point increased at an average of 0.1-0.9°C. A total of 14.05 kWh was generated by PV system. Consequently, approximately RM 13.70 and 10.41 kg CO₂ were saved for electricity bills and carbon emission respectively.



Figure 1: Study site at Faculty of Built Environment, University of Malaya, Kuala Lumpur, Malaysia.



Figure 2: VGS Installation on the Car Park Structure



Figure 3: Installation of Solar Panel, Battery and Sensor to Car Park Structure

Action Goals:

Integration of VGS and PV systems can be a strategic tool to reverse the environmental effects in urban areas. Besides aiming at producing Renewable Energy and reducing Urban Heat Island effect, this initiative validates solar-electricity storage technology and carbon sequestration models, and integrate climate change education and training.

Contact Person(s):
Dr Suzaini M. Zaid

Email Address:
suzaini_zaid@um.edu.my

Link(s) to Action:
umexpert.um.edu.my/file/publication/00001673_159449_70989.pdf



UM Zero Waste Campaign

University of Malaya Zero Waste Campaign (UM ZWC) aims to spearhead the development of an integrated and sustainable waste management model in UM. The inception of Green Bag Scheme was inspired by the fact that food waste is the major problem in Malaysia. Subsequently, a composting center was developed, as well as the installment of a weighbridge station. Using LCA (Life Cycle Assessment) analysis, a total of 2,505 tone of CO₂-eq emission has been avoided by UM ZWC. In addition, UM ZWC received more than 10,000 visitors who come to learn about biological treatment such as composting and anaerobic digestion, separate collection and integrated waste management in a campus level. With the reduction of about 6-7 pulls of open top bin hauled to landfill, a total of RM97,757 of waste disposal cost has been saved. Besides, a total of RM49,058 amount of proceeds from selling of used clothes from UM campus were donated to several charity bodies. UM ZWC also brings various benefits such as academic research opportunities for UM, contributes in UM LCCF (Low Carbon City Framework) target and serves as platform to improve students' soft skill and entrepreneur skill.

Action Goals:

The UM Zero Waste Campaign aims to spearhead the development of integrated and sustainable waste management model to:

- 1) divert organic waste for composting and anaerobic digestion
- 2) increase recycling rates
- 3) create awareness and inculcate best practices
- 4) initiate projects to achieve waste management and recycling goals.



Contact Person(s):
Assoc. Prof. Dr. Sumiani Yusoff

Email Address:
sumiani(a)um.edu.my

Link(s) to Action:
<https://www.um.edu.my/about-um/unique/um-living-lab/zero-waste>



UNICA

Students Achieving Valuable Energy Savings 2

UNICA - institutional Network of the Universities from the Capitals of Europe, currently brings together 49 member universities from 37 capitals of Europe and combines the strength of over 160,000 staff members and 1,900,000 students in 37 countries. It was founded in 1990 and is a leading institutional academic inter-university network in Europe. UNICA seeks to be a driving force in the development of the European Higher Education Area and to promote academic excellence, integration and co-operation between member universities throughout Europe. UNICA offers a forum in which Member Universities can reflect on the latest developments and demands of strategic change in university research, education and administration. The Network organises member-driven activities, the content, format, and frequency of which depend on UNICA Members' engagement and interest. The programmes of the activities are prepared by relevant UNICA working

groups in cooperation with the UNICA Board and the UNICA Secretariat in Brussels. UNICA activities and projects are organised around traditional clusters: Internationalisation & Mobility, Education, Research & Development, Policy & Strategy, and Mission & Link with Society.

www.unica-network.eu & <http://green.unica-network.eu/>

Contact Person(s):

Joanna Romanowicz, Project Coordinator, National Union of Students UK (NUS UK), Marta Brelh-Wasowska, Project & Communications Officer, UNICA Network

Email Address:

joanna.romanowicz@nus.org.uk
marta.wasowska@unica-network.eu

Link(s) to Action:

<https://saves.nus.org.uk/>

UNICA

Students Achieving Valuable Energy Savings 2



Mitigating climate change and making large carbon savings requires systemic changes in people's daily actions. The SAVES2 project intends to instill sustainable energy behaviours among university students in 7 countries to help them reduce their exposure to fuel poverty and empower them to continue energy-saving actions throughout their private lives. Building on the achievements the SAVES (Intelligent Energy Europe) project, which resulted in 4 GWh of saved energy, the Horizon 2020-funded SAVES2 has set even more ambitious targets.

From May 2017 to October 2020, it not only intends to run Student Switch Off campaigns in 7 participating countries, but to also conduct a parallel campaign known as Student Switch Off +. The new initiative will seek to reach students looking at moving into the private rented sector to encourage them to make housing choices that minimise their exposure to fuel poverty, improve their understanding of energy performance certification and energy bills, and raise their awareness on how to reduce household energy consumption with the use of smart meters and in-home displays.

Action Goals:

Throughout 3.5 years of the project, SAVES2 aims to reach 114,000 students living in dormitories with the Students Switch Off campaign (38,000 students per academic year) and save quantifiable amounts of energy in student halls (9GWhs). At the same time, it aims to reach over 100,000 students planning to move into or living in the private-rented sector to encourage them to make housing choices that minimise their exposure to fuel poverty and improve their understanding of energy performance certification and energy bills.



UNIVERSITY OF CYPRUS

Students Achieving Valuable Energy Savings 2

The University of Cyprus aims to establish itself as a Pioneer Research Institution in European Higher Education, offering Competitive Programmes and to become a Centre of Excellence. The main objectives of the University are the promotion of scholarship and education through teaching and research, and the enhancement of the cultural, social and economic development of Cyprus. The University believes that education

must also encourage students' active participation in the process of learning.

<http://www.ucy.ac.cy/en/>

Contact Person(s):
Costas Charalambous

Email Address:
cchara@ucy.ac.cy

Link(s) to Action:
<http://studentswitchoff.org/>

Photo: Renewable energy through windpower

UNIVERSITY OF CYPRUS



Students Achieving Valuable Energy Savings 2

The University of Cyprus participates in SAVES2 that aims to encourage sustainable energy behaviours among 219,000 university students in 7 European countries to help them reduce their exposure to fuel poverty and install good sustainability habits.

Students living in dormitories are encouraged to participate in inter dormitory energy-saving competitions. With the help of student ambassadors that are trained at each university, the campaign motivates students to save energy and win prizes as a result. Social media is used to tap into student

communities and raise awareness in a fun way. A dashboard is used to provide feedback on the performance of their dormitory in the competition, encouraging further action.

Additionally, the project reaches students when they are looking for, moving into and living in the private-rented sector. It enables students to make better informed decisions at the point at which they are selecting a rental property thereby routing purchase decisions towards higher efficiency properties.

Action Goals:

Engage with over 38,000 university students living in dormitories and inspire them to adopt sustainable energy behaviours resulting in significant energy savings, and encourage over 100.000 students living in the private sector to make housing choices that minimise their exposure to fuel poverty.



PONTIFICAL CATHOLIC UNIVERSITY OF PERU

Climate of Changes (Clima de Cambios)

The Pontifical Catholic University of Peru, founded in Lima in 1917, is according to the QS World University Rankings 2015-2016 the number one university of Peru, number 18 in South America and the only Peruvian University among the 500 best universities of the world in international rankings (rank 451-500 in the same ranking).

This placement is an acknowledgement of the quality of its teaching, research, publications, social responsibility, contribution to the culture, and undeniable academic and institutional leadership.

<http://www.pucp.edu.pe/>

Contact Person(s):
Claudia Tuesta Velarde –
Coordinanator of Clima de Cambios

Email Address:
climadecambios@pucp.edu.pe /
ctuestav@pucp.pe

Link(s) to Action:
<http://www.pucp.edu.pe/climadecambios/>

<https://www.facebook.com/pucp.climadecambios/>

<https://twitter.com/climadecambios>

Photo: Ica Desert

PONTIFICAL CATHOLIC UNIVERSITY OF PERU

Climate of Changes (Clima de Cambios)



On 22 April 2008, on Earth Day, the Pontifical Catholic University of Peru launched the initiative "Clima de Cambios". This project informs and raises people's awareness about the impact of climate change in Peru and the world. At the same time, it provides practical tips to contribute to the conservation of the environment. This is reached through a communication strategy that highlights the commitment of the PUCP to

care and take care about the environment. The strategy involves the whole university community, including students, lecturers or administrative staff. A group of volunteers formed by students from diverse disciplines is engaged in Clima de Cambios. This demonstrates that today's youth are interested in environmental preservation and are willing to turn into change agents.

Action Goals:

During the last ten years, Clima de Cambios was successfully implemented within the university and beyond. Synergies with institutions through the participation in various activities (e.g. fairs, talks, conferences, etc.) were established. Clima de Cambios contributed to the management of a sustainable campus through the conservation of the PUCP flora and fauna and the promotion of proper use of resources, like water, paper, energy, and recycling.



UNIVERSITY OF TSUKUBA



Cooperation to The TARA Pacific Expedition 2016-2018 as a Project Partner

UNIVERSITY OF TSUKUBA

Cooperation to The TARA Pacific Expedition 2016-2018
as a Project Partner

The University of Tsukuba aims to establish free exchange and close relationships in both basic and applied sciences with educational and research organizations and academic communities in Japan and overseas. While developing these relationships, we intend to pursue education and research to cultivate men and women with creative intelligence and rich human qualities.

<http://www.tsukuba.ac.jp/>

Contact Person(s):
Sylvain Agostini

Email Address:
agostini.sylvain@shimoda.tsukuba.ac.jp

Link(s) to Action:
http://www.shimoda.tsukuba.ac.jp/180515_eng_coral_reef.html

The Tara Pacific Expedition is a two year scientific expedition focusing on the resilience of corals and their adaptation to environmental change in the Pacific Ocean. The expedition is conducted on board the Tara schooner and operated by the Tara Expedition Fondation - a non-profit organization active since 2003 in favor of the marine environment. The schooner Tara has already accomplished 10 international scientific expeditions to study and understand the impacts of climate change and the ecological crisis happening in the oceans.

The foundation also develops a long term advocacy plan to mobilize civil society, but also to include the ocean among the issues and challenges discussed on climate change. The University of Tsukuba is a member of the Tara Pacific Expedition Consortium which include 24 scientific institutes from across the world, that together developed the sampling protocols, performed the sampling and are analysing the data produced during the expedition.

Dr Sylvain Agostini of the Shimoda Marine Research Center acted as a scientific coordinator and organized all surveys and events in Japan. During its first visit in Japan in 2017, Tara spent one month organizing symposiums, public visits of the schooner and many

other events across the country with the aim to raise awareness on the threats that coral reefs are facing nowadays. More than 4000 people joined these events, among whom were close to 700 children who came to visit the boat and could discussed with the crew and scientists.

Then for one month, a scientific team lead by Dr Agostini with Japanese and international scientists conducted surveys on coral communities in Japan, from the northernmost corals in Tokyo Bay to the reefs of Okinawa. In May 2018, with Tara Pacific Expedition nearing its end, the schooner returned to Japan for three weeks. During the first week a science-art event was organized and to cloture the stopover in Japan, a symposium was held in Tokyo jointly by the University of Tsukuba, the Tara Expedition Fondation, the Japanese Ministry of Environment and the French Embassy in Japan. After presenting the general state of corals in Japan and the world, including the first results of the Tara Pacific Expeditions, a panel of experts including scientists, artists, NPO, journalists and policy makers discussed the different communication approaches to raise awareness on the environmental problems that threaten marine ecosystems.

Action Goals:

One of the objectives is to examine the biodiversity of coral reefs and their evolution in response to climate change, along with raising awareness of the general public and policy makers on this ecological crisis.



UNIVERSITY COLLEGE DUBLIN

UCD Energy Efficiency and Carbon Reduction Programme

University College Dublin has its origins in the mid-nineteenth century under the leadership of the renowned educationalist John Henry Cardinal Newman. Since its foundation in 1854, the University has flourished and made a unique and substantial contribution to the creation of modern Ireland, based on successful engagement with Irish society on every level and across every sphere of activity. UCD is one of Europe's leading research-intensive universities; an environment where undergraduate education, masters and PhD training, research, innovation and community engagement form a dynamic spectrum of activity. The international standing of UCD has grown in recent years; it is currently ranked within the top 1%

of institutions world-wide. UCD is also Ireland's most globally engaged university with over 30,000 students drawn from over 120 countries, and includes 5,500 students based at locations outside of Ireland.

www.ucd.ie

Contact Person(s):
Kieran Brassil

Email Address:
kieran.brassil@ucd.ie

Link(s) to Action:
<http://ucdestates.ie/about/sustainability/energy-management/>

<http://ucdestates.ie/about/sustainability/energy-management/2020-2/>

Photo: Univeristy College Dublin

UNIVERSITY COLLEGE DUBLIN



UCD Energy Efficiency and Carbon Reduction Programme

UCD seeks to ensure that energy usage is actively managed and wastage avoided. This is done in a holistic way, across all aspects of the University operations such as capital development, maintenance and commuting. Management systems, awareness and engagement campaigns in addition to the employment of modern technologies all help to deliver improvements.

International Standard in Energy Management - ISO50001
UCD achieved ISO50001 certification in 2016. This international standard in energy management ensures that energy is managed in a controlled and systematic way. UCD was one of the first Universities in Ireland to achieve this standard and was the first to include water management under the scope of the certification.

Capital Development
The UCD has made a concerted effort to ensure opportunities that new developments present in terms of energy efficiency are pursued. Roebuck Castle student residences(2010), was at the time the largest Certified Passiv Haus structure in Ireland and the U.K. (winning the 2011 Award for "Best Sustainable Project of the Year"). The UCD O'Brien Centre for Science, achieved a "BREEAM Excellent" environmental rating. 'Ashfield' student residences(2016), achieved an "A" energy rating. Requirements relating to energy efficiency and sustainability are considered at the very earliest stages of capital projects at initial brief development, and aided by the ISO50001 system, continue to be managed through

project delivery and commissioning. All new buildings are designed to Near-Zero-Energy Building (NZEB) standard.

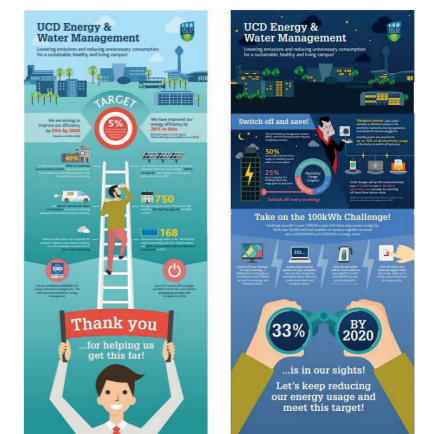
Renewable and Low-Carbon Energy Sources
The University makes a concerted effort to ensure the energy that is used on campus comes from sustainable and renewable sources where possible. The University was an early adopter of natural gas combined heat and power (CHP) technology and now has 3.4MWe installed on campus, making it one of the biggest non-industrial operators of CHP in Ireland. The CHP engines in UCD use natural gas to produce electricity, with the heat produced in the process used to heat buildings and hot water for bathrooms, the swimming pool and showers. UCD has also invested in solar photovoltaic panels (solar PV) which produce renewable electricity from sunlight. In all, there is approximately 240kW of solar PV installed across the University, avoiding up to 100 tonnes of carbon dioxide emissions each year.

Sustainable Commuting Campaign
The majority of the UCD community commutes to the University each day. Therefore the University has undertaken a targeted programme to encourage and promote sustainable transport. In 2016 UCD developed the UCD Travel Plan, which encourages more sustainable choices – such as walking, cycling and public transport. UCD was awarded as Ireland's "Smarter Travel Campus" in 2017, recognising the University's efforts and success in the area of sustainable commuting.

Action Goals:

The primary goal is to meet the government mandated 2020 energy efficiency targets. These ambitious targets require a 33% improvement in energy efficiency by 2020. At present the University estimates that it has improved efficiency by 28% (2017). The remaining 5% will be the most challenging, however UCD is confident that the goal can be achieved by continued investment as well as engagement with, and contribution from, the University community.

In addition to efficiency goals, UCD also aims to reduce carbon emissions in other ways. This is primarily being progressed by increasing the use of renewables and low-carbon sources of energy, but also through water conservation and increasing use of sustainable commuting options.



SELECTION OF PUBLICATIONS HIGHER EDUCATION FOR CLIMATE ACTION

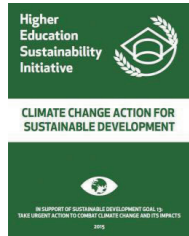


The Paris Agreement.

United Nations, New York: United Nations, 2015, 25 p.

The Paris Agreement was adopted on 12 December 2015 at COP21, the Conference of Parties of the United Nations Climate Change Conference. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change and to strengthen the ability of countries to deal with the impacts of climate change. The Agreement establishes capacity building as an essential means to enhance climate action in particular in developing countries, with education and training playing a crucial role (Article 11).

https://unfccc.int/sites/default/files/english_paris_agreement.pdf

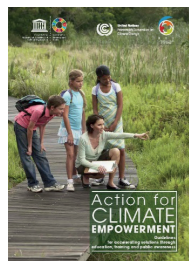


Climate Change Action for Sustainable Development.

Higher Education Sustainability Initiative, HESI, 2015, 42 p.

This paper was presented on the occasion of the 'From Rio to Paris: Higher Education for Climate Change Action' event, held on 14 October 2015 at UNESCO headquarters. Meant as a contribution to the 21st Session of the Conference of the Parties to the UNFCCC (COP21), it puts forward 47 submissions presenting concrete examples of initiatives taken by institutions against climate change in terms of teaching, research, outreach, or greening their campuses. Also featured is an open letter urging Ministers and Governments to acknowledge and strengthen the research and education role that universities and colleges play in addressing climate change.

<https://sustainabledevelopment.un.org/content/documents/2121HESI%20-%20Climate%20Change%20Action%20for%20SD%20final.pdf>



Action for Climate Empowerment: Guidelines for Accelerating Solutions Through Education, Training and public Awareness.

UNESCO, United Nations Framework Convention for Climate Change [UNFCCC], Paris, Bonn: UNESCO, 2016, 81 p. ISBN 978-92-3100-182-6

Action for Climate Empowerment (ACE) is a term adopted by the United Nations Framework Convention on Climate Change (UNFCCC) and is a critical thematic focus in UNESCO's Global Action Programme (GAP) on Education for Sustainable Development (ESD). These guidelines provide a flexible, phased approach for policymakers and stakeholders, including NGOs, to the implementation of ACE through six elements: education, training, international cooperation, public access to information, public awareness and public participation. Activities exemplifying ACE implementation are provided from more than 20 countries in all regions of the world.

<http://unesdoc.unesco.org/images/0024/002464/246435e.pdf>

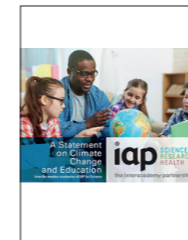


The Role of Universities in Capacity Building under the Paris Agreement.

Marilyn Averill, Saleemul Huq Victoria Hoffmeister, International Centre for Climate Change and Development [Independent University, Bangladesh]; Climate and Development Lab [Brown University, USA], Dhaka, Providence : ICCCAD, CDL, 2016 . - 7 p.

This paper discusses how empowering universities to educate students on climate change could create systems that continue to build countries' capacities to tackle climate-related problems in the future. It begins by detailing how the Paris Agreement establishes capacity building as a crucial means to enhance climate action. It discusses the challenges to climate actions by universities in developing countries, such as access to scholarly work and research, access to Internet and funding. The paper recommends changing funding patterns, so that capacity development funding constitutes investments that build local capacities in the long term. It proposes several strategies for capacity building.

<http://luccc.iccdad.net/wp-content/uploads/2017/07/Capacity-Building-Policy-Brief-July-4.pdf>



A Statement on Climate Change and Education.

InterAcademy Partnership [IAP], Trieste, Italy: IAP, 2017, 4 p.

This Statement on Climate Change and Education was released at the One Planet Summit which took place in December 2017 in Paris, France. The Statement lays out a series of recommendations on how effective climate change education can be promoted in schools and universities.

http://www.academie-sciences.fr/pdf/rapport/IAP_111217_gb.pdf

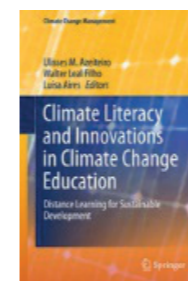


Climate Change Research at Universities: Addressing the Mitigation and Adaptation Challenges.

Walter Leal Filho, Ed., Cham, Switzerland: Springer International Publishing, 2017, 575 p.

ISBN 978-3-319-58213-9

This book provides a multidisciplinary review of current climate-change research projects at universities around the globe, offering perspectives from the natural and social sciences. It is an outcome of an eponymous symposium held in 2016 under the International Climate Change Information Programme (ICCIP). A diverse range of case studies demonstrate the impact of university research in addressing climate change impacts on farming and agriculture, water supply, air and water pollution, emergencies such as landslides, flooding and fires, and carbon emissions. These case studies emphasise the partnerships between universities and local communities, local government, and public and private stakeholders. The book also shows how universities are themselves adapting by mainstreaming climate change in curricula, implementing climate change capacity building for lecturers, and building transdisciplinary climate change research projects



Climate Literacy and Innovations in Climate Change Education: Distance learning for Sustainable Development.

Ulisses M Azeiteiro, Walter Leal Filho, Luisa Aires, Eds., Cham, Switzerland: Springer International Publishing, 2018 . - XIX, 388p. (Climate Change Management)

ISBN 978-3-319-70198-1

This book addresses the links between climate change and the threats it poses to sustainable development, from a distance education perspective. It contributes to the global debate on the implementation of education for sustainability, and specifically the role that e-learning and open education can play in this process. Contributors from Europe, Africa, North America, Australia, India and Brazil discuss current trends, challenges and innovations in sustainable development education and climate literacy. Specific issues addressed include open education in Small Island States, Climate refugees, Climate literacy, health curricula and teaching, governance, interdisciplinarity and interculturality. The book addresses pedagogical concepts as well as the impact of open education resources (OER) and MOOCs.



SARUA Climate Change Counts Mapping Study: Knowledge Co-production Framework.

Piyushi Kotecha, Ed., Southern African Regional Universities Association [SARUA], Johannesburg: SARUA, 2014. - 349 p. (v. 1)

ISBN 978-0-9922354-0-6

This report is the result of an extensive mapping study to establish needs and existing institutional contributions to climate compatible development knowledge production in SADC countries. Part of the SARUA programme on climate change and development, the study primarily involved the 62 universities that are part of SARUA. Summaries of the country reports are provided as well as regional syntheses of the country and institutional needs analyses The countries covered are: Angola, Botswana, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The publication includes strategic direction of knowledge co-production for climate compatible research and education in Southern Africa, and a short 'road map'.

<https://cdkn.org/wp-content/uploads/2014/06/SARUA-Climate-Change-Vol1No1-KCPF.pdf>

CONNECTING THE HIGHER EDUCATION WORK ON SUSTAINABLE DEVELOPMENT: THE IAU GLOBAL HESD PORTAL

More actions relating to SDG 13: Climate action initiatives are already identified and listed on the IAU global HESD portal – www.iau-hesd.net

They are accessible by searching for universities and their actions or via searching by SDG. To access initiatives, two search opportunities are offered via the search section, either:

- Enter a keyword (such as name of an institution, action, etc.)
- Click on the SDG you wish to look at more specifically to get a better understanding of the kind of actions undertaken: go to <http://www.iau-hesd.net/en/contenu/4675-agenda-2030-and-sdgs.html> and click on any of the SDG pictograms as displayed. The list will automatically appear. Each link in the list is connected to a specific action.

IAU is available to assist its members in identifying potential partners for their projects.

Additional examples of services offered to assist IAU Members in getting started with HESD at their University:

- **Bibliographical references:** via the Higher Education Bibliographical Database, one can access a bibliography on HESD. The IAU prepares one every 6 months. The search engine also allows to search for references at any other given time: www.hedbib.net
- **Tools:** IAU can help identify tools and contacts that could assist you in the development of institutional strategies to engage with the SDGs. We can recommend experts and member institutions which have embedded SD in their strategies already.
- **Speakers for events and workshops:** Additionally, IAU can assist member institutions identify speakers for their events or support the institution in organizing workshops related to the topic.

Opening page IAU Global HESD Portal: www.iau-hesd.net

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INTERNATIONAL ASSOCIATION OF UNIVERISTIES
UNESCO House – 1 rue Miolis
75 732 Paris Cedex 15
FRANCE



www.iau-aiu.net
www.iau-hesd.net



+33 (0) 145684800



contact@iau-hesd.net



@IAU_HESD
@IAU_AIU