

# Higher Education Sustainability Initiative



## CLIMATE CHANGE ACTION FOR SUSTAINABLE DEVELOPMENT



**IN SUPPORT OF SUSTAINABLE DEVELOPMENT GOAL 13:  
TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS**

**2015**





# Higher Education Sustainability Initiative

Climate Change Action for Sustainable Development

2015

United Nations Department of Economic and Social Affairs  
Division for Sustainable Development

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# Executive summary

Education for all has always been an integral part of the sustainable development agenda. The World Summit on Sustainable Development (WSSD) in 2002 adopted the Johannesburg Plan of Implementation (JPOI) which in its Section X, reaffirmed both the Millennium Development Goal 2 in achieving universal primary education by 2015 and the goal of the Dakar Framework for Action on Education for All to eliminate gender disparity in primary and secondary education by 2005, and at all levels of education by 2015. The JPOI addressed the need to integrate sustainable development into formal education at all levels, as well as through informal and non-formal education opportunities.

There is growing international recognition of Education for Sustainable Development (ESD) as an integral element of quality education and a key enabler for sustainable development. Both the Muscat Agreement adopted at the Global Education for All Meeting (GEM) in 2014 and the newly adopted post-2015 development agenda – Transforming our World: the 2030 Agenda for Sustainable Development, with a set of 17 Sustainable Development Goals (SDGs) at its core - include references to ESD. Although education is a dedicated sustainable development goal 4 - "*Ensure inclusive and equitable quality education and promote life-long learning opportunities for all*" – with a set of associated targets, it is also a key driver for achieving many of the other sustainable development goals.

In 2005, UNESCO launched the United Nations Decade of Education for Sustainable Development which reaffirmed the key role of education in shaping values that are supportive of sustainable development. The final report of the UN Decade of Education for Sustainable Development, *Shaping the Future We Want*, was launched at the UNESCO World Conference on Education for Sustainable Development, held in November 2014, Nagoya, Japan.

On the same occasion, as a follow-up to the United Nations Decade of ESD (2005-2014), UNESCO launched the Global Action Programme (GAP) on ESD with the overall goal to generate and scale up actions in all levels and areas of education and learning in order to accelerate progress towards sustainable development.

GAP identified five priority areas to advance to ESD agenda: policy support, whole-institution approaches, educators, youth, and local communities. UNESCO has established five Partner Networks, each corresponding to the five priority areas, as one of its main implementation mechanisms of GAP. The Partner Networks will create synergies for the activities of their members and catalyse actions by other stakeholders.

In the run-up to the United Nations Conference on Sustainable Development, Rio+20, the Higher Education Sustainability Initiative (HESI) was created as a partnership of several sponsor UN entities (UNESCO, UN-DESA, UNEP, UN Global Compact and its Principles for Responsible Management Initiative (PRME), and UNU) aiming at galvanizing commitments from higher education institutions to teach and encourage research on sustainable development, greening campuses and support local sustainability efforts.

In 2015, HESI officially became a member in priority area 2 of the GAP Partner Network: "*Transforming learning and training environments*".

Through its association with GAP, HESI will aim at assisting higher education institutions to develop sustainability plans in partnership with the broader community, and assist universities in incorporating sustainability plans into campus operations, governance, policy and administration.

With a membership of over 300 universities worldwide, HESI, through its close ties to various United Nations sustainable development platforms, provide higher education institutions with a unique interface between academia and policy making in the implementation of the 2030 Agenda for Sustainable Development and supporting the achievement of the Sustainable Development Goals.

## Introduction

The current report has been prepared by the United Nations Department of Economic and Social Affairs (DESA), through its Division for Sustainable Development, in collaboration with the partners of the Higher Education Sustainability Initiative.

The report was presented on the occasion of the event “*From Rio to Paris: Higher Education for Climate Change Action*”, held on 14 October 2015 at UNESCO headquarters, organized by the partners of the HESI initiative in close collaboration with the Kedge Business School, itself a signatory of the HESI initiative, as contribution to the XXI Session of the Conference of the Parties to the UNFCCC (COP21), to be held in Paris in December 2015.

In preparing the report, DESA reached out by email to all the signatories of the HESI initiative seeking concrete examples of what their institutions had taken towards climate change action in terms of teaching, research, outreach, or greening their campuses. In order to reach an equitable geographic representation of examples provided, DESA also conducted desk research studies by using information publicly available through websites of the HESI institutions and information provided in the HESI registry (<https://sustainabledevelopment.un.org/partnerships/hesi>).

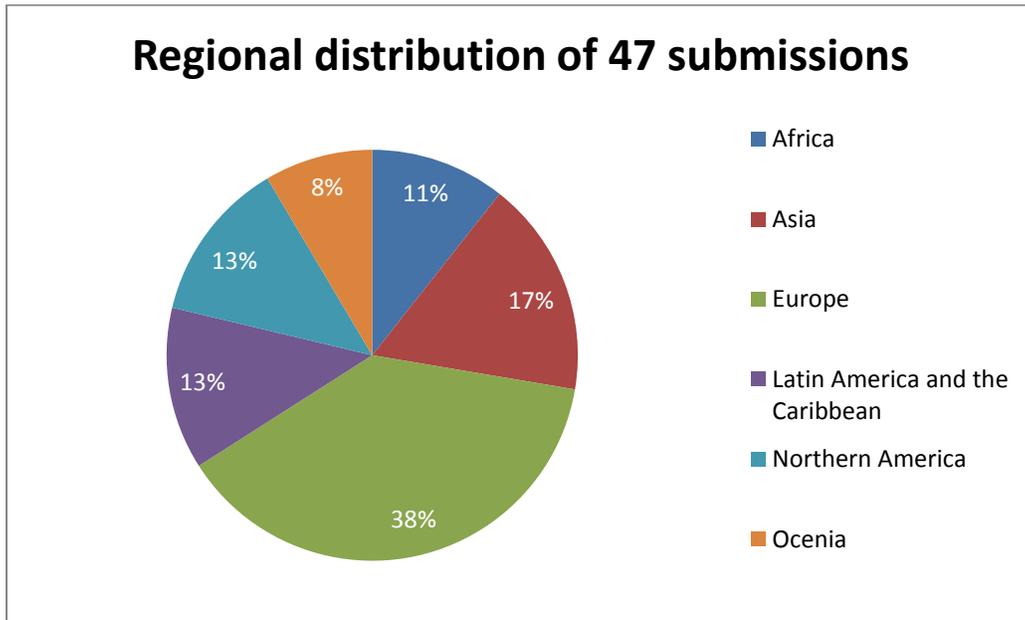
Through the Kedge Business School, co-organizer of the HESI event in October 2015, a strong outreach component was conducted in France, which resulted in over 25 universities in France joining the HESI initiative, all of which has been entered in the online HESI registry, and included as an annex to the current report.

In addition, in preparing for the COP21 conference, an open letter from a global alliance of tertiary and higher education sustainability networks was issued in early October, urging Ministers and Governments to acknowledge and strengthen the research and education role that universities and colleges play in addressing climate change. With networks on every continent pledging signatures, the global alliance represents more than 3000 universities and colleges worldwide. The letter is included in this report as an annex.

Higher education institutions can join the HESI initiative freely by signing up online through the *Partnerships for SDGs platform* – an online platform for encouraging global engagement around multi-stakeholder partnerships and voluntary commitments in support of the implementation of the sustainable development goals, launched at the United Nations Sustainable Development Summit in September 2015 - at: <https://sustainabledevelopment.un.org/partnerships/hesi>

# Climate change actions by HESI Signatories

All the 272 (at the time) signatories of the Higher Education Sustainability Initiative were contacted through email, seeking concrete examples on initiatives related to climate change action in terms of teaching, research, outreach, and greening their campuses.



Many of the universities listed below, are, in addition to be part of the Higher Education Sustainability Initiative, also signatories to UN Global Compact and its Principles for Responsible Management Initiative (PRME) (marked with asterisk \*).

## AFRICA

### The American University in Cairo \*

The American University in Cairo has been conducting research and publishing papers and a report focused on climate change and the negative impact it has on food security, agriculture, and rural development, as well as on water management and water scarcity. In 2013, the report *Impact of Population Growth and Climate Change in Lebanon and Egypt on Water Scarcity, Agricultural Output and Food Security* was published in partnership with the Middle East Research Centre of Columbia University, the American University of Beirut, the Earth Institute of Columbia University, the United States' Agency for International Development (USAID), and FHI 360. The report aimed to explore the negative impact of climate change on the populations of the two countries, and to show how the most vulnerable groups, such as children and women, are the most affected. The Cairo Review of Global Affairs included articles examining the combination of population growth and resource scarcity, the exacerbation produced by climate change and the challenges faced by local populations, in contrast with the distance between decision makers on climate change issues and the citizens facing the consequences of such decisions.

## Cairo University - Egypt

The following paragraphs sum up initiatives taken by the University of Cairo towards advancing sustainable development and climate change.

- *Teaching:* Cairo University partnered with Kassel University, in Germany, to start the REMENA master program for Egyptian, German, and international students. The objective of this international Master of Science program is to educate international students, who are expected to have working experience in a related area and hold a Bachelor of Science degree, on the sustainable energy sector. The program contents focus on the cooperation between countries in the Middle East and North Africa (MENA) region and Germany. The study of renewable energies and energy efficiency requires intensive studies of different theoretic and practical topics in technology, economy, law and intercultural affairs. The Project is supported by the German Academic Exchange Service (DAAD). For more information see <http://www.uni-kassel.de/eecs/remena>.
- *Research:* In 2013, the School of Engineering at Cairo University built an Egyptian model for the development of project for a system of concentrated solar power in the faculty campus in El-Sheikh Zayed City, Cairo. This project is carried out in cooperation with Science and Technology Development Fund (STDF). Our research team developed the entire design of the complex concentrated solar power from the pelvis parabolic type as well as the manufacture of a prototype, and then installed and tested it. The main objective of this project is to solve the problems of research and development for all system components. Thus, it is an essential and necessary step for the establishment of local production of intensive assembly solar modules in Egypt. Indeed, a research team consisting of, in addition to other experts, 35 professors and lecturers of Cairo University's School of Engineering, conducted a theoretical study to simulate the concentrated solar power complex and ended up with a detailed design of the compound to achieve a specific outlet. More information can be found here <http://eng.cu.edu.eg/en/experimental-station-solar-power-system/>
- *Outreach and Greening Campuses:* Cairo University incubated and has been nurturing the international youth movement "youthinkgreen" since 2013. The main mission of the movement is to educate and empower youth to solve sustainable development and environmental challenges locally and globally. The Egyptian group is formed by 20 volunteers, most of them students at Cairo University. The group has been carrying out several activities for a couple of years now, from awareness campaigns about climate change and environmental protection, to researching technical projects that can be implemented to green the university's campus and beyond. They have also been organizing youth sustainability summer camps. These camps, which the group has been organizing annually for two years now, focus on fostering sustainability and entrepreneurship and work on empowering talented youth groups to apply their innovative projects to solve Egypt's environmental problems. The last camp was organized by *youthinkgreen* in partnership with Cairo University, TU-Berlin Campus El-Gouna and the German embassy in Cairo. More information can be found here <http://www.dwz-kairo.de/news/dwz-supports-second-youth-national-sustainability-summer-camp-el-gouna>

## Lagos Business School – Nigeria \*

Lagos Business School (LBS), the first and leading business school in Nigeria, is taking planned steps to embed sustainable development and responsible management into all aspects of the institution.

The school is currently using an energy conservation plan to cut down energy use on the campus. Students, staff and members of faculty are kept informed of progress and milestones reached in energy conservation. A sustainability awareness campaign was also launched in 2015, using electronic notice boards to drive a sustainability mentality within the campus. Similarly, newsletters, articles and news inserts are employed to drive this awareness among external stakeholders and partners.

LBS is in discussions with the Lagos State energy authority, the Eko Electricity Distribution Company, to further its interest in embedded power stations, such that LBS campus will eventually be powered from an embedded power plant instead of generating its own power with generators. This will be a more reliable, sustainable and cheaper energy option in the long run.

In terms of teaching LBS has several MBA, Executive MBA and Executive Programmes courses which are focused on sustainability and combating climate change, these include:

- Corporate Social Responsibility/Sustainability
- Impact Investing and Entrepreneurship
- Sustainable Business Management
- Corporate Governance
- Leading a Sustainable Business
- Sustainability Master-Class
- Implementing a Sustainability Strategy in the Energy and Extractive Industry
- Sustainability Workshop for Non-Governmental Organisations
- Sustainability Workshop for Corporate Organisations and Non-Governmental Organisations
- Sustainability Workshop for Women-led Small and Medium Enterprises

Faculty members of Lagos Business School have also built cases, and carried out and published research focused on sustainable development particularly in Africa, such as:

- Ogunyemi, A. O. (2014). Green Forest Incorporated: Striving for Profit, People and Planet. (The Case Centre: 714 -036 -1). Lagos, Nigeria: Lagos Business School.
- Amaeshi, K., Adebite, E., Ogbechie, C., Idemudia, U., Kan, K. A. S., Issa, M., & Anakwue, O. I. (2015). Corporate Social Responsibility in SMEs: A Shift from Philanthropy to Institutional Works? *Journal of Business Ethics*, 1-16. doi: 10.1007/s10551-015-2633-1

Additionally, LBS has reached out and partnered with several notable organizations and universities internationally, such as the University of Edinburgh's Sustainable Business Initiative, to foster knowledge creation and corporate action towards solving sustainable development problems. Uniquely, LBS alumni are reputed for carrying out social responsibility projects aimed at creating a sustainable society. Our Senior

Management Programme 55 class in 2015 started a sustainability awareness campaign called “Sustain Nigeria Now”, which employs social media as a means to drive discussions in business and public circles on the need for a sustainability mentality in Nigeria.

Lagos Business School has a research centre dedicated to sustainability called the First Bank Sustainability Centre. The business school is also working on a sustainability policy and participating in the process of drafting Nigeria's INDC strategy (i.e., the Intended Nationally Determined Contribution) to the reduction of greenhouse gas emissions, as required by the United Nations ahead of the climate summit in Paris in November 2015.

## University of Nairobi - Kenya

To respond to the challenges raised by climate change and react to the consequences produced in Africa on vulnerable groups, a team of researchers from the University of Nairobi and Maseno University established the Climate Adaptation Research Institute (CARI), later renamed Institute for Climate Change and Adaption (ICCA), with headquarters at the University of Nairobi.

This institution has sought to ensure capacity-building programmes with formal training courses at post-graduate level, as well as professional short courses, to a variety of professionals coming from different backgrounds, performing extensive research in the field of climate change adaptation technologies, designing a framework able to support decision-making at government level as well as local and public sectors.

## University of Cape Town – South Africa \*

Within the University of Cape Town, the Global Fellowship Programme on Social Innovation of the Rockefeller Centre has been established in order to respond to present social and environmental challenges, and has been able to reunite, at multiple levels, international and local experts in social innovation. Within the programme, some fellows have worked on different aspects of climate change, such as disaster-risk reduction and climate change resilience strategy, climate variability/ change analysis and climate-proof investments.

Furthermore, the university developed a blog on *Sustainable Enterprise and Emergent Change*, collecting information and contributions on how business organizations can support sustainable development, and focusing on some thematic clusters such as climate change.

## ASIA

### Asian Institute of Technology – Thailand

Climate change has been included in the Climate Change and Sustainable Development Programme, both for the Master's and the Doctoral curricula. The Programme has been described as a tool to train students and therefore provide future professionals with the relevant knowledge background and skills to address climate change and sustainable management of resources. The Doctoral Programme consists of coursework and research areas in Climate Science and Climate Modelling, Energy Environment and Climate Change: Issues and Strategies as well as Land Use and Climate Change. Furthermore, the University has also been involved as Principal Investigator in a GIZ-funded Project “Emission Inventory Elaboration of Phon Phen Municipality, Cambodia”.

## Hokkaido University - Japan

Together with the Oulu University, Hokkaido organized an annual symposium in June 2015 to introduce the latest outcomes of both research projects and international programmes aimed at training young students on environmental issues in the northern regions of the country which are the most affected by climate change. The university also organized, in partnership with the Free University in Berlin, a summer intensive course called *Climate Change Policy in Asia and the European Union*. The subjects of study included into the programme were global climate change policy, climate change policy in the European Union, Germany, and Asia, as well as its future perspectives.

## Mapúa Institute of Technology – Philippines

The Mapúa Institute of Technology has committed itself to ensure the integration of Sustainable Development in the teaching and learning areas of all of its programs. The Sustainable Development Research Office was established in 2011 in order to conduct research on sustainable development and establish research-related actions, such as workshops, conferences, networking activities. Furthermore, the office led an environmental and occupational toxicology workshop in 2012 in partnership with the Swedish Chemical Agency and carried out initiatives on carbon footprint reduction (CFR).

## Mie University – Japan

Mie University is part of the UNESCO Associated Schools Project Networks, and provides students with an educational background on multiple areas related to sustainable development, such as climate change, disaster mitigation, and education for sustainable development. Furthermore, the University received an award called *Stopping Global Warming: Low Carbon* in 2011 and the *Outstanding Performance Award* in 2010. A particular attention has been devoted to the sharing of experiences and best practises. The University hosted in 2012 a seminar held by one of his students, working in Burkina Faso as a JICA (Japan International Cooperation Agency) volunteer. During the seminar, he described his experience in Burkina Faso and its work in creating awareness among students and the population about environmental issues, such as deforestation, desertification and climate change.

## Mongolian National University - Mongolia

The Mongolian National University (MNU) is getting well known as one of most promising higher educational organizations, with an ambition to build a national innovation and technology center, and it is working towards creation of an innovation-based entrepreneur educational and research environment.

MNU partners with government agencies, other secondary to higher educational institutions, local and international non-governmental organizations, and the private sector. The university is also involved in collaborative ventures with overseas business schools, universities and research organizations, including the Stanford University, University of California (UC Solar), Jeonju University and Chuson University in South Korea, Polzunav Altai State Technical University in Russia, University of Toyama in Japan, and Tongji University and Hanban University in China. MNU is a new member and first and only Mongolian university joined the Global Universities Partnership on Environment and Sustainability (GUPES) to date.

The MNU established an Innovation Technology Center in 2014, which is becoming an important integral part of the University from development and creation of lasting social value perspectives. Furthermore, MNU and

its faculty members have been actively participating in major events on sustainable/greener development, including green/sustainable education, green building practices, eco-living, and has been contributing to policy debates and discussions about greener development and developing new tools, including a training handbook on green economy and a green building rating system for Mongolia. MNU also has opened a universal college where vocational trainings are offered in the field that are relevant to Mongolian labor market demands.

For the past five years, MNU has been developing numerous training programs on sustainability-related issues, and using these programs for the training of undergraduate students, also for preparing presentations in local and international conferences, meetings and seminars and for research in relevant fields of study:

*Sustainable Development:* This training program is developed for students of the School of Economics and Business Management and is aiming to give an understanding of sustainable development concepts, the key challenges and pathways to sustainable development – that is, economic development that is also socially inclusive and environmentally sustainable.

*Ecology and Environmental Protection:* This training program is for undergraduate students to get an understanding about the importance of ensuring ecological balance, ways to efficient use of resources, environmental protection and ecology in overall. The training program is for students enrolled in Spike mining technology, geology and oil engineering courses.

*Environmental and Ecology Regulatory Framework:* This training program is students enrolled in Land management, Environmental Monitoring and Evaluation courses which give an understanding of the regulatory framework of environmental protection, resource efficiency, *Meteorology and Climate Change:* This training program is for students enrolled in Environment Monitoring and Evaluation course. By studying this training course, students learn about climate change issues, including global challenges and challenges that Mongolia is facing and main theoretical understanding of the meteorology which in the later stage can apply in practice before they graduate.

*Environment and Sustainable Development:* This training program is a compulsory for all students of the School of Tourism and Land Management, School of Mining and Engineering and School of Construction Engineering. The training program is aiming to give a clear understanding about sustainable development and green development in overall, fundamentals of Environmental Economics, Environmental and green development policy of Mongolia, Climate change adaptation strategy, and environmental pollution impacts on human health and other treats.

Some examples of MNU and its staff participation in trainings, seminars, workshops and consultancy services:

- Handbook on Introduction to a Green Economy, 2015, D. Nergui, Associate Professor, MNU, Ministry of Environment, Green Development and Tourism contract, supported by UNITAR
- MNB TV (Mongolian National Public TV) Weekly Program on Science, Technology and Innovation. Prof Sh. Batmunkh, who is a Science Journalist, member of World Federation of Science Journalist runs this TV weekly program since 2012
- Action Plan on Mongolia Green Learning Program was developed by Associate Professor D.Nergui, MNU as a part of "PAGE" E-learning course study, 2014 <http://www.un-page.org/resources/e-learning-courses>

There are also a number of MNU student-led initiatives in the area of sustainability:

- Student Eco-clubs: Students joined Eco-clubs advocate others to change their attitude, behavior and approach from gray to green.
- Waste-to-recycling initiative: Students work together with MNU admin staff to collect that solid waste can be recycled, and deliver them to recycling companies.

## TERI University – India

In its search for clean and sustainable energy, the TERI University installed in 2015 a 48 kWp solar rooftop system. In this context, the university also opted for a 'pay-as-you-consume' model to save on high energy costs from the very beginning. Under the power purchase agreement, the company has invested, operated and maintained the solar plant, supplying uninterrupted power to the university campus throughout the whole year.

The University has developed a dedicated Master Programme on Climate Science and Policy aimed at exploring adaptation options, identifying mitigation strategies and assessing climate change impact on human habitats and resources. Within its Master on Public Policy and Sustainable Development, this higher education institution has also offered two courses devoted to climate, namely *Urban Disaster Management and Climate* and *Resilient Cities and Climate Change: Vulnerability, Impacts Adaptation and Resilience*. Furthermore, the university has also been engaged in multiple research projects on ecosystem management.

TERI University was the recipient of the *Greenest University and Research Institutions* award and of the UNESCO Chair in Climate Science and Policy.

## Tongji University – China \*

In the framework of the 4<sup>th</sup> International Student Conference on Environment and Sustainability at the Tongji University, the University co-hosted in 2014, together with the German Consulate-General in Shanghai and the Friedrich- Ebert- Stiftung, the Symposium on Energy Transition and Climate Change. The declared goals of the Symposium were the setting of an international platform to connect global experts, the establishment of a policy-research-industry dialogue, as well as the identification of innovative solutions on energy technology and policy to achieve global sustainability and alleviate climate change and poverty. The University has also been engaged in the Shanghai Master Plan in order to help the city turn into a more environmentally sustainable metropole, providing the urban system with new technologies, global connectivity and contributing to raise awareness on climate change issues.

## University of Shiga Prefecture - Japan

*University of Shiga Prefecture 's Environmental Science Graduate School has offered, under the Division of Ecosystem Management, courses in Biosphere Environmental, Ecosystem Conservation as well as Bio Resource Management focusing on the dynamics of the ecosystem in relation to environmental changes determined by climate change and human activities on both the natural ecosystem as well as on the agroforestry ecosystem. Among the undergraduates' programmes, the School of Environmental Science provides, through its Department of Ecosystem Studies and the Department of Environmental Policy and Planning, courses on ecosystems management and protection as well as on environmental policy and planning.*

# EUROPE

## Aalto University – Finland \*

Aalto University strives for responsibility in all its activities. The university is part of the International Sustainable Campus Network (ISCN) and it has signed the universities' Rio+20 declaration. The information below has been divided into three parts in accordance with the ISCN reporting model.

*Environmental impacts of campuses:* Aalto University Properties, Ltd. has committed to a national energy efficiency agreement of property sector and strives to reduce its energy consumption by 6% by 2016. Measures to improve energy efficiency on campus included LED lighting investments at the Maarintalo building in Otaniemi.

- Aalto University Properties buildings mainly utilise green electricity. Half of the procured electricity was produced by means of wind power and half by bioenergy. Several evaluations and repairs were made to improve indoor air during the year. The largest measures were implemented on the Arabia campus.
- The efficiency of waste processing was improved in 2014 and 90% of the waste created in facilities was recovered. A recycling map was published for the Otaniemi and Töölö campuses. A safety advisor was appointed to improve the procurement and handling of hazardous substances, and users of such substances received training.

*Campus planning and indirect impacts:* The development of Aalto University's infrastructure complies with the principles of sustainable development. In 2014, biodiversity was strengthened by opening a garden of decaying wood at Maarinranta in Otaniemi. Implementation was based on a student competition in cooperation with the University of Helsinki, Finnish Association of Nature Conservation and Aalto University's Department of Landscape Architecture.

- The conditions for sustainable transport were improved by launching the Otaniemi smart mobility programme. University procurements were carried out according to the Act on Public Contracts and with consideration to environmental aspects.

*Sustainable development in research, teaching and impact:* All of the schools at Aalto University research and teach topics that are related to the theme of sustainable development and responsibility. The university has supported crossdisciplinary projects that address global challenges, such as ecology, a sustainable future and service development. A new operating environment called Energy Garage was opened in Otaniemi in 2014 as a meeting place for students, researchers and stakeholders with an interest in the energy field.

- Sustainable development themes were the topic of some 340 research articles or conference papers (11% of all publications). The university is home to numerous research groups with a research theme related to sustainable development. For example, the CESR research group operating in the School of Business organised an international corporate responsibility conference in 2014. Aalto University provides strong support for energy efficiency research in the Energy Efficiency Research Programme.

- In the Aalto Global Impact project, university researchers and students cooperate with a large group of partners to solve global development problems. The university coordinates the Rio+20 Implementation in the Nordic Higher Education Institutions project, which is funded by the Nordic Council of Ministers, and strengthens the implementation and steering of sustainable development in Nordic universities.

*Sustainable development organisation and resources:* Aalto University's Academic Roundtable for Sustainability and Sustainable Campus Board internal working groups provide the university management with recommendations on setting and monitoring sustainable development targets. The work input of one employee has been resourced for the coordination of sustainable development activities.

## Aix-Marseille Université - France

In Aix-Marseille University's research unit ESPACE, one of the research topics is adaptation in constraint environments. With an interdisciplinary social sciences approach (history, geography, psychology, anthropology, and sociology) we study how people or institutions perceive and adapt to environmental events like flooding, earthquakes and, in a more general way, climate change. The areas we study are mostly situated around the Mediterranean Sea and in the Arctic and Sub-arctic Regions. Parts of these studies are linked to the LABEX OT-MED. Please see <http://www.otmed.fr/spip.php?article763> for a more complete presentation of the Lab and research on OT-Med related topics.

Furthermore, the university participates or leads several ANRS on sustainable development, climate change and adaption of the populations in Arctic and sub-Arctic regions, as for example:

- ANR PUR (Polar urban centers) (see interview <http://nu.s-vfu.ru/interview/sebasten-gadal-kachestvo-zhizni-opredelyaetsya-kachestvennoy-organizatsiy-prostranstva/>)
- FP-7 (IRSES) POLARIS (ESPACE is in charge of the development of the GIS Observatory for Tourism development in Arctic)
- ANR BRISK Bridging Indigenous and Scientific Knowledge about Global Change in the Arctic (see <http://arcticbrisk.org/> and <http://onerc.developpement-durable.gouv.fr/fr/projet/brisk-lier-les-connaissances-scientifiques-et-celles-des-peuples-autochtones-sur-les>)
- ANR CLASSIQUE « Climat, Agriculture et Société Sibérienne - Quelle Evolution ? » (see [http://s-vfu.ru/news/detail.php?SECTION\\_ID=23&ELEMENT\\_ID=17697](http://s-vfu.ru/news/detail.php?SECTION_ID=23&ELEMENT_ID=17697))

Concerning training, the university is involved in education and knowledge transfer to local populations in the *Arctic Network School: Earth Environmental Observatories' Schools of Yakutia (zEOSY)*, which are e-learning programs in Russian, French and English for the use of remote sensing, spatial analysis and GIS methods for the environmental observations for local populations' initiatives on sustainable development and adaption of the climate change and globalization. In addition, we have developed expertise in geo-simulation of social-ecological systems that we transfer to Aix-Marseille University students.

Our lab also organized a workshop called Considering the Linkages between Human, Social, and Natural Sciences on the Issue of Global Change: An Interdisciplinary View of the Humanities (see <http://www.otmed.fr/spip.php?article805>). Furthermore, we participated in the evaluation of the plan of sustainable development of the "Grand Lyon" (his work is still underway).

Two research projects deal specifically with climate change and modeling (Team of ESPACE-Nice). The first one is the CASSANDRE project, which aims to anticipate the vegetation evolution in the Alpes-Maritimes French region in order to identify natural areas to protect before 2100. The model consists in regionalizing the outputs of the climate model ALADIN-Climat of the CNRM to locally evaluate the precipitations and the lowest and highest temperatures trends at the end of the twenty-first century. The second model, called SERENISSIM, proposes new methods of modeling, coupled with GIS, to evaluate the impacts of climate change on the organization of the coastal urban area of Nice and to provide decision-makers with a convenient tool which allows them to propose adaptation measures.

Finally, our team will participate in an event organized by Tara de Porte (IMERA) during la "Fête de la Science" and for the arrival of the Climate train in Marseille on 11 October 2015.

## Business School Lausanne – Switzerland

Business School Lausanne (BSL) was founded in 1987, became a member of the UN Global Compact in 2006, and joined PRME (Principles for Responsible Management Education) in 2010. These two affiliations were chosen, among others, because BSL is very aware of the important role education can and should play in developing future responsible leaders, in helping businesses to become more sustainable and in engaging in the public social debate.

In the last years, Business School Lausanne developed a new vision and mission, based on three pillars: responsibility, sustainability, and entrepreneurship. Based on the school's mission –To provide a learning platform that enables individuals and organizations to thrive by co-creating viable business solutions for our planet and its people– six values have been defined in collaboration with our faculty and students: professional engagement, solution-oriented partnership, force for good, lifelong learning, collaborative innovation, and courageous leadership. These values are shared with our new students twice a year and serve as a basis for our community to work effectively together. As a consequence of this strong, value-based approach, we have integrated sustainability and responsibility in all of our business programs since 2012. This achievement differentiates BSL from other business schools in Europe and has resulted in significant student interest.

Given that sustainability and responsibility are an integral part of each program and course since 2012, climate change is a topic addressed in several modules, across all of our programs. The future responsible leaders we want to produce need to develop a variety of skills and competencies to be able to bring the required changes in the way of doing business. These include a global, holistic, long-term and visionary perspective, which will allow students to question the dominant business paradigm, such as the exclusive focus on shareholder value. As important as this ability to see the big picture is, the capacity to drive change, to motivate people and to align all efforts of a company towards new goals, is a result of awareness among students and future leaders of the skills they will need. These are mostly "soft skills" that can only be developed if they are regularly practiced during the students' studies. This extension from teaching not only knowledge, but also developing skills and changing students' attitudes has resulted in further pedagogic changes at BSL. Our research shows that business leaders confirm that these competencies are the ones they are looking for.

Besides its teaching activities, Business School Lausanne has developed a range of applied research activities. Dr. Katrin Muff (Dean of BSL) and Prof. Dr. Thomas Dyllick (Head of IWÖ at the University of St. Gall) have published a paper entitled [The Business Sustainability Typology](#), which differentiates the journey from business as usual to true business sustainability in a systematic way. The complete list of BSL's publications can be found here: <http://www.bsl-lausanne.ch/faculty-and-research/research-and-publications>.

## The Catholic University of Portugal – Portugal

The Catholic University of Portugal (UCP) aims to contribute to climate change adaptation and mitigation in its region mainly by leading the “FUTURE – the 100.000 trees project in Porto Metropolitan Area”. The UCP is promoting this project as the main leading partner of the “Porto Metropolitan Area Regional Centre of Expertise on Education for Sustainable Development” (CRE.Porto), which is a network –a strategic alliance– of 30 local, regional, and national organizations working together to promote education training and action for sustainability in the region. CRE.Porto was established in 2009 after the official acknowledgement of the United Nations University (UNU). The Porto Metropolitan Area (PMA) is a 2.000 square kilometres territory in northern Portugal, which comprises 17 municipalities. About 16% of the Portuguese population lives in the area (1,750,000 residents).

The project FUTURE builds upon the outcomes of the “Porto Metropolitan Area Environmental Strategic Plan”, a participative plan that mobilized 5000 citizens and 200 organizations (also lead by UCP). One of the stakeholders’ shared vision is “to create, care and acknowledge the importance of native urban forests in the region”. We believe this vision helps fulfil several environmental, social, and economic challenges.

Trees and urban forests provide multiple and highly demanding goods and services. Working as green infrastructures: they filter air, water and sunlight; moderate harsh local climates; cool air and slow wind and storm water runoff; reduce urban heat island effect and air pollution; act as a carbon sink against climate change; provide recreational opportunities; improve wildlife habitat and biodiversity; and create other countless health, social and economic benefits. Several studies state that trees are the best “medicine” for negative thoughts, stress, and headaches. Simultaneously, cities with urban forests attract more talent, innovation, investment and visitants. Research results indicate that urban forests can positively and significantly contribute to the enrichment of tourist experience and destination loyalty.

It has also been recently highlighted that the best technology to pull carbon from the atmosphere is planting new trees (afforestation). It is low-cost (compared to other alternatives), embodies fewer uncertainties and offers extra benefits to the society. It takes 15-40 years for a tree to grow large enough to deliver meaningful benefits, so planting trees now is essential for the future.

The project FUTURE we are leading at UCP is co-creative, collaborative, participative and synergic and the main quantitative goal is to plant and care for 100,000 native trees in the region (by 2017). In four years, 63,570 native trees of 40 species were planted in 170 hectares of the region and are continuously nurtured. This outcome is due to the dedication of 212 technical and operational staff from 60 organizations (governmental, NGO, public and private) as well as 9,285 voluntary participations of citizens (30,203 volunteer hours).

It is expected these 63,570 trees will pull 322 tons of carbon/year from the atmosphere. It is also estimated that they will provide €2,656,717 in ecological services/year (based on the ability of the adult trees to capture CO<sub>2</sub>, atmospheric pollutants and intercept rainwater).

## Cranfield University – United Kingdom \*

Cranfield University has worked with international researchers, UK agribusinesses and government agencies to identify the impacts and potential adaptations related to agricultural water resources and irrigated crop production. Studies have covered Spain, Sri Lanka, Southern Africa and South Korea, as well as the United

Kingdom, and a variety of crops such as rice, sugar cane, potatoes, and strawberries. Results have been published in high impact academic journals (e.g. Knox et al., 2012; Daccache et al, 2011; Chung et al, 2011; De Silva et al, 2007; Green and Weatherhead, 2014,,; Rodriguez-Diaz et al, 2007; Tompkins et al 2010), in information leaflets for stakeholders, and in policy reports for government.

In the United Kingdom, Cranfield led the agricultural sector analyses in the first UK Government Climate Change Risk Assessment (CCRA, 2012; Knox and Wade, 2012) and recently provided adaptation evidence for the Committee on Climate Change (Knox et al., 2015). Internationally, Cranfield supported the Government's Department for International Development assess climate impacts on crop productivity in Africa and South Asia (Knox et al., 2012).

The university leads the development of the CLIMSAVE Integrated Assessment Platform (Holman et al; in press; Harrison et al., 2015), a unique web-based modelling and visualisation tool that allows stakeholders to analyse climate change impacts, vulnerability and adaptation options across Europe for agriculture, forests, biodiversity, coasts, water resources and urban development ([www.climsave.eu/iap](http://www.climsave.eu/iap); <http://climate-adapt.eea.europa.eu/tools/general>).

At Cranfield we have improved the understanding of climate change impacts on groundwater, the world's largest accessible store of freshwater, through the International Association of Hydrogeologists' Commission on Climate Change and Groundwater (Holman et al., 2012; Taylor et al., 2012), partnered with the UNESCO-IHP GRAPHIC programme.

Working with Indian scientists, we have improved our understanding of climate change impacts on food production, water resources and hydropower in northern India, deploying a series of outreach workshops attended by the President of Indian Farmers Association, almost 100 local farmers, reservoir managers from Bhakra Beas Management Board, NGOs working in watershed management, local political leaders, engineers from States irrigation department, legal advisors to farmers associations and policy makers, water resources faculty and research scholars from IIT Roorkee and NIT Hamirpur.

Finally, Cranfield staff have researched the climate change risks and adaptations across a wide range of other topics, such as WASH (Water, Sanitation and Hygiene) in developing countries (eg Heath et al, 2012), telecommunications (eg Jude et al, 2013) and water utilities; supporting the UK implement the Adaptation Reporting Power (ARP; Climate Change Act, 2008) with ca. 100 infrastructure operators, regulators and public bodies. Our detailed analysis underpinned, and was used as supporting evidence, in the UK Government's consultation on the proposed second round of the ARP.

## EPF – France

The EPF's commitment to sustainable development and the climate is very present in all its activities: teaching, research, strategy and governance, communication and awareness

EPF teachings are greatly devoted to sustainable development, especially through various programs such as environment, urban planning, energy, environmental and innovative engineering, industrial technologies for the environment, sustainable building, water-energy and environment, and conventional and sustainable energy. The issue of climate change is discussed in depth both by the education provided (climatology, environmental risk management, life cycle analysis, carbon footprint, renewable energy, sustainable development strategy, etc.), as well as by the students projects (assessment of energy performance of ecodistricts, measurement of the school energy consumption, energy optimization of washing stations by photovoltaic solution, creation of a carpooling website for students, smart light project green TIC Campus, etc.)

Currently EPF is developing several research projects aimed at limiting the impact of human activities on climate:

- The "Energy in the Mediterranean region" projects are based on two research themes: solar power and storage (thermal concentrating solar system, photovoltaic and concentrating thermoelectric materials) and sustainable housing (energy efficiency buildings, development and optimization of cooling systems). The activities of this research group have strong considerations and impacts on climate.
- The "Clean and sustainable chemical processes" projects focus on the use of polymeric materials from a green chemistry for durable applications such as metals recovery from wastes and wastewaters. This activity affects the climate since limiting the use of natural resources reduces emissions of greenhouse gases.

With green buildings, the school demonstrates a strategic commitment to sustainable development and climate. The support of a sustainability committee and sustainability delegates on each campus (Sceaux, Troyes and Montpellier), help each year the undertaking to promote actions for the climate - partially renewable energy supply, limit color prints, sorting of wastes, etc. Working closely with the city of Sceaux, the school has been developing a soft mobility program for users (e.g., bicycles lending, users carbon footprints).

During their first week at EPF, students participate in a workshop on the theme of sustainable development and social responsibility in an effort to raise awareness of students. A conference on sustainable development business is organized for students and moderated by alumni who give a presentation on a current or past activity on sustainable development. For one year in each campus, the fourth year students (urban planning at Troyes, Energy at Montpellier and Environment at Sceaux) organize a congress for other students to raise awareness of the issues related to climate change. A beehive was installed in 2015 on the campus of Sceaux to sensitize the entire EPF community to the preservation of biodiversity.

## ESSEC Business School – France \*

In the context of the COP21 conference and Eco-Campus 3 International Colloquium "Commit and Act Together for the Climate", ESSEC Business School wished to share the initiatives undertaken by its professors, staff members, students and alumni in order to develop synergies and share practices to mobilize and contribute to the common good. This information will be communicated by the HESI (Higher Education Sustainability Initiative), the "Conférence des Grandes Ecoles" and the "Conférence des Présidents d'Universités".

In terms of **strategy**, the ESSEC Dean/President and Senior Administration committed to mobilize and value climate-related initiatives.

In terms of **education**, our Master of Science in Management program offers the Energy and Commodity Finance Track (Prof. Andrea Roncoroni / Prof. Francis Declerck) and the Sustainable Energy Economics (Prof. Estefania Santacreu-Vasut). Also, a new seminar entitled "Understand and Change the World" is now required and one course is about "Towards COP21: The CAC40 and the Energy Transition". Finally, the "Issues in the Energy Transition" seminar is offered by Prof. Laurence de Carlo, as well as in our Advanced Master's Degree in Urban and Real Estate Management.

In terms of **research and publications**, several ESSEC professors (Prof. Guillaume Chevillon, Prof. Charles Cho, Prof. André Fourçans), Associate Researcher (Emmanuel Vivet) and a PhD student (Helen Etchanchu-Schneider) published articles in professional and academic (peer-reviewed) outlets and the media on climate politics, astroturfing, climate skepticism, climate negotiations, climate econometrics and governance of business-stakeholder relations.

In terms of **events**, (1) Les Mardis de l'ESSEC hosted Nicolat Hulot, Special correspondent for planet protection on January 2015); (2) the 3rd International Forum of the Council on Business & Society (an ESSEC initiative) on Energy and Environment took place on September 25, 2015; (3) the ESSEC Center of Excellence for Management & Society (CEMAS) co-organized the Eco-Campus 3 International Colloquium and featured several speakers (Dean/President Jean-Michel Blanquer, Prof. Laurence de Carlo, Prof. Christian Koenig about the Council on Business & Society, and ESSEC Alumnus Ludovic de Nicolay with the Trophies for Renewable Energies and Energy Efficiency; (4) Jean-Michel Blanquer is likely to make a speech (TBC) during two COP21 conferences (Blue Zone and Civil Society Zone) about "The responses of higher education and research to scientific and social issues of climate change"; (5) ESSEC Involvement week will feature "The Earth, our Inheritance" exhibition in partnership with the Antoine de Saint Exupery Youth Foundation, and a guided tour with the author, Jean-Pierre Guéno, as well as the "Eco-friendly gestures at ESSEC" exhibition; (6) the ESSEC Alumni / Sustainable Development Club will present the 7th Trophies for Renewable Energies and Energy Efficiency with Prof. Charles Cho as a jury member and a Trophy for Climate was created and will be undertaken by the Center of Excellence for Management & Society.

Finally, in terms of **campus environmental management**, the topic was taken into account by the Environmental Group within CSR@ESSEC. There were also actions taken by the New Construction and Maintenance department. Finally, major student associations (Bureau des Elèves, NOISE, Raid ESSEC...) were mobilized to organize awareness-raising activities and projects that can have a positive impact for the environment and the climate.

## Grenoble INP – France

Grenoble INP is strongly and actively involved in the field of sustainable development. As a higher education institution delivering 1500 engineering degrees each year and as a major institution in French scientific and technology research, we aim to innovate for a sustainable future.

Sustainable development is fully included in our policy and a vice-rector is specifically in charge of this field. A "Plan Vert" has been now active for two years and more than 150 actions are being in operation. To strengthen the self-evaluation of these actions, since 2014, we obtained the ISO26000 certification with a silver level. As a complement to evaluate the efficiency of our policy, a review of our carbon emissions has been followed since 2011.

In terms of teaching, to fulfil our commitments, INP has embodied mandatory courses and workshops on Sustainable Development and Ethics in teaching programs that aim at enhancing climate literacy. In addition, we developed a comprehensive set of data and tools at the Bachelor, Apprenticeship, Master and Doctoral levels that empower students with broad-based, practical knowledge that can be readily implemented in an industrial context. Programs encompass eco-design, green logistics, energy and water issues, paper and biomaterials.

PIME, a program in environmental management, is common to all engineering schools within Grenoble INP, and new pedagogical approaches are being developed with an emphasis on problem solving skills within multi-disciplinary projects.

A European Leadership in Sustainability (LeadSus) project has been successfully launched. Its general objective is to transfer and integrate sustainability leadership skills to European industry and institutions. Our teaching model is based on ongoing research activities that are built on a collaborative culture with both local and international communities. Among more than 50 major research projects dealing with sustainable development, some topics can be emphasized:

- Smartgrids to develop autonomous and adaptive control process for distribution of electrical energy, with the objective of reducing its consumption
- Smart building for the future, a project to achieve comfort, energy and technologies for old people
- Development of bio-refinery and lignocellulosic material to replace oil by biomass, a renewable resource
- New eco conception methods to take into account ecological concepts and recycling in industrial engineering
- Development of new material with electro catalysis, more efficient and sustainable for the whole life cycle
- An industrial chair to develop a new research topic "ecology for acoustic landscape in the sea and in relation with geophysics"
- Development of renewable energy: grid of sea turbines, hybrid energy storage, electric bicycle, photovoltaic and piezoelectric conversion

Grenoble INP is also acting to improve its societal responsibility. The institution takes care of its consumption of resources (electricity, water, paper, etc.), sorts and recycles all its wastes. Grenoble INP introduces sustainable development in its work life, such as transportation, along with local authorities. A strong support to student's actions is also part of our policy.

## International Sakharov Environmental University - Belarus

Created in 2007, the "Education for Sustainable Development" Coordination Centre has been focusing on researching, collecting, and disseminating information on national and international experience in the field of Education for Sustainable Development (ESD), identifying new methodologies for ESD and establishing consultations, round tables, seminars and conferences on ESD and ESD- related topics. The university has been also engaged in the implementation of international educational projects such as the *Youth Ecoteam Program for Belarus: Teaming Up to Care for Climate Saving* from 2009-2011 together with IVN Association for Environmental Education and Nature Protection. In partnership with Norges Naturvernforbund, *SPARE - School* project on application of resources and energy has been implemented since 2009.

## Kedge Business School – France \*

Kedge Business School has the largest faculty dedicated to sustainable development and corporate social responsibility (CSR) in France. Its expertise on topics connected to sustainable development and CSR is internationally renowned. For example, the development by Frank Figge and Tobias Hahn of a management

tool to measure and monetize corporate sustainability performance (including CO<sub>2</sub> emissions) has been recognized by the German Council for Sustainable Development. The school's expertise is also translated into innovative pedagogic approaches and program content. Students can complete courses that qualify them as 'Carbon Footprint'® specialists, and are exposed to climate change issues through the school's viral communications activities. Besides acquiring necessary knowledge and skills, student progression towards becoming more informed managers and world citizens is monitored through the Sustainability Literacy Test (SULITEST), a tool developed in collaboration with other institutional partners. This is the first test that measures individual knowledge of sustainable development and thus far has been completed by 31,000 students from 360 universities worldwide.

Kedge Business School is a proactive member of international networks intent on sharing understanding of sustainable development issues and on shaping future policies. For example, in collaboration with other partners, Kedge:

Organizes an annual international research conference on corporate responsibility

- Is hosting the 10th United Nations simulation (Simonu-MUN). This event takes place in November 2015, during Climate Change week and involves several hundred students
- Is co-organizing a HESI event at Unesco during the forthcoming Paris Climate Change Conference (COP21) in October 2015.

The school is committed to improving its own performance as a responsible citizen and this is reflected in its operational activities, notably sustainable campus management initiatives. For example, Kedge is reducing the carbon footprint of its campuses by, amongst others, installing 300 m<sup>2</sup> of solar panels in 2009 and introducing a "Campus Mobility Plan" for students and staff. This plan includes a platform for affordable electric car rental, free electric bike fleet and the planned development of a platform for car sharing and public transport.

## International University of Monaco – Monaco \*

In fulfilling its commitments as part of the HESI community, the International University of Monaco (IUM) has incorporated courses and workshops on sustainable development, ethics and corporate social responsibility, and green business management in all of its programs. The core material is often complemented by guest lectures on topics such as food waste management, economic, social and environmental potential of the world's oceans, or green urban mobility. In addition, professors and students at the bachelor, master, and doctoral levels regularly engage in research projects on sustainability-related topics like creating shared value, ethics in business, smart city management, social progress measurement, socially responsible investments, or sustainable luxury trends.

In fulfilling our mission to train tomorrow's responsible leaders, our endeavour goes way beyond the classroom, with our students participating regularly in numerous projects and events where they can propose and put in practice their solutions to a diverse range of sustainability challenges. These include participating in charity runs or other fundraising for local children- and health-focused NGOs (e.g., Mission Enfance, Children and Future, Fondation Flavien, Monaco Red Cross), creating and managing a social and sustainability-oriented student association (TwoHelp), organizing a forum on socially responsible entrepreneurship (The EDGE), participating in conferences on topics like "Altruism in Modern Capitalism" or "Science, Technology and Innovation, and the Potential of Culture for Promoting Sustainable Development and Achieving the Development Goals", or working on corporate projects with local companies (e.g., the organization of the First Solar Grand Prix in

Monaco), or promoting the new legislation on banning single-use plastics in Monaco under our framework agreement with the Prince Albert II of Monaco Foundation.

We also successfully launched a campus greening program in 2013, consisting in introducing paper-recycling bins in the library and near the major printing spots; introducing recycling facilities for batteries and used toner cartridges; using only energy-efficient lights on our premises; using only recycled paper for printing; encouraging double-sided black-and-white printing; encouraging the reuse of scrap paper whenever feasible; reducing the amount of print-outs by using several newly launched online systems (Online Monaco for course materials; MyIUM for the student intranet, or HyperPlanning for the course schedules); and installing water fountains on all floors to reduce the use of plastic water bottles.

Finally, the university regularly shares its achievements with the international networks that it belongs to, namely by publishing our PRiME Sharing Information on Progress (SIP) reports <http://www.unprme.org/reports/IUMPRIMESIP3.pdf>

## Nottingham Trent University – United Kingdom \*

Nottingham Trent University (NTU) has many award-winning projects that address climate change in operation, curriculum, research and community outreach. We would like to highlight two. If adopted by universities across the world, the reduction of greenhouse gas emissions would be immense.

- How can universities help business to combat climate change? Nottingham Business School (Nottingham Trent University) has teamed up with Nottingham-based social enterprise NetPositive to do exactly this. As part of their core curriculum final year undergraduate students act as consultants to local businesses, helping them to reduce Greenhouse Gas Emissions and achieve Investor in the Environment (iIE) accreditation. While learning about related research and theories, students directly apply these to the organisations allocated to them. Based on their own research, the students also develop new ideas adding to existing knowledge of how to reduce Greenhouse Gas Emissions. The latest 10-week programme was run in collaboration with 150 final year students and 32 organisations and local businesses in autumn 2014. The programme follows on from a Greenhouse Gas Management Project which has been run by Nottingham Business School (NBS) since 2011 involving over 200 students and 75 companies from shopping centres to Indian restaurants. Businesses have commented positively on the professional work of the students, applauding in particular, their evidence-based, innovative ideas on how to reduce carbon emissions. Ideas have ranged from plans for a carbon-free Christmas in a shopping centre to unusual ways to reduce lift usage and change behaviour of employees. The project has demonstrated the role business schools and students can play in providing practical support in the shift to a low carbon economy, by helping businesses across all sectors work on reducing their environmental impacts and develop niche low carbon offers and products. The student participation provides the skills, funding and time that often prevent businesses from gaining accredited Environmental Management Systems. In return, the project enables students to gain and enhance employability skills that cannot be learnt in the classroom. NBS was awarded the Guardian University Award 2015 in Business Partnership for this project, on which further information can be found here: <http://www.theguardian.com/higher-education-network/2015/mar/19/business-partnership-category-winner-and-runners-up>

- Sustainability in practice certification: A “Sustainability in Practice” (SiP) certificate was designed in 2013 in the style of a small private online course (SPOC), and was based entirely online. It is offered to all 26,000 students at NTU simultaneously. Now running in its third year and having been shortlisted for the Green Gown awards in 2014, approximately 6,000 students have so far engaged with it; approximately 250 have gained the certificate. The SiP has two major advantages: 1) It introduces students to the topic of sustainable development in only four sessions (introduction, disciplinary approach, interdisciplinary approach and solutions), and 2) It has a strong focus on sustainable solutions – this means that we encourage students to find their own solution to a problem related to their own discipline. This way we tap into the creativity of students and are often impressed by their ideas. This year we are encouraging students to also create practical solutions and apply them locally. Other universities could copy this approach or we could develop something together, which encourages students worldwide to seek solutions. This could work similar to crowdsourcing. More information about this can be obtained from [petra.molthan-hill@ntu.ac.uk](mailto:petra.molthan-hill@ntu.ac.uk).

## SKEMA – France \*

Since its creation, SKEMA has taken up the challenge of being a global school with several campuses located in zones of high growth (Europe, Asia, America), evolving in synergy with local and international stakeholders.

SKEMA’s mission is to train and guide high-achieving students and practitioners from a variety of backgrounds in their professional and personal development in respect of ethical and responsible principles and practices. To do so, the school develops academic and applied research, pedagogical innovations, global and local engagements, social and sustainable campus policies.

SKEMA is deeply involved in sustainable development and climate change, and contributes to the development of the regions and countries where it is located. Some of the school’s initiatives for COP 21 include:

- “Mobilité Urbaines Campus” is a collective project with all universities, business schools and engineering schools of the north of France (COMUE LNF), that aims to reduce campuses gas emissions and develop responsible behaviors. The project has four objectives: 1) To optimize travels related to professional and student activities; 2) To promote alternative transport modes to the individual car; 3) To promote soft mobility (e.g., use of bicycles and public transit, pedestrian accessibility, carpooling facilitation); and 4) To create economic, social and environmental gains.
- In July 2015, the school presented the **SKEMA Greenhouse Gas Reporting Balance and The Greenhouse Gas Reduction Plan 2015-2017** (insulation, frame waterproofness of , elimination of equipment using R22 gas, upgrading of air handling units, centralized regulation of temperature, etc.).
- On 21 -22 September 2015, SKEMA will take part in the North of France Mobility Challenge, when 51% of employees present on the SKEMA Lille Campus will use alternative transport modes (public transit, subway, train), bicycles, on foot.
- “Universités Zéro Carbon” is a project with the Regional Council of the North of France and the Chamber of Commerce of Lille. It involves the following four actions: Remote working/ Visio conferencing / Campus Quality of Life/ Café Découverte / Tonic Incubation.

## University of Gloucestershire – United Kingdom

The University of Gloucestershire committed to 'whole-institution' change for sustainable development in 2007, and is recognised for its leading education for sustainability work. Since Rio+20, we have moved beyond our early successes in the formal integration of sustainability into governance, policy and strategy. Our focus is now on strengthening both our immediate practical impacts and the deeper social impact of our education and the experience we offer to students. Some of our recent achievements include:

### Modelling Sustainability:

- *Carbon Management Plan*: 30% scope 1 emissions reduction plus annual scope 2 reductions, giving us the 2<sup>nd</sup> lowest carbon emissions per head in the UK universities' Green League. Action on scope 3 with Sustainable Travel Plan and new cycling and car share schemes.
- *Sustainable Procurement*: University caterers achieved prestigious 'Gold' UK Soil Association 'Food for Life' standard for responsible local sourcing, 89% of dishes prepared on site and food growing projects on campus. Stronger sustainability criteria have been integrated into decision-making and monitoring of all contracted suppliers.
- *Waste Management* – 54% waste reduction and 83% less waste to landfill, saving 30 tonnes of CO<sub>2</sub> and exceeding 2020 waste targets. University libraries recycled 9,253 books, saving 147 trees and 64,587 gallons of water. Student residences collected 1,419 bags of goods since 2012, raising £25,000 for charity and saving over 100 tonnes of CO<sub>2</sub>.

### Encouraging Sustainable Business:

- *Improving Corporate Leadership*: Appointment of new University Council member for sustainability; stronger governance role and representation on Sustainable Development Committee; renewed ethical investment and de-investment commitments in financial strategy and corporate planning.
- *Supporting Student Enterprise*: Student Union pioneered non-profit social enterprises run by students (chilli chutney, honey, and cider), creating products on campus and giving students experience in business models, production and marketing for sustainability.
- *Local Sustainability Partnerships*: increased collaboration on sustainability with local organisations through Local Enterprise Partnership and UNU RCE Severn, working on biodiversity planning, arts and community gardening projects, plus student sustainability placements with health, sports, political and environmental organisations.

### Living and Learning Sustainability:

- *Curriculum Change*: University committed to Education for Sustainability in all new course approvals and supported 20 new learning innovation projects through its *Learning for Sustainable Futures* scheme. Advised on key sector developments such as UK Quality Assurance Agency ESD guidelines and informed the 2014 UN DESD Summit in Japan.

- *Student Experience:* Student Union won £289,790 for initiatives that involved over 3,000 students since 2012 in sustainable sports, business, retail and green auditing projects. Sustainability and ESD training offered to student course representatives and new sustainability internships established in university departments.
- *Professional Development:* New focus on sustainability responses in our professional departments and inclusion of Education for Sustainability through central academic staff training (Postgraduate Certificate in Academic Practice). Leadership of UE4SD, a new European Commission project on professional sustainability competences in higher education across 33 countries.

Through this strategic approach, we at the University of Gloucestershire continue to think, learn and act for sustainability in more connected ways across our corporate, academic and outreach activities, to inspire future collaboration and transformation for sustainability within and beyond higher education.

## University of Gothenburg – Sweden \*

According to Cortese (2003), collaboration between education, research, university operations and external community, is critical for achieving a transformative change and a sustainable campus. With its well-established Environmental Management System (EMS), the University of Gothenburg is in a strong position to implement a climate strategy and carry out systematic monitoring of this.

The main objective of the university's climate strategy is to reduce total carbon dioxide emissions by the year 2015 by at least 20 percent compared with 2008 levels, and to reduce total energy usage by 10 per cent for the same period. By the end of 2013 the target was almost reached, with a reduction of total carbon emissions by 19 per cent as compared to the baseline year 2008. Total energy use is reduced by 15 per cent, exceeding the 10 per cent goal. Other initiatives are:

- The student initiative "Fossil Free University of Gothenburg" and "Meat-free one days" at the University's cafés and restaurants.
- An internal Climate Committee consisting of eminent researchers within the climate field, connecting research and operations.
- The University giving a series of interdisciplinary climate seminars.
- Together with the city of Gothenburg and Sahlgrenska university hospital, the University is setting up a "Green Itinerary" aiming to develop an easy accessible campus without increasing motor traffic.
- In order to balance carbon dioxide emissions from travel, carbon offsetting is applied by investing in a Gold Standard Clean Development Mechanism (CDM) project.
- An internal climate fund, financed by part from carbon offsetting fees, is being implemented.
- Cutting energy and reduction of carbon dioxide emissions at the Laboratory for Experimental Biomedicine (EBM)
- Students at the School of Business, Economics and Law were assigned to count on profitability and environmental benefits of installing a solar PV system on the school roof.

The climate strategy is a university-wide strategy, including collaboration between faculty, administration and management, as well as with external stakeholders such as property owners. With the support of its EMS, the University of Gothenburg manages climate action with a systematic approach, both in implementation and

follow-up. This creates opportunities for technical solutions and social learning processes, and allows the University of Gothenburg to serve as a living laboratory and a role model for sustainability

## University of Greenwich – United Kingdom

The University of Greenwich is proud to be seen as a leader in advancing sustainability within the higher education institutions (HEI) sector. Using innovative approaches to tackle challenges creatively, we are seeking to deliver sustainability systematically and strategically, sharing our learning with others, and engaging broad stakeholder groups. To help us meet sustainability and climate change goals we are:

- Developing a sustainability strategy engaging senior management, key decision makers and all stakeholders responsible for enabling sustainability delivery
- Complying with ISO 14001 and expanding this to all areas of our operations
- Delivering our Carbon Management Plan including piloting cutting edge technologies such as our combined heat and power (CHP) plant
- Delivering sector best practice in areas such as sustainable food and biodiversity
- Working directly with our academics to help them and their students understand sustainability from a principles perspective. We are now undertaking action to more effectively integrate education for sustainable development (ESD) within the organisation's teaching approaches
- Engaging researchers in better understanding the relationship of their work in delivering sustainable outcomes
- Supporting our student's union in the development and delivery of student led actions illustrating the capability of students to become sustainability leaders
- Capacity building and actively communicating to staff and student about the relevance and importance of sustainability in their working and wider lives
- Empowering staff to create exciting sustainability projects of relevance to their departments by making adaptations to the NUS Green Impact model
- Sharing our experience, knowledge and skills with our local communities to accelerate sustainable change in the regions where we operate
- Develop collaborations with business and governmental organisations to illustrate how academic institutions are a key part of delivering future sustainability solutions
- Partnering and contributing to the HEI community and organisations that represent them

More information can be found at our website <http://blogs.gre.ac.uk/greengreenwich/> illustrating the breadth and depth of our actions and opportunities to get involved.

We are continually seeking means to improve on our work, seek local ownership, action and responsibility and rewarding and recognising those leaders amongst us. We recognise the value of aligning sustainability in delivering value and positive outcomes in all the work we do and where possible relate our work to national and international standards and systems. We are keen to illustrate this in for example mapping our ability of delivering the HESI high-level goals.

## University of Limerick – Ireland \*

The University of Limerick (UL) is on target to meet the Irish government's ambitious target of a 33% reduction in energy consumption by 2020, having already saved 22.7% compared to the baseline year. This has been achieved in part by retrofitting old and inefficient lighting and electrical equipment (e.g. pumps, compressors, boilers, etc.) with high-energy efficiency replacements, improving existing insulation and glazing in selected buildings as well as rolling out occupancy detection (for light switching) campus wide. UL also has introduced policies to work smarter by consolidating all out-of-hours classes into a small number of highly energy efficient buildings. UL's latest initiative will see the rollout of an energy behaviour change campaign. To measure the efficaciousness of energy saving initiatives and target energy saving opportunities at UL an Energy Monitoring and Targeting system was installed.

In recent years UL has also focussed on encouraging the campus community to embrace more sustainable forms of commuting to campus with the most recent published results showing a decrease of c. 7% in the number of single-occupancy cars being driven onto campus and an increase of c. 2% and c. 4% respectively in the numbers of people walking and cycling to campus. UL's efforts have been recognised nationally with the National Transport Authority of Ireland naming UL Smarter Travel Campus of the Year, Cycling Campus of the Year, Student Union of the Year and Sustainable Champions of the Year.

Inclusion of the interdisciplinary module on sustainable development as a broadening module available across the university, inclusion of sustainability learning outcomes in a wide range of taught programmes and development of a joint MSc with NUIG on Sustainable Resource Management

The Bernal Project involves the recruitment of 10 world-leading professors, a start-up seed fund to support their teaching and research activity and the construction of a new advanced research building on campus. This initiative will make a significant contribution to Ireland's national research initiatives in the strategically important areas of pharmaceutical science and engineering; energy and sustainable environment; modern and biomedical materials and engineering.

In recent years UL has installed a community roof garden, orchard and apiary all of which are supported by both in-house and local experts and thrive because of the dedication of on-campus student and staff volunteers. In addition these assets provide a means of educating the campus community on the sustainable production of food. It is worth noting that UL's apiary is almost exclusively populated with a swarm of bees, which were collected on campus.

## The University of the West of England, Bristol – United Kingdom \*

The University of the West of England, Bristol is committed to ensuring that all its students, irrespective of their programme of study, are introduced to the ideas of sustainable development during their undergraduate or postgraduate degree programme. In the most recent year of analysis 96% of our students were able to consider issues of sustainability within their degree programme.

The university offers degrees in a wide range of relevant subjects that consider issues of mitigation of greenhouse gases and /or adaptation to a changing climate. Relevant undergraduate degrees include Architecture, Architecture and Environmental Engineering, Architecture and Planning, Biology, Building Services Engineering, Civil and Environmental Engineering, Environmental Resource Management, Environmental Science, Geography, River and Coastal Management, Urban Planning, Wildlife Ecology and

Conservation Science. Our postgraduate provision addresses mitigation and /or adaptation as part of Masters Provision in Architecture, Construction, Urban Planning, Environmental Management, Environmental Consultancy and Sustainable Development in Practice.

University staff conducts a wide range of research in the fields of climate change adaptation and mitigation. Research centres and groups contributing to this university mission include: Air Quality Management Resource Centre, Applied Statistics Group, Centre for Floods, Communities and Resilience, Centre for Research in Biosciences, Centre for the Study of Behaviour Change, Centre for Sustainable Planning and Environments, Centre for Transport and Society, Construction and Property Research Centre, Engineering Modelling and Simulation Group, Environment Law Unit, Public Health and Wellbeing Group and the Science Communication Unit. In addition, the university is proud to host the WHO Collaborating Centre for Healthy Urban Environments. The University led the multi-agency Environmental Technologies Innovation Network supporting small and medium size businesses develop low carbon technologies.

The University has a wide range of public engagement work to support awareness of the impacts of climate change and to support the development of a low carbon future. These range from our contributions to the annual Festival of Nature through to the unique Future Bristol project exploring the 2050 future Bristol where an 80% cut in carbon emissions has been achieved – see <http://www.futurebristol.co.uk/>

The University's Sustainability Plan sets out our policy commitments and strategy to support sustainable development and describes their implementation these into the business of the University both in our educational role and in the management of our estate. See <http://www1.uwe.ac.uk/aboutus/visionandmission/sustainability/governanceandstrategy/sustainabilitydocuments.aspx>

The City of Bristol has been designated European Green Capital 2015 (<https://www.bristol2015.co.uk/>) by the European Commission. The University played a central role in providing the evidence of the sustainability credentials of the city and provided financial and intellectual resources to support the bidding process. As part of UWE's contribution to the Green Capital we have developed the *Our Green City: Global Challenges, Bristol Solutions* MOOC. See <http://courses.uwe.ac.uk/Z42000145/2015>

The University is committed to ensuring that current and future students are able to build on the achievement of the Green Capital award and contribute towards the development of a low carbon future.

## LATIN AMERICA and THE CARIBBEAN

### Fundação Getulio Vargas – Brazil \*

In January 2015, the Rio de Janeiro Law School of the Fundacion Getulio Vargas (FGV) launched an international course on "Law and Economics of Climate Change" to introduce participants to the science of climate change, examining the United Nations Framework on Climate Change (UNFCCC) and reviewing the negotiation history of signatory states.

Regarding climate change adaptation, the Centre for Sustainability Studies at FGV's São Paulo School of Business Administration (EAESP), together with the Brazilian Ministry of Environment (MMA) and the University of Oxford (UKCIP), and with support of the British Embassy, launched the publication "Climate

Change Adaptation in the Business Sector” and the 2.0 version of the “Tool for the Development of Business Strategies on Adaptation”. These publications resulted from the development of the platform Business for the Climate (EPC), an initiative comprising 33 participating companies and seeking strategic management of greenhouse gas emissions and climate risks. Since 2013, the EPC has been working to meet the growing interest of the business sector on the risks that climate changes pose to business in their technical, operational, and strategic levels, and on potential and still unexplored opportunities.

## Universidad Autónoma de San Luis Potosí – México

With the aim of mainstreaming environmental issues into the core activities of the university (i.e., teaching, researching, and management), the Autonomous University of San Luis Potosí (UASLP) established its environmental agenda as a tool to ensure cross- coordination and horizontal collaboration between academic and administrative authorities. Since 2007, this environmental agenda established the virtual diploma “Designing and Implementation of Projects on Environmental Sustainability Education addressed to environmental educators in any field of action. In the framework of this virtual diploma, the university has been including in its training and educational offer a variety of programmes focusing on climate change and the impact it has at social, political, economic and cultural levels, and on how to build and monitor development projects.

## Universidad de Buenos Aires – Argentina

With the adoption of Resolution 2352/07, the University of Buenos Aires inaugurated in 2007 an Interdisciplinary Programme on Climate Change. The programme was designed to consolidate knowledge on climate change and the causes at the core of the problem to strengthen at the same time the position of the country in international negotiations on Climate Change and any other related issues.

Climate change has been a recurring theme in the university’s publications, such as Management of Climate Change: a Conceptual Analysis to a Management Model and Democratic Governance or Multiple Views on Climate Change and the topic of some workshops organized by the Facultad de Ciencias Económicas (School of Economics). One of the latest was Strategies for Climate Change Adaptation: Risk Management in Agriculture in Argentina held in June 2015.

Furthermore, within the School of Economics, the Research Centre on Applied Quantitative Methods for Economics and Management has developed projects on research areas such as climate change and has aimed at identifying effective solutions to specific challenges at regional, national and global.

## Universidad de Ciencias Aplicadas y Ambientales – Colombia

Within the university’s Master’s Degree in Environmental Sciences, some research projects have focused on the vulnerability of regions in Colombia that are particularly threatened by climate change. More specifically, a research project was devoted to examining and exploring changes that occurred in the avifauna, the distribution and abundance of birds, and ecosystem in two areas of the Chingaza National Park. A second project aimed at defining biophysical, social and economic indicators for measuring vulnerability to climate change in the Rabanal region. Regarding environmental issues, other dedicated graduate programmes include geographical and environmental engineering, environmental education and environmental management

## Universidad Iberoamericana – México

Through its degree in Chemical Engineering, the Universidad Iberoamericana is committed to train students on the development of chemical industry and the application and generation of process technologies and products to meet the demand of domestic and international markets, raising at the same time their awareness on sustainable development. Besides providing technical skills and knowledge, the curriculum tries to identify ways of making these trainings more suitable to respond or find solutions for nowadays challenges, such as climate change, implementing renewable energy, health, population, water shortages and guarantee food security, among others.

## Universidad Rafael Landívar – Guatemala

The School of Agricultural and Environmental Sciences (*Facultad de Ciencia Agrícolas y Ambientales - FCAA*) has been designed to train professionals in environmental and agricultural sciences and to offer them relevant scientific, technological, and entrepreneurial skills for the promotion of sustainable development. The school offers degrees in Environmental Engineering, Agricultural Engineering, and Forestry Engineering, as well as master's degrees on Plant Protection in International Trade, Management of Sustainable Agriculture and Natural Resources and Science in Tropical Agroforestry. In the framework of the International Seminar on Social Policy: Towards a Social Policy for Rural Development, New Proposals for Access, a presentation was delivered on *Food and Income to the Poor* focusing on the impact that climate change has on the income deriving from land productivity.

## NORTHERN AMERICA

### Dickinson College – United States of America

Dickinson College, a 4-year liberal arts college located in Carlisle, Pennsylvania, USA, is taking action to make learning about sustainability part of every student's education, reduce our GHG emissions, green our campus and promote sustainability in communities near and far.

An initiative begun in 2008 has infused sustainability throughout our curriculum so that we now offer more than 100 sustainability related courses each year that explore social, cultural, economic and environmental dimensions of sustainability. Ninety-five percent of the graduating class of 2015 took one or more sustainability courses during their 4-year undergraduate program, and nearly 50% took four or more sustainability courses. Beginning with this year's entering class, we made sustainability a graduation requirement for all students. Our sustainability courses include many courses on climate change science, impacts, and policies. We have taken delegations of students to COP15, COP17 and COP20 as part of interdisciplinary multi-course investigations of climate change, and we will bring students to COP21.

Dickinson adopted a Climate Action Plan in 2009 with a goal of becoming a carbon neutral campus by 2020. After initial progress and then reversal, this year we created a Green Revolving Fund to finance new GHG reduction projects and move us toward our goal. With an initial capitalization of USD 230,000, we financed 20 projects that are cutting our emissions 1000 MTCO<sub>2</sub>e/yr. Energy cost savings from these projects will replenish the Green Revolving Fund and will be used for additional GHG reduction projects.

All campus buildings constructed since 2008 have earned LEED Gold Certification and our next building aims for Platinum. Two-thirds of our buildings are heated by a high efficiency steam central energy plant, which we plan to expand to serve more of our campus with a new tri-generation system that will provide heat, cooling

and electricity while substantially reducing energy consumption and GHG emissions. Our 50-acre organic certified farm supplies our campus dining hall and employee families with sustainable, local produce. We are leading an initiative to organize a dialog among college students across the state of Pennsylvania with environmental regulators and state legislators about implementation of the USEPA Clean Power Plan in our state. We are also working with community organizations in Pennsylvania and New York to train and support them in monitoring and protecting water quality in their local streams.

## Portland Community College – United States of America

At Portland Community College (PCC), we're all in this together for sustainability. Through the Climate Action Plan and Strategic Plan, PCC is reducing greenhouse gas (GHG) emissions and fostering well-educated, action-oriented citizens. In fact, leadership in climate change action has resulted in an overall 4% decrease in GHG emissions, despite a 25% increase in gross square footage.

PCC reduced its energy consumption 45% per square foot below baseline 2006 levels, with energy efficient HVAC and lighting upgrades district-wide, new solar installations, and occupant behavior change efforts. PCC has committed to achieving at minimum LEED Silver standards in all new construction. Since 2010, the college has either achieved or is in-line to meet LEED Gold certification for six new construction projects and LEED Platinum for two. Additionally, PCC CLIMB Center completed a green roof install in 2013 that mitigates storm water runoff and reduces energy demands, and Newberg Center is LEED Platinum and Path to Net Zero.

PCC is also tackling difficult scope III emissions. Due to an emphasis on transportation demand management, such as inter-campus shuttles and subsidized bus passes, more than half of commuters now use alternative transportation. With efforts like the closed loop system at our Rock Creek campus- recycling food scraps for compost on campus- solid waste now contributes to less than 1% of the GHG footprint. PCC is the only community college on the Sustainable Purchasing Leadership Council founders' circle, and demonstrates leadership with sustainable purchasing efforts emphasizing reusable and recycled products. For example, installing bottle-filler stations and a reusable food container program have prevented over 152 MT of CO<sub>2</sub>e. Further, Facilities Management has reduced chemical usage over 70% by replacing general cleaners with ionized tap water and practicing integrated pest management.

To streamline sustainability education, the sustainability and curriculum council developed seven Green Course Outcomes and delivered three training workshops to promote sustainability in curricula. The college now has over 100 sustainability-related courses and a new Sustainability Focus Award for students was initiated in 2014. The college has also advanced opportunities for hands-on sustainability education with learning gardens hosting classes, tours, and events- connecting with over a thousand students annually.

PCC students continue to be leaders in sustainability and climate change action, with a large portion of the sustainability programs student-funded through The Green Initiative Fund. Student programs like the Bike Rental Program have contributed to GHG reductions and sustainability culture. Additionally, students, staff, faculty, and community members sponsored a number of annual events including: E-cycle Drive, Earth Week, Harvest Fest, and Bike to Work Week. PCC helped lead the development of the Greater Portland Sustainability Education Network, a collaborative multi-sector network to educate for a sustainable future. PCC and GPSEN partnered with Hands On Greater Portland to combine sustainability learning with civic engagement, completing over 400 hours of service. PCC representatives presented on sustainability initiatives at several conferences locally, nationally and internationally, and PCC co-hosted the 2104 annual AASHE conference, all of which have advanced PCC's leadership role in higher education sustainability.

## Simon Fraser University – Canada \*

The university's Faculty of Environment offers graduate programmes in development, sustainability and ecological restoration. Furthermore, in the context of the President's Dream Colloquium in 2015, a series of public lectures, readings, discussions, research, and writing sessions were organized on the topic Obedience and Disobedience: Taking Action on Climate Change.

Within the Business School, the CMA Innovation Centre has supported interdisciplinary scholarships on the processes and management of innovation translated into a variety of topics, such as Innovation and Sustainability. The Centre also hosted earlier this year a research presentation on the theme "*Mindful Consumption?*" on the consequences that climate change and eco-system destruction have on the sustainability of the traditional consumption patterns.

Among its Executive Education Programmes, the School introduced the "Leading in the 21<sup>st</sup> Century" in order to provide future leaders with a broad range of entrepreneurial skills, as well as with a global mind-set enabling them to identify effective solutions on global problems such as Climate Change.

## State University of New York (SUNY) at Geneseo – United States of America

The State University of New York at Geneseo is making progress in our effort to address climate change on all fronts, which can be divided into three interconnected categories: climate change mitigation, climate change resiliency and sustainability education.

We have been successfully working towards mitigation for quite some time, starting with the low hanging fruit such as efficiency upgrades in lighting across campus, and efficiency upgrades in our steam plant and implementation of policies that greatly reduce the use of automobiles by students on campus. Geneseo has implemented a policy that requires all new or renovated structures on campus to meet LEED Silver standards, at a minimum. In 2014 Monroe Hall became our first LEED Gold Certified building on campus. Many of our buildings employ innovative sustainability features such as rainwater collection and geothermal heating and cooling. Each year we continue to dig deeper into mitigation strategies. In the last year we have dramatically increased our on-site composting of organic waste and are working on a partnership with the Village of Geneseo to implement an anaerobic digester facility that we hope will allow our campus to recycle all of our organic waste into energy and compost. In addition, we are positioning ourselves to replace much of our current diesel and gas powered grounds maintenance equipment with electric equipment over the course of the next few years. We have expanded our "no-mow" zones on campus and have started to replace the grass on steep slopes with lower maintenance native plantings. We are also negotiating a Power Purchase Agreement with ESA Renewables to establish a 2-megawatt solar array near campus, with the possibility of additional similarly sized arrays in the future.

Over the last year we have started to put more focus on resiliency initiatives as well. In the summer of 2015, SUNY Geneseo was awarded a NY Prize stage 1 grant, from the New York State Energy Research and Development Authority (NYSERDA). The purpose of the grant is to fund a feasibility study for a microgrid on campus and in the village, which would increase our usage and production of renewable energy, as well as provide electricity to critical local facilities in the event of a major grid outage. We are working with Willdan Energy Solutions on the feasibility study; it should be completed by early 2016.

Sustainability Education is an area that is embraced across campus both in the formal curriculum of many academic departments as well as in co-curricular activities. We are in the process of restructuring our general education core learning outcomes and plan to include sustainability literacy as a requirement for all students graduating from SUNY Geneseo. In addition, we offer an Environmental Studies minor through the Geography Department and the Jade Certificate through GOLD our leadership development series, which signifies that recipients have successfully participated in eight hours of workshops, focused on environmental issues along with 10 hours of volunteer work in sustainability. In addition, we have developed a one-acre space on campus called the eGarden that allows students, faculty and community members to engage in research and education around renewable energy production, sustainable horticulture and organic waste reduction.

With the establishment of the Office of Sustainability in the fall of 2014, along with two full-time positions for sustainability professionals, SUNY Geneseo is poised to make even greater strides in the years to come.

## State University of New York (SUNY) at Buffalo – United States of America

The University at Buffalo's 750-kilowatt solar strand, brought to life by world-renowned artist Walter Hood, reflects a transformative vision that defines the future of sustainability. Its approach moves beyond obtaining carbon neutrality and reducing our footprint. It welcomes students, faculty staff and community members to the University at Buffalo's (UB) campus through a connected and cultural natural landscape that was designed to be one of the most publicly accessible energy sites in the world. Like higher education, the strand is multidimensional; merging teaching, learning, art, research, sustainability and community engagement into a complex and powerful resource that will be a model for future development.

The UB Solar Strand represents a unique partnership between the New York Power Authority (NYPA) and UB and is creating a sustainable, innovative environment that supports our students, faculty and staff while increasing our positive impact on the communities we serve, locally and globally.

To achieve this objective, UB convened an artist selection panel that included faculty and members of the community. The panel was co-chaired by Louis Grachos, director of the Albright-Knox Art Gallery, and Ted Pietrzak, director of the Burchfield Penney Art Center. An international design competition was then conducted to solicit more than 50 world class submissions for the design of the solar array.

The panel chose landscape architect and artist Walter Hood. Hood is the founding principal of Hood Design and professor and former chair of the Landscape Architecture Department at the University of California-Berkeley. Hood's vision for the site created groups of photovoltaic panels that are mounted onto supports that stretch in three rows along Flint Road, creating a new gateway for the Campus. Walkways run between the rows of panels and connect the array with local roads and naturally regenerated meadows and wetland areas that the public can enjoy. Gathering spaces embedded in the project include an open-air chamber paved with recycled, concrete sidewalk slabs. The array's tallest groupings of solar panels form a slanted roof over three outdoor "social rooms." At 140 feet wide and 1,250 feet long, the array has the capacity to produce 750,000 watts of energy—enough to power hundreds of on-campus student apartments.

After the design was shared with the community and approved by NYPA and UB, construction began. Over 40 local contractors, vendors, and businesses were employed to install the 3,200 American-made solar panels and create a space in line with Hood's vision. UB students, faculty, staff, and community members were active participants in the construction of the Solar Strand by planting trees and shrubs as part of the project that will serve as a reminder for years to come of the engagement the Solar Strand fosters. On April 23rd, 2012 the UB Solar Strand was officially powered on and a year later the strand was opened to the public. Three months ago

the university unveiled its new [Solar Strand App](#) which invites the community to explore the landscape. In three years of production the UB Solar Strand had generated more than 2,722,588 K/Wh of electricity.

## University of Missouri at Kansas City – United States of America

In 2014, the University of Missouri at Kansas City (UMKC) was among the recipients of a 20 million USD dollars grant funded by the National Science Foundation (NSF) to study climate variability and its potential impact on agriculture, environment, and society in Missouri. The five-year grant has been considered by the University as an opportunity to leverage some of its computational and modelling assets to address pressing challenges such as climate change, food security and environmental sustainability in the Missouri River Basin.

The Division of Diversity at UMKC has been sought to track, assess and respond to both the positive outcomes and current challenges faced within the university with regard to climate issues. In order for the Division to have a better overview on the demographic characteristics and trends of its students, faculty and staff, a new *Campus Climate Survey* is being planned so that specific actions can be adopted.

## OCEANIA

### Griffith University – Australia \*

The Griffith University hosted, at its premises, the National Climate Change Adaptation Research Facility whose tasks consist of managing and preparing on climate change-related risks and disasters, with a particular attention devoted to sea level rise. The programmes and activities of the facility have been addressing governmental bodies, NGOS, and the private sector. Furthermore, in order to better support decision-makers and practitioners in the formulation of effective strategies in disaster risk scenarios such as flooding or coastal erosion, the facility inaugurated last year a three-year programme on adaptation needs.

The University has also been engaged in projects on the field, its Centre for Environment and Population Health has indeed collaborated with the World Health Organization on a Climate Change Resilience Project in Bangladesh to test a community-based climate change assessment tool. The latter has been known as the WHO Vulnerability Reduction Assessment tool and has been designed to appraise how specific interventions have reduced community vulnerability to climate change in the coastal areas of southern Bangladesh.

### RMIT University – Australia

RMIT is Australia's largest dual-sector tertiary university, offering an extensive range of postgraduate, undergraduate and vocational programs. RMIT prides itself on its collaboration with industry in applied research and education, and on the development of highly skilled, globally focused graduates. As a result, RMIT graduates are valued by employers around the world for their leadership skills and work readiness.

RMIT has a strong educational presence in the Asia-Pacific region, and its community is diverse. The University is committed to building a sustainable organisation that serves the aspirations and needs of the community, business, students, and staff. The University also has a long-standing commitment to incorporating sustainability into its core activities of teaching, research and operations.

Implementation of RMIT's sustainability policy in relation to learning and teaching is facilitated collaboratively across colleges, schools and disciplines. The intent and objectives of the sustainability policy is to express RMIT's commitment to transforming itself into an organisation that models institution-wide excellence in response to national and international calls for tertiary education to play an influential role in shaping a sustainable future.

The Sustainability Action Plan (see [www.rmit.edu.au](http://www.rmit.edu.au)) integrates sustainability consistently into the University's teaching, training, and research activities. The inclusion of sustainability-related graduate attributes; specifically, "Environmentally aware and responsible" provides a further policy framework for sustainability in graduate learning outcomes and supports the inclusion of appropriate sustainability-related learning and teaching in all RMIT programs. The "Environmentally aware and responsible" graduate attribute requires graduates of RMIT University to have engaged in processes to develop their abilities to recognise environmental and social impacts and to provide leadership on sustainable approaches to complex problems. More recently, in 2010 the RMIT Sustainability Committee commenced work to build on existing practice in a systemic way. The committee provides leadership, and coordination in integrating sustainability principles and practices throughout the University's core activities.

High urbanisation and rapid building and construction activity is anticipated in many growing economies in the Asia-Pacific region. If building and construction growth is not directed within the right framework, carbon emissions will continue to grow, perhaps exponentially. The built environment professions are at the forefront for ensuring low carbon emissions for new built forms and refurbishments for existing built forms are maintained now and into the future.

RMIT University is consolidating its reputation as a world leader in environmentally sustainable building design with investment of AUD 500 million into capital works. An example of leading-edge research and practice is design, development and delivery of the Swanston Academic Building (SAB) setting new standards in attracting and retaining the next generation of students in a completely new pedagogical learning environment, and fostering a collegiate atmosphere between academics and students maximising interaction.

From the outset, RMIT defined design principles, which directly reflected the University's strategic goals:

- Inspire and encourage student achievement
- Ensuring that facilities exemplify excellence in technology and design
- Developing sustainable modes of operation
- Engage and collaborate with industry and integration with cities

For refurbishments, RMIT University's Sustainable Urban Precincts Program (SUPP) is a commitment of AUD 98 million over three years of implementation to cut energy and water use and greenhouse gas emissions – the biggest program of its kind in the southern hemisphere. Working with Siemens and Honeywell are opportunities for energy and water savings in 90 buildings in Melbourne campuses, with projected 30,000-tonne reduction in greenhouse gas emissions in energy and an estimated 68 million litres savings in water. RMIT has committed to a further eight years of measurement and verification through a number of research, teaching, and learning scholarships pursued through this partnership with industry.

UNITEC Institute of Technology - New Zealand

In the past years, the UNITEC Institute of Technology issued several publications on climate change such as the *Climate Change and Generation Zero: Analysing the 50/50 Campaign: A Communication for Social Change Approach* in 2013, and carried out research on this particular theme and its multiple impacts. For instance, a senior lecturer of the institute spent the last six years observing the changing of sea levels due to climate change and the subsequent risk of saline intrusion with saltwater penetrating into water aquifer in Wellington. All lecturers at the institute have been focusing part of their research on climate change and corporate strategy and policy to ensure sustainable development as well as on climate change and urban planning.

## The University of Waikato - New Zealand \*

The University of Waikato has long had a commitment to implementing sustainable practices throughout its campus. The University Environmental Policy was first written in 1997. (<http://www.waikato.ac.nz/official-info/index/docs/environmental-policy>). The university's strategy (2014-2017) outlines a commitment to sustainability; action 6 of the strategy states: *Ensure sustainable practices in all aspects of university activity*.

The University's newly approved Waste Minimisation and Management Programme aims to provide a basis for good practice, environmental responsibility, and methods for waste reduction and diversion. It supports a holistic and integrated management approach, key elements of which are the reduction of waste generated and the environmental impact of waste. Two waste audits are held annually on campus to assess waste and recyclables. Students take part in the audits, either as volunteers, or as part of their course work. Two prototype solar powered compost systems were designed and built in 2014-2015. The University of Waikato aims to divert 40 tonnes of food waste on campus.

Regarding packaging and procurement, the University began to phase out polystyrene cups and packaging on campus in 2014. This stopped around 33,000 polystyrene cups from going to landfill. In order to reduce thousands of take away cups to landfill, subsidised refillable thermal mugs were introduced on campus. Staff and students bringing mugs back for a refill get a discount on their drink. Paper was reduced by 29% when hard copy purchasing orders were put online.

Regarding recycling, during 2014 the university:

- Recycled approximately 20 tonnes of glass, 9 tonnes of plastic, 4 tonnes of aluminium cans, over 40 tonnes of cardboard, over 33 tonnes of paper and 265 tonnes of green waste, 1,600 fluorescent tubes, and 700 compact fluorescent lamps
- Recycled approximately 750 computers (via the HP Planet Partners Recycling Programme)
- Refurbished 50 computers, and gifted ITS equipment to local schools
- Diverted 175 kg of batteries from landfill for reprocessing
- Gifted over 370 pieces of second hand furniture, carpet and equipment to the community
- Gave away 8 tonnes of unwanted items via a "No Throw" waste exchange
- Developed 'Going Green' at Waikato and the 'Wasted' brand, to engage students and educate and raise awareness around waste and recycling. Ratty the Recycler, a student-designed green mascot for the University features in animated films and posters

The university has the largest business fleet of hybrid cars in the country (36 Toyota Prius C's). Fleet car travel decreased 5% from 2013-2014. CO<sub>2</sub> emissions in the vehicle fleet have decreased since the purchase of the

hybrids. Prius mileage has increased due to more cars being purchased, and staff preferring to drive them. Waikato reports on its carbon emission annually (travel, flights, gas and electricity).

Accounting students conducted research on trees on campus as carbon sinks (2012). The results highlighted that the larger trees on our 65 ha campus captured around 180,000 kg of carbon in a year. Given that many of the trees are far from maturity it is estimated the amount sequestered will grow to an average of 253,000 kg a year over the next 10 years.

In New Zealand, 74% of power is renewable. The university has a Building Management System that controls the heating, cooling and lighting in 85% of buildings on campus. We have an array of photovoltaic cells on our student centre, which power the equivalent of all computers in the building.

Sustainability & Environmental research is broad and varied across the university. Sixty-five Papers and courses at the university have sustainability related themes. Two new programmes have been created around sustainability in the Faculty Arts and Social and Science and Management School.

\* PRME Signatory

# Annexes

## List of newly joined universities from France

1. Campus Euro-Latino Americain de Sciences Po
2. CNRS
3. COMUE Lille Nord de France
4. Fondation UVED (Université Virtuelle Environnement et Développement durable)
5. Institut des Sciences Moléculaires d'Orsay
6. Institut Pasteur de Nouvelle-Calédonie
7. Institut de Physique nucléaire Orsay (IPNO)
8. Société de Mathématique Appliquées et Industrielles
9. SUPELEC
10. Universcience
11. Université Catholique de Lille
12. Université Claude Bernard Lyon, Institut Lumière Matière
13. Université d'Artois
14. Université de Haute-Alsace
15. Université de la Rochelle
16. Université de Lille
17. Université de Lyon (COMUE Lyon / St-Etienne) - Service Sciences et Société
18. Université de Paris-Sud
19. Université de Perpignan Via Domitia
20. Université du Littoral Côte d'Opale
21. Université Grenoble Alpes (UGA)
22. Université Lyon 1
23. Université Paris 13
24. Université Paris Diderot
25. Université Paris Ouest Nanterre la Défense, Nanterre
26. Université Pierre et Marie Curie

# An Open Letter to COP21 Ministers and Governments

Dear COP21 Ministers and Governments,

In the coming weeks' negotiations to achieve universal agreement on climate, we urge you to acknowledge and support the research and education role that universities and colleges play in addressing climate change. We represent a global alliance of Higher and Further Education Sustainability networks with a combined membership of more than 3,000 universities, colleges and student organisations worldwide.

In this Open Letter to you, we affirm our commitment to the critical role that universities and colleges play in finding and implementing solutions for climate change mitigation and adaptation. We see this taking place in the context of also addressing wider issues of sustainability, including social and economic policies and practices. The commitments and actions outlined below require the urgent support of COP21 Ministers and Governments.

We commit to supporting our members in creating more innovative academic pathways for our students --- the leaders and policy makers of the future --- and to support our staff to envision and spur creative strategies, practices and attitudes for climate change solutions. We call on national Governments to support us to embed climate and sustainable development education into teaching, operations, and quality standards.

We celebrate the unique role of our university and college members in leading the research and understanding of the origins and trajectory of climate change, in gauging its consequences, and designing reduction mitigation and adaptation solutions. We invite COP21 to acknowledge and strengthen the key research and development role that our university and college members contribute towards climate change solutions.

We believe that our university and college members are pioneers and demonstrators in modelling and piloting effective climate and sustainable development practices. We call on COP21 Ministers to strengthen, showcase and embed our responsibility to assess and report on our climate and wider sustainability organisational and teaching performance.

More specifically we urge COP21 Ministers and Governments to consider taking the following measures:

- Invite, challenge, support and showcase universities and colleges as living laboratories and agents of change for climate change adaptation and mitigation, so that they, in turn, may inspire and stimulate actions in their local communities and societies. Showcase education initiatives that take an integrated and collaborative approach to the design and delivery of programmes and which place the Global Goals for Sustainable Development at the centre of teaching, learning and research.
- In acknowledging the connection between climate change impacts and systemically embedded social and economic structures that disadvantage, harm, and kill people all over the world, we request more support for transdisciplinary learning, teaching and research approaches that link climate solutions with the need to transform economic, political and social structures.
- Respect, acknowledge and support the academic freedom of universities and colleges in leading the research and understanding of the origins and trajectory of climate change, in gauging its consequences and designing reduction mitigation and adaptation solutions. National and public research funding support criteria needs to acknowledge and prioritize trans---disciplinary research activities that address climate change and the Global Goals for Sustainable Development.

- Invest significant financial support to promote national and regional energy transition using university and college campuses and operations as a leverage agent to accelerate the transition.
- Develop and implement policy frameworks that embed accountability and responsibility for climate change mitigation and adaptation and the Global Goals for Sustainable Development into research, teaching, operations, and quality standards of institutions of higher education. Establish or strengthen existing reporting, benchmarking and accreditation frameworks for universities and colleges to account for and further improve sustainability performance.
- On behalf of all of our members and the communities which they serve and develop across the globe, we urge you to consider the measures proposed in partnership with universities and colleges. We are hopeful and confident that you will reach a strong and binding climate agreement during COP21 and believe that increased support and commitment towards the enabling role of universities and colleges in solving the climate crisis.

Signed by - last update October 8, 2015:

- Alianza de Redes Iberoamericanas de Universidades por la Sustentabilidad y el Ambiente (ARIUSA) - Orlando Sáenz, Coordinator
- Asia Pacific University Consortium on Environment for Sustainable Development - Mario Tabucanon, Chair
- Association for the Advancement of Sustainability in Higher Education (AASHE) - Meghan Fay Zahniser, Executive Director
- Australasian Campuses Towards Sustainability (ACTS) - Leanne Denby, President
- Campus Responsables - Pauline Pingusson, Program Manager
- Campus Sustainability Network Japan (CAS-net Japan) - Takayuki Nakamura, Executive Director
- Conférence des Grandes Ecoles - Jean-Christophe CARTERON, Representative
- COPERNICUS Alliance, European Network on Higher Education for Sustainable Development - Clemens Mader, President
- Costa Rican Network of Sustainable Educational Institutions (REDIES) - Manrique Arguedas Camacho, Director
- English Learning for Sustainability Alliance (ELSA) - Stephen Martin, Director
- Entrepreneurship Educators' Association of the Philippines (ENEDA) - Eunice Mareth Q. Areola, Adviser
- Environmental Association for Universities and Colleges (EAUC) - Robert Belfield, Chair
- Environmental Management for Sustainable Universities - Rodrigo Lozano, Representative
- Foundation for Environmental Education (FEF) - Daniel Schaffer, CEO
- Global Business School Network (GBSN) - Guy Pfeffermann, Founder & CEO
- Global Organisational Learning and Development Network (GOLDEN) for Sustainability - Maurizio Zollo, Academic Director
- Global Universities Partnership on Environment and Sustainability (GUPES) - Wu Jiang, Chair
- Globally Responsible Leadership Initiative (GRLI) - Dennis Hanno, Chair
- International Association Of Universities (IAU) - Dzulkifli Abdul Razak, President
- Latin American Council of Management Schools (CLADEA) - Alberto Zapater, Executive Director

- Nordic Sustainable Campus Network (NSCN) - Meri Löyttyniemi, Chair
- PRME Chapter UK & Ireland - Carole Parkes, Chair
- Red de Indicadores de Sostenibilidad en las Universidades (RISU) - Javier Benayas, Coordinator
- The Institution of Environmental Sciences - James Longhurst, Vice President
- Sustainability and Education Policy Network (SEPN) - Marcia McKenzie, Director
- U.S. Partnership for Education for Sustainable Development - Debra Rowe, President
- University Educators for Sustainable Development (UE4SD) - Daniella Tilbury, Director

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