

## 4.0 Sustainable Campus Initiative & Fellowships

Reporting:	Australian National University
Lead(s):	Wayne Ford (Australian National University) Julie Newman (Yale University) Bart Meehan (Australian National University)

Document type:	√	Progress update
		Workshop
	√	Discussion paper
		Project proposal
Action required:		For information only – no further action required
	√	Presidents' endorsement requested

Funding provided to date:	USD10,000 Consultancy Fees (January 2012) USD 7,207 Sustainability Meeting (March 2011) USD 4,055 Sustainability Meeting (February 2010) USD16,500 Copenhagen related activities (March 2009) USD14,000 Sustainability Meeting (October 2008)  Up to USD15,000 for website development write-up, etc (PM '11) Up to USD15,000 for 3rd annual meeting in 2012 (PM '09)
Funding requested:	US\$15,000 per annum (for three years) to fund workshop activities US\$10,000 to fund a benchmarking study.

### Previous recommendations:

Senior Officers' Meeting (October 2011)	<p>Mr Bart Meehan (ANU) informed the meeting that he will be retiring from ANU at the end of 2011. He introduced the new team members from ANU: Mr Wayne Ford (lead), Mr John Sullivan and Ms Su-Ann Wilder (not present). Ms Julie Newman (Yale) and Mr Dominik Brem (ETH Zurich) would take the lead on Sustainability Fellowships and website updates, respectively. Today, ETH Zurich and Copenhagen placed on record their appreciation and confidence on the successful efforts of the group, and Mr Meehan's leadership of this initiative.</p> <p>Nine members have sent nominations or indicated their interest to participate in next year's Sustainability Fellowship, with a response pending from Beida. The third Sustainability Officers' Meeting will be held at ANU in March 2012. Mr Ford was requested to submit a proposal detailing the purpose and intended outcomes for future meetings at the 2012 Presidents' Meeting for consideration, if there was a plan for such future meetings.</p> <p>Mr Meehan presented the sustainability materials available on the website, including updates on case studies, the Toolkit and the How-To Guide. The team was also looking into the development of online modules and an education package. An intern would be engaged and Mr Meehan was planning to have a complete Sustainability section on the IARU website updated before the next Presidents' Meeting.</p>
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	<p>For the educational package, the group decided to do video-conferencing as the cost of webinars was too high. A key challenge of video-conferencing was coping with the different time zones. The team would be looking into making an online recording available, with Japanese and Chinese translations.</p> <p>Ms Sophie Christoe, currently an ANU Masters student who interned at Yale spoke about her experience as a Sustainability Fellow in 2009. Ms Christoe has continued working on a green checklist for running events on campus, which included waste management, started by another Sustainability Fellow the year before.</p> <p>Other future plans include water consumption, ICT emissions, as well as how implementation affects people and mindsets. For the 2012 Presidents' Meeting, Mr Meehan and Mr Ford were requested to develop a proposal, including identifying the location, target groups and theme for the Sustainability Conference and seek consensus from fellow Sustainability Officers. Mr Meehan was also requested to provide an overview of the movement of Sustainability Fellows/ Students in the past three years (i.e. from which universities, and the types of projects), as well as a status update of each member institution's achievements against their set targets established in 2009.</p>
<p>Presidents' Meeting (April 2011)</p>	<p>Next steps include a focus on strategies to reduce energy and water consumption (especially waste water). IARU can also demonstrate leadership through outreach, developing more on-line modules and making case studies more accessible. All partners confirmed that they would be offering Sustainability Fellowships or Internships later in the year.</p> <p>The International Sustainability Campus Network (ISCN) and Global University leaders Forum (GULF) were possibly doing similar work on Sustainability. Sustainability Officers were asked to examine where the overlaps might be and how IARU might collaborate with them. IARU should aim to be distinctive, for example by reaching out to third world country campuses at the early stage of campus sustainability, and currently not in GULF or ISCN.</p> <p>The IARU Chair proposed the creation of a Wiki-like website for Campus Sustainability where non-IARU institutions can upload their own resources in addition to accessing IARU case studies. There is currently not much available information anywhere online and this is a good opportunity for the Alliance to demonstrate thought-leadership on such a critical issue.</p> <p>Mr Bart Meehan (ANU) and Ms Julie Newman (Yale) have been instrumental in the leadership and success of this group, in particular, the way they rallied various sustainability initiatives and interacted with all partners. Both have indicated that they are unable to continue in their leadership roles due to retirement and other matters. Noting that the group should not lose any momentum, Presidents agreed to engage Mr Meehan on a consultancy basis. In the meantime, interested IARU Sustainability heads are urged to step forward to take up leadership and coordination of the Sustainability group.</p>

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### **Recommendations:**

- The IARU Campus Sustainability Working Group continue and funding of \$15000 pa to host annual meetings be approved for the period 2013-2015
- Establish a project to develop a benchmarking tool that would allow effective comparison of IARU campus sustainability programs and identify best practice strategies. The project to be undertaken over the period 2013-2014, and where appropriate IARU students engaged using the existing funding approved at the 2011 Presidents' Meeting, to undertake research and analysis.

### **Report to Presidents:**

The IARU Campus Sustainability Working Group was established in 2009, following the Climate Congress held in Copenhagen, and was subsequently funded by IARU Presidents to meet annually from 2010-2012. Since that time, meetings have been held at NUS (2010), Yale (2011) and ANU (2012). (Earlier meetings, with part participation by the group, were held at UC Berkeley and University of Copenhagen to coincide with IARU Senior Officers Meeting and IARU Presidents Meeting respectively.)

The current co-leads are ANU and Yale, though all members have been actively involved in the development of the project.

Key successes include:

- All members have established campus sustainability targets and created Environmental Management Offices.
- The IARU Sustainability Fellowship program has been established and 51 students have participated over the past 4 years (Details of the 2012 program are covered later in this report).
- A Campus Sustainability toolkit has been developed and published online. The tool kit has been further refined to create training guidelines. (There is currently a project being undertaken by student interns using part of the \$15000 funding approved at the 2011 IARU Presidents' Meeting, to develop this further as a web based/interactive training program.)
- An online database of good practice initiatives being undertaken by IARU members has been developed and published on the IARU website, with public access.
- An on line library of IARU Fellows Reports has been published on the IARU website. (All the reports are subject to editorial review and approval by Project co leads before publication.)

There is general agreement within the group that the project has created relationships that facilitate the honest exchange of ideas and solutions. The network has promoted the adoption of various initiatives across Universities particularly in respect of academic/operational integration, biodiversity and community funding strategies (e.g. Green loans, carbon funding schemes etc). More recently, several members of the group have exchanged information on options for *greening* research technologies, campus infrastructure and buildings.

Following a discussion at the 2012 meeting, the group felt there was value in continuing the project and agreed to seek approval for continued funding of annual meetings. The following would be the key objectives for the group for the period 2013-2015.

- Development of a benchmark methodology allowing realistic comparisons institutional performance and the identification of best practice. This would potentially benefit the overall sector as an appropriate methodology would even out institutional and geographical differences that often undermine the acceptance of international benchmarking. (Note that while an earlier attempt was made to develop this methodology (in 2009/2010), the relative immaturity of some University environmental programs made it difficult to establish a process that would deliver meaningful data. All members now have mature programs and have the confidence to share the data needed to establish benchmark tables. This project would take some time and would have to be overseen by a sub group established by the IARU Campus Sustainability Officers. IARU students would also be engaged on paid internships using the current \$15000 fund approved by IARU Presidents in 2011, to undertake research and analysis.)
- Development of strategies for the design and operations of environmentally friendly infrastructure, in particular research facilities (e.g. green laboratories, green teaching space, data centres.) The IARU has significant influence in the research sector and could influence designer and research technology developers to move to equipment that has lower carbon footprint. This would have value for the overall sector
- Development of living laboratory (or campus as a classroom) models, that may have for the overall sector
- Development of community engagement strategies, particularly involving students. An emphasis on enhancing the informal curriculum through the establishment of environmental programs that encourage volunteerism (e.g. eco system audits, Citizen Scientist, sustainable food systems including organic gardens etc.)
- Continued support of the IARU Sustainability Fellowship Program

## IARU Campus Sustainability Annual Reports

All the member Universities have provided reports on their respective campus sustainability programs.

As an overview, analysis of the reports show there is an ongoing commitment to achieving the institutional goals despite regional pressures and global financial impacts.

Several Universities have achieved absolute reductions in emissions/energy use and are on track to meet their stated targets, though others report small increases in absolute terms due to a growth in the campus building programs and research activities. All Universities are achieving reductions in relative terms when measured using per capita and/or per square metre metrics. This is an indicator that the campus communities are becoming more conscious of energy use and that infrastructure is being designed/maintained to operate more efficiently. The following table summarises the current progress against targets:

<b>University</b>	<b>Targets</b>	<b>Achievements</b>
ANU	: Emissions 35% below 2006 levels by 2020 100% offset of fleet emissions by 2009 100% offset/reduction of air travel emissions by 2014	Energy = 4.8% over 2006 by end 2010. CO2 emissions = 1.5% below 2006 by end 2010. 23% reduction when calculated by per capita metric. (2011 results still being finalised but indicate a small absolute increase due to new buildings.)  100% of Vehicle fleet emissions have been off-set since 2002. In addition to that, emissions (before off-setting) have reduced by 18% since 2006, and by 32% since 2002, and the quality of our off-setting has improved. 62% Air travel emissions off-set by end 2011. Off-setting now internal through the Carbon Reduction Fund.
Berkeley	: Back to 1990 levels by 2014	Emissions in 2010 increased slightly (0.8% or about 1,400 metric tons CO <sub>2</sub> e) relative to 2009, although emissions are still almost 5% below 2008 levels. Electricity use in 2010 is down 1.5%.
Cambridge	: 10% below 2005 levels by 2010/2011 for building related emissions	Total emissions from energy used in buildings in 2010/11 were 19% above 2005 levels
Copenhagen	: 20% below 2006 levels by 2013 per Full Time Equivalent student and staff	By 2011: 14.1 % gross reduction (or 10.8 % when corrected for temperature fluctuations (degree days)

ETH Zurich	<p>10% reduction in CO2 below 1990 levels.  In more detail:  - Reduce CO2 emissions from heating by 50% for the “Science City” Campus by 2020. Base year 2004. This campus is responsible for most of the CO2-emissions at the ETH Zurich.  - Reduce energy consumption by 10% in some buildings at ETH.</p>	<p>Target was achieved for direct emissions in 2010:</p> <ul style="list-style-type: none"> <li>• 1990: 10902 Tonnes/CO2eq</li> <li>• 2010: 7806 Tonnes/CO2eq (= <b>-28%</b>)</li> </ul> <p>50% Redution of direct Emissions for the ScienceCity Campus by 2020, Base year 2004:</p> <ul style="list-style-type: none"> <li>• Base year 2004: 10400 Tonnes/CO2eq</li> <li>• Actual 2011: 5519 Tonnes/CO2eq (= <b>-46%</b>) - ongoing</li> </ul> <p>Reduction of Energy in selected buildings:</p> <ul style="list-style-type: none"> <li>• Building HPM: Savings of 585MWh/y heating energy and approx. 900MWh/y electricity; base year: 2010</li> <li>• Building ETL: Savings of 100MWh/y heating energy - no savings in electricity; base year: 2008</li> <li>• Building SLA: Savings of 125MWh/y heating energy - no savings in electricity; base year: 2009</li> <li>• Building FEL: No savings due to a massive growth in greenhouse capacity with A/C; base year: 2008</li> </ul>
NUS	<p><u>Energy &amp; heat:</u>  1. 15% reduction in our existing buidling emissions by 2015.  2. 20% reduction in laboratory energy consumption benchmarked against standard regularized laboratory consumption by 2015.  3. 25% reduction in future building emissions benchmarked against existing building energy consumption norms by 2015.  <u>Air miles:</u> 100% offset in carbon emissions by routing equivalent carbon fees to campus green/energy efficiency projects.  <u>Campus fleet emissions:</u> 100% offset in carbon emissions by using alternative fuels/greener vehicles and routing remaining carbon fees to campus green/energy efficiency projects.</p>	<p>18.5% reduction in CO2e emissions (GreenHouse Gas Emissions)</p>

Oxford	: Reduce Scope 1 and 2 CO2 emissions to 11% below the 2005/6 baseline by the end of the academic year 2015/16 and to 33% below the 2005/6 baseline by the end of the academic year 2020/21.	Absolute building related emissions increased by 2.2% (from 79,612t CO2 in 2009/10 to 81,362t CO2 in 2010/11). However emissions per m2 floor area fell by 2.9%. The 2015/16 target is 58,722t CO2 and 44,152t CO2 in 2020/21.
PKU	: 15% per floor area below 2005 levels by 2010 (Short term goal). Currently reviewing for long term goal.	<i>To be advised</i>
University of Tokyo	: 15% of CO2 emission from non-experimental sector below 2006 by 2012	11% reduction was achieved in FY2011 in spite of recent increase of building floors.
Yale	: 43% below 2005 levels by 2020	GHG Emissions: 11.5% reduction against 2005 levels [despite a 11.3% growth in campus size]

The member reports also show some programs expanding as they mature, to cover a wider range of sustainability issues, including strategies for enhancing bio diversity, reducing potable water consumption, changing transport behaviour and building campus infrastructure using best practice environmental design standards. There is also a growing emphasis on cross campus collaborations between student, academic and operational groups.

- The reports submitted by the members are available online. However, the following provides a summary of key achievements.

### **Australian National University**

- While there has been a small increase in absolute CO2e emissions in 2011 due in large part to campus growth, the emissions measured on a per capita metric have reduced by 23% against 2006 levels. This has been achieved through a range of initiatives including improved efficiency of plant and equipment ; designing new buildings using best practice environmental design principles; installation of photo voltaic/solar cells; and establishing strategies to reduce the direct energy consumption of campus information and communications technology (which has been quantified as approximately 23% of total campus use).
- Establishing a University Carbon Fund using funding from the Campus Energy budget, which will provide budgets for medium sized projects to reduce University emissions in absolute terms. (This Fund will complement the Green Loan Scheme, which allows departments to borrow from central source to fund environmental initiatives and then repay (interest free) over a period of up to 10 years.)
- Continued reduction in potable water use, in line with the University target of 50% reduction by 2020. Key projects to achieve this have included water recycling infrastructure (such as “black water” processing plant in the College of Sciences Precinct); redesign of landscape to focus on less water dependent species; and the construction of a world class synthetic oval which included the installation of a 500K litre, sub-surface storm water tank.

### UC Berkeley:

- Energy consumption has been reduced by 14 million kilowatt-hours since 2006, using a range of energy efficiency strategies such as the conversion of street lighting to LED technology. Additionally, student commitment to sustainability remained strong with the Graduate Assembly passing an energy efficiency resolution and new energy and water reduction projects being completed by the Berkeley Student Co-operative and at several Greek houses.
- Transportation usage has been reduced by 30% against 1990 levels (exceeding the targets set by the University)
- Recycling rate has reached 67% of waste materials. As an extension of the ongoing campus commitment to waste reduction, students voted to end the sale of bottled water.

### Cambridge University

- Given the current expansion of scientific research activities (such as the newly constructed Sainsbury Laboratory which houses energy intensive plant growth rooms) carbon emissions related to electricity consumption will rise. (Note that gas consumption has been reduced by 800 MWh saving 150 tonnes CO<sub>2</sub> to date in 2012). However, the Energy and Carbon Reduction Project (ECRP) has been established and in the medium term is expected to slow emissions growth.
- The ECRP has helped drive forward sustainability issues within the University over the last year. A fund of £2 million per annum has been made available for this purpose and the following initiatives have been taken forward since February 2011:
  1. The issue of carbon is now embedded within the **annual planning process**. The Capital Planning Process has also been updated to require specific input on carbon in registering and progressing to Concept and Full Business Case.
  2. In order to provide greater financial incentives for reducing carbon emissions, a more ambitious baseline has been agreed for the **Electricity Incentivisation Scheme**.
  3. Additionally, a **Carbon Reduction Commitment (CRC) levy** is charged directly to users.
  4. A **web-based energy dashboard** providing real-time energy data has been implemented in three departments. This will be rolled out to other large energy usage departments.
  5. Five departments were selected to be **project pilots**, each with a unique focus point which will enable lessons learnt to be rolled out across the estate.
- Sustainable infrastructure has also been developed as part of the University Estate, including construction of several buildings designed to meet BREEAM standards; the installation of new biomass boilers (2 x 250kW) at Vet School; installation of solar PV cells as part of the roof structure of the Department of Engineering; and the construction of a “green” data centre replacing current energy inefficient infrastructure.

### University of Copenhagen:

- The University is on track to meet its target of reducing energy consumption and CO<sub>2</sub>e emissions to a level 20% below that of 2006 (measured as energy consumption per man year for staff and students). A number of projects have been commenced to improve the environmental efficiency of campus infrastructure, including heat and ventilation systems, lighting and research equipment (particularly fume hoods).
- A green procurement project was initiated, targeting joint purchasing of furniture and equipment (energy consuming) for a range of new research and education buildings. Considerable environmental gains as well as an estimated 10-20 % savings are expected.

- Two new laboratory buildings (46.000 m<sup>2</sup> and 50.000 m<sup>2</sup>) are being planned with a focus on sustainability, including 50 % reduction in energy consumption for process ventilation, green roofs, rainwater storage and use, district cooling and increased use of core facilities.
- The City development of a seawater based district cooling system for Northern Campus has commenced. This will reduce energy consumption and CO<sub>2</sub> emissions related to cooling by up to 70 %.
- LEED Gold certification of the Green Light House. This is the first public building in Denmark to be CO<sub>2</sub> neutral.

### ETH Zurich

- The total use of electricity was reduced by 2% in 2011 against 2010 consumption. This was mainly due to lower demand for heating energy, as a result of a warmer European winter and improved energy efficiency in building systems. The percentage of electricity from renewable energy sources dramatically decreased from 89% to 23% due to a change in the electricity product purchased from our electricity provider because of a new and emission based strategy at ETHZ. Most of the electricity purchased at ETHZ is produced in nuclear power plants instead of hydropower plants. The decrease of the percentage from renewable sources in heating is also linked to the change in the electricity product (-> use of electricity for heating pumps).
- The University has constructed a number of environmentally designed buildings and improved the performance of campus infrastructure through the renovations of older style (1970s) buildings using the Minergie ESD standards; installation of energy loop system (dynamic geothermal storage) and LED lighting on the Science City campus

### National University of Singapore

- *An Energy Task Force has been established, to monitor the campus energy performance (particularly for buildings) to ensure that University greenhouse emission reduction targets are met. The follow specific energy reduction strategies have been established:*
  1. **Replacement with LED street lamps** - By December 2012, NUS will have changed over 300 street lamps from sodium lamps to the more energy-efficient LED lamps. This is expected to generate energy savings of up to 58% and leading to lower operating costs. These LED lamps will last for 10 years or more.
  2. **Consolidation of air-conditioning chillers** - As part of efforts to reduce energy consumption from air-conditioning, six existing (older and less efficient) chillers in the Faculty of Science and School of Medicine will be replaced by newer and more efficient plant. The project is partially completed with two existing chillers already aggregated.
  3. **Greening the data centres** – The University started on a server virtualization exercise to reduce energy consumption and to cut down the physical server space in data centres. Many of the old systems were consolidated into this virtualised platform, which enabled many of its physical servers to be decommissioned. Today, more than half of the systems deployed on campus are virtual machines. The University is continuously reviewing and refreshing aging systems, moving to newer hardware and technology which is more energy efficient.
- There has been a notable 2.6% year-on-year decrease from AY09/10 to 1,771,169 CuM in AY 10/11, which is likely due to NUS' participation in the Singapore Public Utilities Board (PUB) Water Efficient Buildings (WEB) programme. From May 2009 to May 2011, more than 200 University buildings earned the PUB-WEB label recognising reduced water consumption.

- The waste recycling rate has seen a steady increase from 3.23% to 16.9% from AY 06/07 to AY 10/11. However, the total waste disposed increased by 45 % from 3,377 tonnes to 4,882 tonnes over the same period. Although the increased recycling rate is encouraging, it also indicated that recycling alone is insufficient and more must be done to reduce waste at source.
- With the introduction of the Building Construction Authority's Green Mark Scheme since 2005, NUS' requirements for more stringent ESD requirements on new and existing buildings have led to a total of 12 buildings being certified, of which 4 have achieved the highest Platinum level. (University Town was one of the only two projects nationally to be certified GoldPlus Green Mark for Districts. The Green Mark for Districts scheme is a new one that recognizes sustainable practices in the design and implementation of precinct or district developments.).

### **Oxford University**

- Carbon emissions increased by 2.2% in absolute terms. However, emissions per square metre floor space fell by 2.9%. The emissions increase was due to the 29,500m<sup>2</sup> expansion of the University estate (Earth Sciences building, Swindon Book Store and Oxford Molecular Pathology Institute).
- While potable water consumption increased slightly, a Water Management Strategy has been established to provide a road map for reducing water usage in the medium term. A key infrastructure initiative is the harvesting of rainwater from campus buildings to be used for toilet flushing.
- While emissions from air and fleet travel have risen, a number of strategies have been implemented to assist in changing travel behaviour, including development of a Business Travel Toolkit; collaboration with a national car share scheme (Journeyshare) that allows staff and students to identify car share/travel partners; and video conferencing
- Four buildings received a BREEAM rating for environmental design.
- Various recycling and reuse strategies were implemented including a Virtual Swap Shop (allowing the University to reuse 93.81t of furniture, stationery and laboratory equipment in house, with a consequent estimated £37,000 saving.)
- OxGrow, an edible garden project managed by staff, students and the local community was established to provide Oxford Hub's Turl Street Kitchens with fruit, vegetables and herbs, as well as giving volunteer staff and students an opportunity to learn how to grow food sustainably.

### **Peking University**

- A range of energy efficiency strategies have been implemented including improvements in thermal effectiveness of building envelopes; centralised energy management systems for lighting and heating; energy sourcing from geothermal and ground source heat pump
- Transitioning boiler operations from coal to gas fuel, with the consequent reduction in atmospheric emissions
- Development of campus infrastructure to reduce waste production and promote recycling.
- Establishment of water recycling plant and new campus irrigation regimes to reduce potable water consumption.

## University of Tokyo

- The University was required to establish a range of energy reduction strategies in to address the energy shortages that followed the Great East Japan Earthquake (on March 11, 2011) and the subsequent failures of nuclear power reactors including Fukushima Dai-ichi. Using work already completed by Todai Sustainable Campus Program (TSCP), various energy saving strategies have been implemented including modified operation of air-conditioner (changed temperature set points and reduced operating hours), removing lamps, stopping use of non-experimental refrigerators, stopping heaters in wash let toilet, switching off electric water heaters, reduced operation of elevators, energy saving mode in PC, reduction of computer servers in operation, using laptop (in lieu of desktop infrastructure) and stopping the use of high electricity demand experimental equipment in non-peak time. An online system displaying energy consumption was also introduced to allow the campus community to visualise the energy profile and thereby modify their behaviour. These strategies achieved an average reduction of 31% during peak demand, while total electricity consumption was reduced by 23% during April through August 2011.
- The University has a target of 15% reduction in CO<sub>2</sub> emissions from non-experimental sources by 2012 (against 2006 level). The actions taken to address the electricity shortage has suppressed electricity consumption in 2011 and as a consequence annual CO<sub>2</sub> emission was reduced by 13% from 152,495 t-CO<sub>2</sub> in FY2010 to 132,897 t-CO<sub>2</sub> in FY2011.

## Yale University

- The Sustainability Strategic Plan 2010-2013 continues to shape and guide Yale's overall campus sustainability commitment. The following details achievements in 2011:
  1. GHG Emissions: 11.5% reduction against 2005 levels [despite a 11.3% growth in campus size]
  2. Waste reduction: 20% decrease in solid waste to landfill from 2009 levels
  3. Recycling: Increased recycling rate to 26% from 21% in 2009
  4. Composting: 95% of all pre and post-consumer food waste is being composted in Yale University dining facilities.
  5. Green Buildings: Yale is committed to designing all new buildings and major renovations to a LEED Gold certification standard. Since 2004 Yale has built and certified eighteen LEED certified building projects [2 Silver, 14 Gold and 2 Platinum].
- The Sustainability Strategic Plan also called for a number of resource management plans which are now in process. These include Potable Water, Storm Water and Ecosystem Management plans which will all be the first of their kind for the University. At the systems level, staff is working on the development of a Sustainable Transportation Plan and a Sustainability Supplement to the Yale Framework Plan. In an effort to ensure that the Sustainability Strategic Plan has broad reaching impact across the university, the Office of Sustainability is working hand in hand with four of the professional schools at Yale – Medical School, School of Forestry and Environmental Studies, Divinity School and the School of Management – to develop school specific sustainability action plans. The University is also running a number of projects including Green Laboratory and Green Workplace Certification; real time energy “dashboards”; and a sustainability micro loan fund.

## Summary Report - IARU Sustainability Fellowship Program

University	Fellowship Officer	Fellows Sent/Received				
		2009 (Pilot)	2010	2011	2012	Total
ANU	Teifi Caron	2	3	2	2	<b>9</b>
ETH	Dominik Brem	N/A	1	1	2	<b>4</b>
NUS	Marcus Tay	N/A	2	2	2	<b>6</b>
PKU	Lu Bin	N/A	1	N/A	1	<b>2</b>
UCB	Judy Chess	N/A	2	N/A	1	<b>3</b>
CAM	Martin Whiteland	N/A	2	2	2	<b>6</b>
KU	Hans Halvorsen	N/A	1	2	2	<b>5</b>
OXF	Jenny Ekelund	N/A	2	2	2	<b>6</b>
UT	Hanaki Keisuke	N/A	1	N/A	1	<b>2</b>
YALE	Julie Newman	2	2	2	2	<b>8</b>
<b>Total</b>		<b>4</b>	<b>17</b>	<b>13</b>	<b>17</b>	<b>51</b>

2011 Sustainability Fellowship Program: Seven Universities participated in the program in 2011. PKU and UC Berkeley were unable to send/host interns due to logistical and financial issues, while the impacts of the earthquake and subsequent nuclear power emergency meant it was difficult to organize fellows in a time frame to suit both University of Tokyo and sending Universities. Despite these set backs, the overall program was successful with several innovative projects being undertaken, including the development of an I Phone application that will allow residents to complete an environmental audit of their on campus accommodation and the further refinement of the Yale Green Certification standards for campus events (<http://sustainability.yale.edu/green-event-certification>)

2012 Fellowship Program: All Universities will be participating in the 2012 program. The following table provides the details of the agreed intern exchanges. The Fellows will be required to complete reports and the best projects will be published in the project library on the IARU web site (<http://www.iaruni.org/grand-challenge/fellowships>)

Host University	Sending (Parent) University
Cambridge	UC Berkeley; The University of Tokyo
ANU	Yale University; University of Copenhagen
UC Berkeley	University of Cambridge
Oxford	ETH Zurich; Peking University
Copenhagen	Yale University; University of Cambridge
NUS	Oxford University; University of Copenhagen
Peking	NUS
ETH Zurich	NUS; Oxford University
Yale	ETH Zurich; ANU
Tokyo	ANU