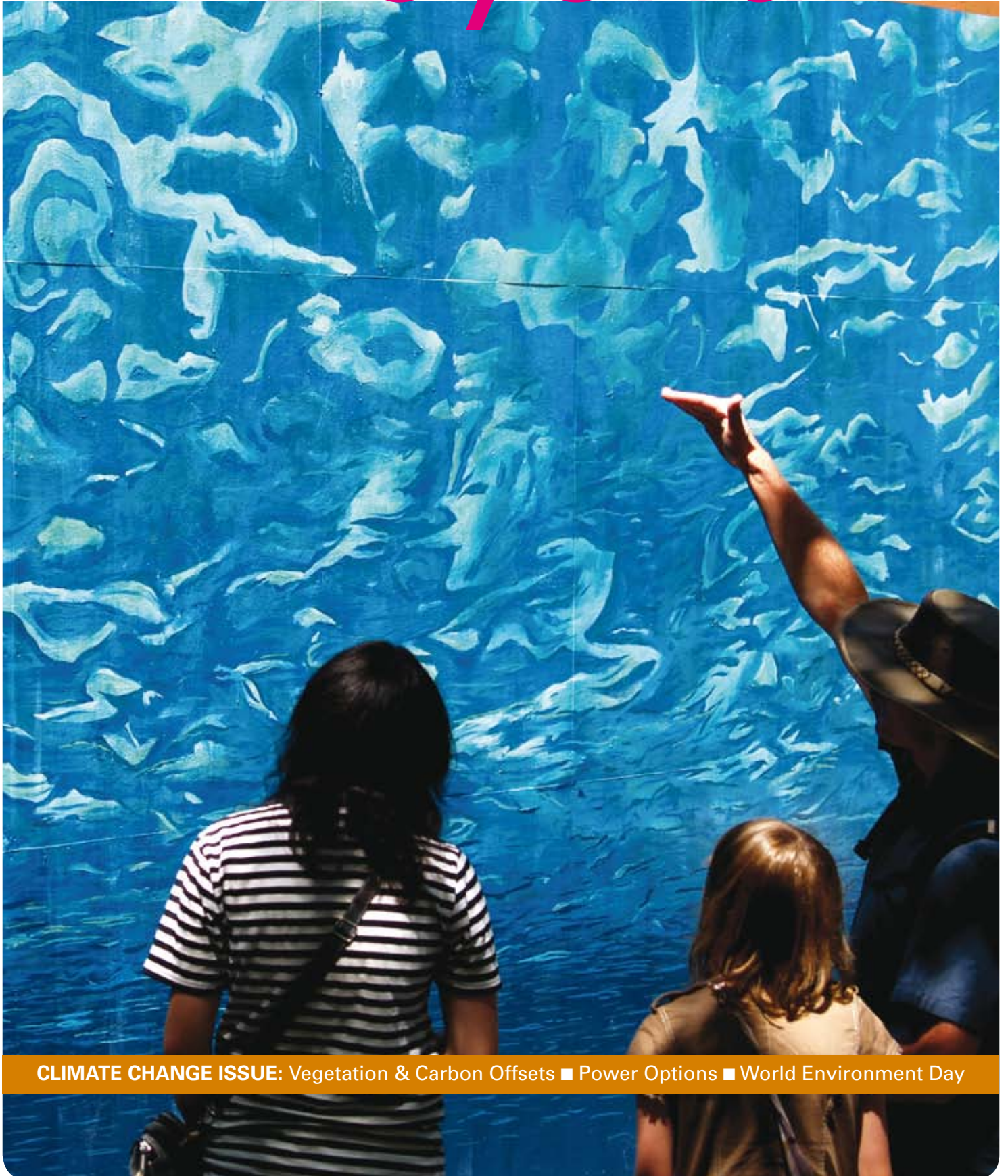




# BeyondEP



**CLIMATE CHANGE ISSUE:** Vegetation & Carbon Offsets ■ Power Options ■ World Environment Day

## In 2007 climate change became a pressing concern within Australia.

Community calls for action contrasted with an ambivalent response by governments to the possibility of major climate change regulation and energy sector reforms. Australia, tied as a matter of geology and history to a dependency upon fossil fuels, now faces key decisions in a climate change future. *Beyond EP* highlights the activities of the Office for Environmental Programs (OEP) in disseminating information about climate change, raising awareness about sustainable use of energy and resources, as well as its support for research and multidisciplinary teaching addressing climate change.

Climate change exemplifies the complex character of environmental problems and consequently a multidisciplinary perspective is crucial. The Graduate Environmental Program provides students with a unique opportunity to develop such perspectives. Students can undertake science subjects providing climatic data about global warming, engineering subjects that explore energy options, while other subjects enable a consideration of policy and governance questions related to climate change. Other subjects allow investigation of social and behavioural change through educational and planning processes. Impacts upon biodiversity and animals might be explored in the conservation subjects or even

in a veterinary science subject, while ramifications for food production and natural resource management can be studied in land and food resources subjects. Economic and legal instruments regulating climate change can be investigated, while human health impacts can be examined in the public health stream. The program is a paradigm for the Melbourne Model in its trans-disciplinary approach and the breadth of the learning experience that it offers. Graduates have the qualities to tackle pressing environmental challenges in industry, government and the community.

Program quality is further enhanced by the active engagement of academic staff teaching into program, who bring to bear cutting edge research. For example, consistent with the climate change focus, Dr Anna Hurlimann, an OEP teacher, led a plane tree forum discussing climate change and recycled water use.

*Beyond EP* is pleased to emphasise our student research activities, as these enrich individual learning and the program as a whole. It is pleasing to see external recognition of student research projects, via awards and prizes. Knowledge transfer activities have been myriad, including support for a Pacific Rim Universities *Climate Change and Sustainable Cities* workshop in San Diego, and a *Water and Energy: Australia – China Climate Change Futures* Conference (with the Law School and the Uniwater Research Centre) that brought



leading Chinese delegates to the University. In addition, we have been involved in many other activities Beyond Climate Change!

As incoming Director, I would like to record my appreciation to former Director, Professor Jacqueline Rowarth, who provided such a strong basis for further development of the OEP. Jacqueline and OEP staff greatly assisted my transition to the Office, and we welcome back Helen Duckham. OEP acknowledges the contribution of Dr Sherie McClam, Deputy Director, who returned to the USA in June. Sherie's contribution to the trans-disciplinary character of the Graduate Program has enlivened our program, pedagogy and epistemology! My thanks to those who continue their support of OEP, especially Deputy Directors, Mark Burgman and Mike Connor, the Academic Advisory Committee and Community and Industry Advisory Board, as we enter an exciting time of transition and future directions for OEP and the University of Melbourne.

Dr. Lee Godden  
Director  
[l.godden@unimelb.edu.au](mailto:l.godden@unimelb.edu.au)

## Parched

COVER PHOTO: From 'Parched' by Ash Keating

The Mockridge Fountain is a 3.4m high x 10m long water wall on the corner of Collins and Swanston Streets, Melbourne. Due to water restrictions the fountain has been de-activated and covered with timber panels.

The conceptual mural by Ash Keating was produced in partnership with Melbourne Water and with the support of the City of Melbourne as part of their commitment to educating the community about important water issues.

Parched began by creating an entire painting of water, as if the public were beneath the surface looking up. Executed with environmentally friendly paints, the water

level slowly depleted each week as it was painted out with a long perspective of dry land.

When painting out the first level of water on Tuesday 23rd January Melbourne's water stores were 37.2% and when painting out the last at the end of March the water stores were at 32.2%. A five percent drop. Even after it finally rained, the stores continued to drop below 30%.

## BeyondEP

MAGAZINE OF THE OFFICE FOR ENVIRONMENTAL PROGRAMS, THE UNIVERSITY OF MELBOURNE



Editor Dr Lee Godden  
Sub-editors Louise Wilson, Peter Morgan, Helen Duckham  
Design Blue Vapours  
Photography Cover: ©Ash Keating; page 3 photograph courtesy of Brendan Sydes; page 5 photo courtesy of Liz Boulton, page 6 diagram courtesy of Kate Noble; page 6 photographs courtesy of Kumi Kato, page 7 photo courtesy of Jim Falk.

Further details about research and events described in this magazine are available through the Office for Environmental Programs. Details are correct at the time of printing.

# Native Vegetation Policy and Carbon Offsets

Brendan Sydes (Master of Environment)

European settlement has dramatically altered the Australian landscape with clearing of large areas of native vegetation driven by economic opportunity and, in many cases, government policy. The last 20 to 30 years, however, have seen a significant shift in Government policy and the increasing recognition of protecting and enhancing remnant native vegetation is an important environmental policy objective.

This is a contentious policy area, particularly with respect to vegetation on private land, where the public benefit outcomes of protecting native vegetation can conflict with the development of that land for agricultural purposes or for urban expansion.

Biodiversity offsets promise some resolution of this conflict by allowing development to proceed provided that development impacts on biodiversity are offset by compensatory conservation actions. An example in the context of native vegetation would be an arrangement where an urban developer wanting to clear vegetation offsets the biodiversity impacts by restoring or revegetating an adjacent area of bushland.

The flexibility and potential for better conservation outcomes promised by offsetting schemes have proved particularly attractive for policy makers. Various forms of biodiversity offsetting schemes have been proposed or are in the process of being implemented around Australia. There has, however, been little in the way of critical scrutiny of offsetting schemes and how effective they are in practice.

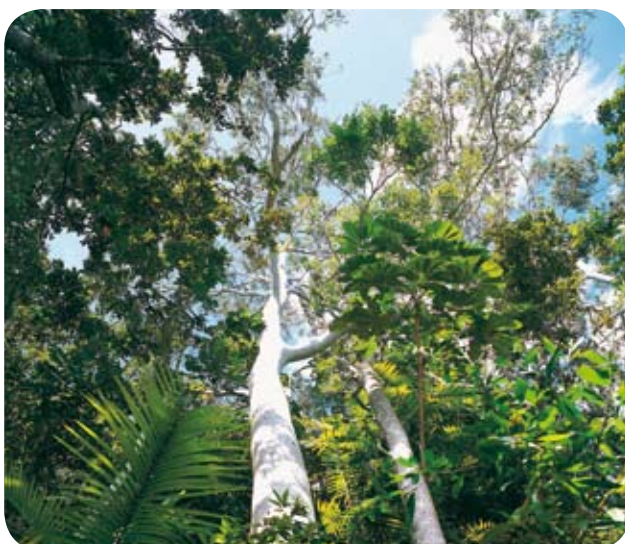
Native vegetation offsets as forms of carbon sequestration may play a major role in the range of adaptations that will be required for climate change.



Conservation science emphasizes the irreversibility of biodiversity loss and the expense and difficulty of biodiversity restoration. These are key issues for any biodiversity offsetting scheme and it is a common feature of such schemes to recognize that preventing biodiversity loss should be a top priority, with offsetting a last resort only if losses are unavoidable.

As an environmental lawyer, I have a particular interest in how biodiversity offsetting schemes are implemented and the issues and practical problems that arise in translating policy objectives into on the ground conservation outcomes. As part of my Masters of Environment I undertook a research project considering the implementation of Victoria's "net gain" policy for native vegetation. My research considered the difficulty of giving effect to the priority to avoid further native vegetation losses, a situation that may be exacerbated where the promise of offsets can become a justification for permitting vegetation removal.

Another key issue that I identified is the difficulty in ensuring that offset promises are actually delivered. Ensuring that offset conditions are legally clear and enforceable, and that there is the necessary commitment of political will and financial resources to monitoring and compliance, is critical to the success of a biodiversity offset scheme and an area where more attention will be required.



*Brendan Sydes was a student in the Master of Environment Program from 2004–2006.*

# Power to the People

Miguel Brandao looks at power generation technologies on offer.

In an attempt to reduce carbon emissions and address concerns of climate change (the Stern Review recommends 80% reductions by 2050), many nations are planning and defining targets to adopt “clean” energy generation. While Australia is a potentially resource rich country in regard to renewable energy, 95% of its power is currently generated by fossil fuels – mainly coal, gas and imported oil (ABARE).

“Clean energy” or low emission technologies include wind, solar, nuclear, coal power with CCS (carbon capture and storage) and biomass.

Wind and solar technologies use no fuel, therefore have low operating emissions footprints subsequent to the fabrication process.

Nuclear power has the unsolved issue of nuclear waste storage and needs huge amounts of energy and water for fuel processing. CCS is a technology that is not yet at a commercial phase. Biofuels release emissions at lower, but still high levels, and compete with food production for land use. All of these technologies use water, with nuclear and coal needing larger amounts for fuel processing and cooling processes, with serious impacts for water-scarce Australia.

Australia, despite being the continent with the best solar resources in the world, faces an internal stall in the renewables market. It has failed to recognise the merits of solar energy technologies; their flexibility of application (from remote to grid-connected systems), scalability (from domestic systems to large power stations) and ability to complement other technologies.

A lack of cost-effectiveness has been argued as limiting the growth of the solar energy technologies market. The average costs of solar energy technologies are generally not competitive with wholesale electricity as there is an unequal comparison of costs between amortized and market mature technologies, and developing unsubsidised technology.

Germany and Japan, although having smaller solar resources than Australia, have recognised the potential and benefits of photovoltaic (PV) technologies, and developed supporting policies (with R&D and incentives offering good return on investment, security and low investment risk) to foster internal market uptake. The result? These countries are now the leaders in this technology, responsible for lowering its cost and accelerating its markets.

While energy storage technologies are still high cost and need further development, solar energy does have the merit of offering the highest output capacity when it is most needed, during hot summer days. If the domestic market changes the use of off-peak electricity to peak electricity (off-peak incentives were invented to favour coal-fired generation), solar energy can deliver the electricity that would otherwise be required from base load

*Miguel, a full time International Student recently completed his Postgraduate Diploma in Environment and is pursuing a research degree in the UK.*

power. Solar thermal power technology already has some degree of storage, making it flexible enough to meet specific peaks and alternating loads.

Solar energy domestic applications also have the capacity to enable “distributed generation”, where every household (or office) can become a small electricity generator, thus varying supply source and lowering electricity transportation losses.

There is an additional hidden potential in a distributed generation scheme: people taking environmental and energy measures are very likely to further extend their actions and adopt energy efficiency and conservation practices, contributing to a lowering in demand, which becomes significant when scaled to a large number of households.

While government and energy policies in Australia have contributed to an initial solar market, these policies alone will never be enough to develop a strong solar energy market. The current funding distribution favours CCS technology, indicating to the market that Australia is not considering solar energy as a priority.

The solar energy market needs a clear sign from government, strong and fair economic incentives for a developing set of technologies, and regulation that fosters adoption of renewable targets. Examples might include the obligatory incorporation of solar technologies into buildings, or mandatory 100% green energy for government buildings and large electricity users. Information and education campaigns are also needed for the public, construction industries, and business generally, to demonstrate the advantages of solar energy technologies. Such policies will enable solar energy to play its important role in global solutions to lower carbon emissions and avoid dangerous climate change.



# Women on the Move

## Women in Freight Logistics and Marine Management Scholarship Prize Winner!

After 12 years working in the logistics and supply chain field, the book 'Natural Capitalism' alerted Liz Boulton to environmental problems in the world, particularly climate change. As a logistician, Liz immediately comprehended that the prospect of reduced energy, fuel, water and materials, will have serious implications for any supply chain operation over the next 10-50 years. This passion led to her entering and winning the 2007 Women in Freight Logistics and Marine Management Scholarship.

The Department of Infrastructure offers the annual scholarship to female students undertaking postgraduate studies in the freight, logistics or marine-related fields. The prize aims to encourage women across Victoria into management positions within these industries thus addressing the gender imbalance in an industry that has been traditionally male dominated.

### Liz Boulton's Research Interest

In undertaking her studies in the Masters of Environment, Liz said her aim was to gain a solid grasp of environmental threats and solutions so that she could develop her company, 'Logistick Pty Ltd,' into a sustainable supply chain consultancy.

She has selected subjects oriented towards this goal and has studied the reverse logistic implications of the 'Extended User Responsibility' scheme used in the EU, sustainable packaging design initiatives, building design, environmental auditing, law, policy and the regulatory environment, plus the impacts of climate change on Australia.

Her research intention is to focus this upon 'global best practice sustainable supply chains' and then assess which initiatives or practices are most applicable to the Australian context.

'My course is highly relevant to the freight, logistics and marine industry, as two significant issues: "peak oil" and climate change are key threats to way in which supply chains are currently conducted,' Liz said.

In terms of 'peak oil', the Federal Government has recently published an interim report on future oil supply and alternative transport fuels<sup>1</sup>, which highlights the vulnerability of the transport sector, and associated industries which are highly dependant upon distribution. In terms of Climate Change, 'The Stern Review'<sup>2</sup> has advised of the urgent need for global economic tools to place a cost on carbon. A carbon tax or emissions trading scheme will have implications across entire global supply chains, particularly in the Australian context where comparatively low fuel prices have been enjoyed. To adapt to these significant impacts, the Australian logistic sector needs to adopt a risk management approach which aims to avoid the occurrence of 'stranded assets' and allows a manageable rate of change. Part of achieving this is developing the sector's 'intellectual capital' in this area, in the same way that the current generation of logisticians have had to become IT literate'.

## Scholarship information

The scholarship is awarded for one year full-time or two years' part-time study. The scholarship recipient is given the opportunity to work part-time with the Freight, Logistics and Marine Division within Department of Infrastructure.

Selection Criteria:

- Knowledge and Commitment to the Logistics Industry
- Relevant Industry Experience
- Leadership and Initiative
- Potential to achieve Academically

For more information contact the Department of Infrastructure [www.doi.vic.gov.au](http://www.doi.vic.gov.au)

<sup>1</sup> The Senate, Rural and Regional Affairs and Transport References Committee, Australia's Future oil supply and Alternative Transport Fuels', Interim Report, September 2006

<sup>2</sup> Stern, Nicholas, The Economics of Climate Change, United Kingdom Cabinet Office - HM Treasury, 2006 [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

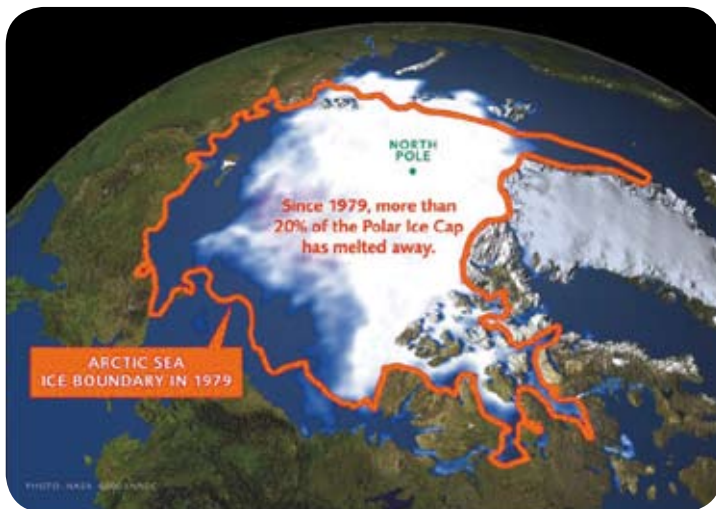
*Liz Boulton is a part time Masters of Environment student. She has been studying in the program since 2005 and works full time.*



## February Seminars

Two CIAB seminars were held on Friday 23 February in conjunction with the first day of the core subject Sustainability Policy and Management.

Both were well attended by students and staff from across the University.



**Kate Noble** is a Sustainable Cities Campaigner with the Australian Conservation Foundation (ACF). Her presentation on Environmental Advocacy and its role in sustainability policy provided the introduction for the core subject Sustainability Policy and Management and was attended by over 60 staff and students. After providing a brief outline of the mission and goals of the ACF, she described environmental advocacy as a three stage process:

- The importance of raising awareness of environmental issues, in particular global warming, and ensuring these are placed on the agenda of decision-makers.
- Developing solutions through working with academic and other researchers to find the right policy mechanisms and framework, identifying the costs and benefits of each. As part of this process Kate examined the question of regulation versus Best Practice Standards.
- Promoting solutions by building the case for change, persuading stake-holders and decision-makers to come on board, and ensure that policy decisions are delivered.

Kate concluded by noting that everyone has a role to play in creating sustainable cities; politicians, policy-makers, industry, environment groups and, most importantly, citizens.

**Dr Kumi Kato**, from the School of Languages and Comparative Cultural Studies, University of Queensland, provided a different perspective on sustainability. She introduced the audience to her work with a soundscape presentation on the topic “Hearing the Intangible – ethics and spirituality of subsistence communities”. Kumi’s work transcends many media with the objective of conveying ‘the beauty and strength of humanity and their obligation to the natural environment, which we so depend upon.’

In her presentation, Kumi demonstrated how soundscapes help humans recognise their place in relationship to their surroundings. Intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history.

Through images and sounds, Kumi highlighted the importance of linking communities across cultures committed to the same environmental issues, forming a moral community across geopolitical boundaries and addressing the global nature of environmental responsibility. Her work demonstrated the ability to express activism through positive acts – celebration of beauty, trust and creativity.



# Dispatch from the Pacific Rim Conference

from Professor Jim Falk

Melbourne University is a relatively new member of the Association of Pacific Rim Universities, an association of 37 leading research universities around the Pacific Rim. On 4-6 April I attended the first meeting of its World Research Institute, a meeting focussed on the research challenges of Climate Change and Urban Sustainability.

The meeting was hosted by the Scripps Institute of Oceanography at the University of San Diego. It was an important and memorable conference, of a quality of expertise, intensity of interaction, and clarity and significance of presentations, that is seldom achieved.

One of the reasons for this was that the participants were generally leaders in their fields (one - Molina - held the Nobel Prize for discovering the chemistry of the destruction of the ozone layer; another - Sommerville - led the recent IPCC Fourth Assessment Report, etc). A second reason for its success was that there were about 40 people present – a small enough group to allow quality interactions between participants. A third was that the program was particularly well structured and moderated with plenty of time for discussion. And finally, the urgency and gravity of the issues under discussion gave a sense of importance and focus to the discussion which was very satisfying.

Areas covered included the latest results on global warming, an important historical perspective, an up-to date analysis of



China's energy policies from Beijing, a careful and worrying presentation on the global implications for food, excellent examples of corporate leadership in emissions reductions, issues in environmental security, and a quite gripping discussion on transdisciplinarity.

There was great interest in what was happening at the University of Melbourne, especially with the Climate Adaptation Science and Policy Initiative (CASPI). A number of the member universities (including San Diego) have embarked on similar whole of university CASPI-like exercises.

As far as collaboration around climate change research is concerned, APRU seems to be the right organization in the right place at the right time. At the meeting it was proposed that we set up a program of research collaboration stretching from Beijing to Melbourne, to San Diego, across the Pacific Rim. There was considerable support for this sort of development. Such research collaboration could be an important ingredient in achieving the political momentum necessary to tackle some of the key dynamics of emissions growth on a truly global basis.

## News From PEN

The Postgraduate Environment Network (PEN) formed in March 2006. PEN supports postgraduate environment students and others in their learning, provides a forum for students and alumni to share ideas and engages in projects that promote sustainability.

Many PEN members are studying through the OEP, and PEN provides a means for this diverse group to converse and connect outside class. PEN and the OEP have and will continue to collaborate on various events and workshops throughout the year.

For further information see: [www.PEN.net.au](http://www.PEN.net.au) or contact Daniel Besley (PEN President) on: [d.besley@pgrad.unimelb.edu.au](mailto:d.besley@pgrad.unimelb.edu.au)

## Water, Energy and Climate Change Futures:

Australia and China 22-23 May 2007

The Conference was an interdisciplinary forum organised by the Centre for Resources, Energy and Environmental Law and the Asian Law Centre, and the Office for Environmental Programs at The University of Melbourne in conjunction with the Australia-China Centre on Water Resources Research. The Conference was opened by Mr Chris Bell from the Environment Protection Authority Victoria who is a member of the OEP Community and Industry Advisory Board.

The focus of the first day was on "Energy" and featured leading Chinese experts on energy and resources law, who are involved in the development of future regulatory frameworks for energy and the pressing issue of climate change. Distinguished speakers from China included Professor Wang Mingyuan, Executive Director, Centre for Environmental, Natural Resources and Energy Law, Tsinghua University Law School, and Professor Ye Rongsi, Chairman, Energy Law Academy, China Law Society.

The second day of the conference focussed on "Water". Professor John Langford opened with a joint plenary, together with the Chinese Director of the Australia-China Centre on Water Resources Research, Professor Xia Jun, from the Chinese Academy of Sciences. In this regard, the conference built on the initiatives developed at the first Australia-China Water Resources Workshop, held in February 2006 at the University of Melbourne.

Leading Australian and Victorian water experts covered areas including: water allocation and conservation policies, groundwater, healthy rivers and integrated catchment management in presentations

throughout the day. Chinese delegates also visited the Latrobe Valley to view power generation and water storage sites.

The conference was a collaborative endeavour working towards the sharing of knowledge and experiences as both China and Australia grapple with the challenge of securing energy and water futures in both countries in light of climate change impacts.



## World Environment Day

Professor Jacqueline Rowarth, Massey University, New Zealand and former Director of the OEP.

One world, one University of Melbourne, many concerned people - and the sum is a commitment to the environment throughout the year which is overt in the celebration of World Environment Day.

World Environment Day is commemorated each year on 5 June. It was established by the United Nations General Assembly in 1972 to mark the opening of the Stockholm Conference on the Human Environment, and is one of the principal vehicles through which the United Nations stimulates worldwide awareness of the environment.

At the University of Melbourne, staff and students are well aware of the importance of the environment and human activities upon it. The annual gathering allows time for staff and students to catch up on University activities in terms of recycling, saving of energy, energy purchasing, new building strategies, transport initiatives, etc. This year over 100 people attended the event co-hosted by the Environment, Health and Safety (EHS) Unit and the Office for Environmental Programs. They were given information as well as sustenance and time to converse with colleagues.

Steven Malcolm, State Program Manager, Education and Behavioural Change Strategy, in the Department of Sustainability and the Environment, gave the guest presentation on the various initiatives occurring in Victoria, through the DSE. Stefan Delaney, General Manager of EHS at the University of Melbourne, presented information on all that the University is doing to ensure improvements in environmental impact. He was supported by the presence of some of the companies involved in recycling on campus.

In keeping with the United Nations theme for 2007, Melting Ice – a hot topic?, the OEP gave a door prize – White Nature - a collection of stunning photographs from cold climates. Dr Mike Connor, a long time supporter of sustainability and creator and teacher of a core subject in the Graduate Environment Programs (Sustainability, Policy and Management) was the lucky recipient. Few returned home empty-handed, however, as REPSA (Recycling Expanded Polystyrene Australia) had examples of 'polystyrene to picture-frames' to give away - a practical example of recycling waste into attractive and useful items.

Mark 5th June as a green letter day in your calendar and we will be in touch about where and when for 2008.

Bookmark our website for updated information about these and other events [www.environment.unimelb.edu.au](http://www.environment.unimelb.edu.au)

## BeyondEP

BeyondEP is printed using vegetable based inks onto stock which is 100% Recycled. The printer and paper manufacturer are accredited to ISO14001 - the internationally recognized standard for Environmental Management.

The Office for Environmental Programs features work by students and academics connected with the Graduate Environmental Programs, and events organised by the Office. For future events, please see [www.environment.unimelb.edu.au](http://www.environment.unimelb.edu.au)  
Contact details: University of Melbourne, Victoria 3010, phone 03 8344 4773 / 5073 or [Query-environment@unimelb.edu.au](mailto:Query-environment@unimelb.edu.au)

