

# ENVIRONOMICS

AUGUST 2008

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## Welcome from the Director

The Environmental Economics Research Hub is up and running. And to help you keep in touch with what's happening in the Hub, we're initiating "Environomics". Through this periodic newsletter, we will alert you to upcoming Hub events, provide brief overviews of workshops, seminars, training courses etc that Hub members have organised and give some insights to the research projects and people that make up the Hub.

Over its short life to date, a lot has been achieved through the Hub. As well as having the fourteen major research projects that form the core of the Hub under way, there has been a range of events conducted. Some of these are reviewed in this issue while others are detailed on the Hub web page:

[http://www.crawford.anu.edu.au/research\\_units/eerh/index.php](http://www.crawford.anu.edu.au/research_units/eerh/index.php)

We're continually refining the webpage, so please lock it in as one of your favourites and keep an eye out for new items. One of the key elements in the web-page is the link across to the EERH Research Report series. We have a couple of Reports already loaded and more on the way. This will be a major outlet for the results of Hub projects.



*Professor Kevin Fox, UNSW, Dr Frank Jotzo ANU and Dr Regina Betz, UNSW at the first EERH workshop held on 20 May at University House, ANU*

The EERH represents a turning point in Australian Environmental Economics. For the first time, the Australian Government has committed a significant sum of money to research into the application of economic techniques to issues relating to the environment. The significance of economics as a key contributing discipline to environmental policy has been recognised and a group of Australia's top practitioners has been assembled to deliver policy relevant research results. "Environomics" will help you keep up with the fruits of these labours.



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## International linking of emissions trading

Public forum by Regina Betz (UNSW) & Frank Jotzo (ANU)

"Emissions trading" must be in the running for Word of the Year in Australia. Australia is set to introduce emissions trading, New Zealand is about to implement its scheme, other markets are emerging including in North America, and the EU scheme is maturing. Yet with all the public discussion about the design of Australia's emissions trading scheme – or ETS in the jargon – it is still unclear to what extent and how Australia's system will be linked to other markets internationally.

EERH project leaders Frank Jotzo of ANU, and Regina Betz of UNSW, convened a public forum on international linking of emissions trading, on April 15 at ANU. The event attracted well over 100 participants, predominantly from government, industry and academia, with a number of top level representatives from government and industry associations. This was one of the first such forums in Australia, and made an important contribution to the policy debate, with much room given to discussion between presenters and the audience.

The linking research by Betz and Jotzo under the Hub is associated with a project on linking of emissions trading schemes by Climate Strategies, a European research initiative. Anthea Harris, of Australia's Department of Climate Change,

discussed Australian government perspectives on linking. She detailed the government's design process and timeline, discussed considerations for international market linking and options for bilateral links, and highlighted that policy is likely to evolve with the changing international environment.

John Scott, of the New Zealand government Emissions Trading Group, explained why international linking is an important feature of the NZ scheme. He emphasized the access to low cost abatement opportunities and a more liquid market, less price volatility, and the prospect of assisting in developing a global response to climate change. He also explored the options of trans-Tasman linking.

Stephen Howes of ANU and the Garnaut Climate Change Review discussed the pros and cons of international linking, and detailed some preliminary recommendations from the Garnaut Review. He argued that the decision to link with particular markets is a matter for fine judgement, but ultimately global mitigation will only be successful if countries can trade in emission permits. He also discussed prospects for linkages to Australia's neighbours to the North.

Erik Haites of Margaree Consultants, Toronto Canada, spoke on 'Getting linked, breaking up'. He showed that unilateral links are easy to implement, but need cooperation among countries that have Kyoto targets. He predicted that most schemes will be unilaterally linked with the CDM, with bilateral links more complicated, and concluded that breaking up a linkage is not so hard – especially if a pre-nuptial is in place. Haites also gave an update on North American carbon markets, with various schemes in the US and Canada in operation, about to begin or being planned. Prospects for linking are there but largely still unclear.

Ashley Stafford of Baker&McKenzie explored legal aspects of linking emissions trading schemes. He pointed out that few commodities are so intangible as carbon permits, raising questions over the status of permits as property rights, and their treatment across national and international jurisdictions. He showed how small changes in design, which is in the hands of sovereign nations, can impact on international linkage, and pointed out the need for consistency with international emissions trading obligations.

Tony Beck of the Australasian Emissions Trading Forum (AETF) asked whether Australia has missed the bus on Kyoto's Clean Development Mechanism (CDM). He explained about fast growth and future prospects in the CDM, which allows developed country investors to put money into projects in developing countries and receive emissions reductions credits. Australia as a late-comer still has some opportunities, and argued the focus should be on longer term potential. Frank Jotzo of ANU discussed likely effects of linking on prices in domestic schemes. The large markets determine the level, and Australia is likely to be a small player in the

emerging international field. He argued that despite fears of taking another country's price, there is an inescapable tendency toward a globally harmonised price through linking, and that this may in fact be desirable for Australia.

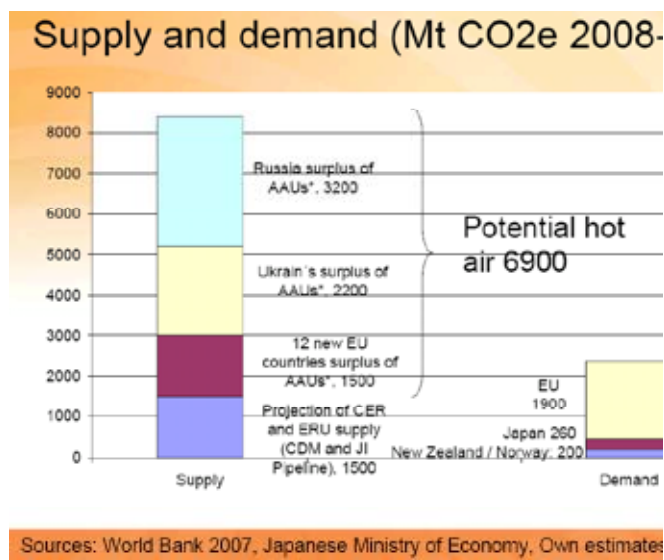
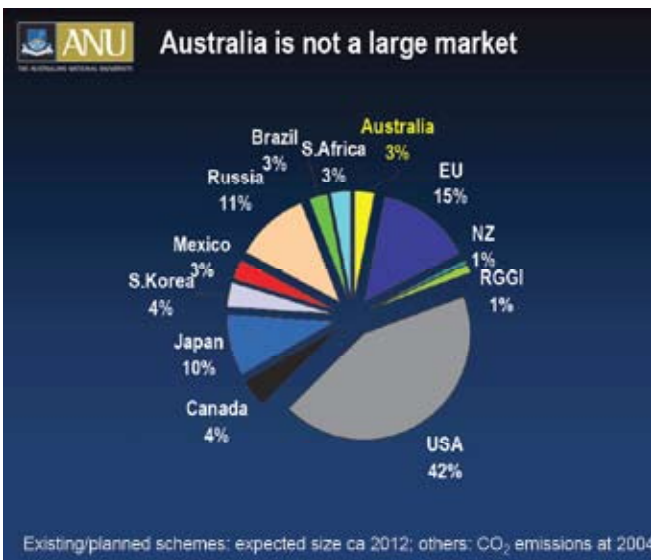
Regina Betz of UNSW concluded discussions with lessons from the EU ETS, the largest global permit trading scheme. There could be problems for linking with Australia because of possible design differences such as on banking and borrowing of permits, and the potential inclusion of forestry and agriculture. She also pointed out that EU concerns about

'hot air' permits from the former Soviet Union Russia that may be allowed into the NZ system.

The forum was opened by EERH director Jeff Bennett, and chaired by Jack Pezzey, who also leads a climate change economics project under the Hub.

Presentations from the forum are available here:

[http://www.crawford.anu.edu.au/research\\_units/eeerh/ETS\\_forum.php](http://www.crawford.anu.edu.au/research_units/eeerh/ETS_forum.php)



Hub Director, Professor Jeff Bennett talking with DEWHA staff at the Hub workshop in May



Dr Michael Burton from University of Western Australia presenting to the Hub Workshop





*Amy White from Griffith University in Brisbane, who presented Prof Tor Hundloe's project, Socio-economics of on-farm renewable energy at the Environmental Economics Research Hub workshop held at University House at ANU in May.*



*Professor John Rolfe, Central Queensland University, Leader of the Hub Theme Valuing environmental goods and services*



*Environmental Management and Development PhD student Marit Kragt working on Integrating Economic Values in Catchment Models.*

## INTRODUCING GABRIELA SCHEUFELE

Working in natural resource management for a couple of years made me realize how important economic analysis is in an environmental context. This experience motivated me to expand my knowledge in this regard. Therefore, I decided to enrol in the coursework master programme in natural resource economics at the University of Queensland in 2005, which meant moving from Frankfurt in Germany to Brisbane in Australia. Studying natural resource economics had sparked my interest to engage further in the area of ental valuation – and so I looked for PhD opportunities. I decided to start a PhD study at the ANU in the Crawford School of Economics and Government in 2007, which, once more, meant moving – this time from Frankfurt to Canberra. However, it is absolutely worth it! My research is embedded in one of the EERH projects ('environmental values and valuation over time'), which provides the advantageous opportunity to work in an applied context. The goal of the project is to make comparisons of value estimates and the performance of valuation techniques over time, drawing from an over 30 year history of environmental valuation. In 1978, the first contingent valuation method application undertaken in Australia was focused on the existence benefits of the Nadgee Nature Reserve on the far south coast of New South Wales. The intention is to replicate that study using both the original questionnaire and sampling techniques and state of the art non-market valuation tools. The comparison over time afforded by this replication will provide insights into the extent and direction of changes in environmental preferences in Australia and the impact on value estimates of methodological evolution.



*Gabriela Scheufele, PhD candidate in the ANU Crawford School of Economics and Government*

### CHOICE MODELLING WORKSHOP May 1 and 2, Brisbane Powerhouse Marit Kragt, Crawford School ANU

About two dozen academics, students and a number of policy makers and consultants from Australia, New Zealand and the UK and Ireland participated in discussions over the latest progress and challenges in Choice Modelling (CM). The workshop was hosted by the Environmental Economics Research Hub and Central Queensland University.

Speakers addressed a variety of issues. A presentation by John Rolfe on a meta-analysis of CM in Australia highlighted the differences amongst existing CM studies and the difficulties associated with meta-analyses. Benefit transfer issues, presented by Nick Hanley, further identified the limits in comparing and transferring valuation results between sites.

The presence of Riccardo Scarpa and John Rose assured a solid econometric discussion on several topics, including error component modelling and Bayesian design strategies. It is clear that practitioners of CM can no longer get away with conventional multinomial logit analysis and that efficient design strategies can considerably reduce sample size requirements.

Impressive empirical works that were presented on the second day of the workshop included choice experiments on recreational fishing in New Zealand, a comparison with contingent behaviour data and the estimation of social welfare preferences. Further presentations involved work on discontinuous choices in choice modelling experiments.

Finally, Nick Hanley shared his experiences in developing 'best practice guidelines for non-market valuation' in the UK and the subsequent discussion focused on the possible development of similar 'guidelines' for Australia and New Zealand.

A key theme that arose throughout the workshop was the importance of appropriate survey design. Discussed topics as hypothetical bias, impacts of choice complexity and respondents' discontinuous choice behaviour can largely be addressed by a careful design of CM surveys. Development of possible 'guidelines for choice modelling' should pay sufficient attention to the emerging issues discussed during the workshop and advocate use of the latest methodologies for sophisticated designs and data analysis.

The majority of the presentations have been published on the EERH website at [http://www.crawford.anu.edu.au/research\\_units/eerh/workshops/choice\\_modelling.php](http://www.crawford.anu.edu.au/research_units/eerh/workshops/choice_modelling.php)

### THE FIGHT AGAINST SALINITY Extract from "Uniken"

Researchers analysing the environmental economics of water conservation argue that water is undervalued, despite its scarcity, and this is resulting in its misuse and overuse by a range of stakeholders, including industry, farmers, irrigators, and household users.

Water scarcity and undervaluing is driving research in the areas of salinity and pollutant mitigation.

"Salinity is uncertain, relying on many factors which are quite localised," says Professor Kevin Fox, Director of the Centre for Applied Economic Research (CAER) at the Australian School of Business. CAER received a \$1 million grant in 2007 from the Commonwealth Environment Research Facilities Program, for research projects in environmental management, including salinity mitigation. The grant cements CAER, founded in 1976, as an Australian research hub for environmental economics.

Professor Fox says a priority in CAER research is developing instruments and models that take the uncertainty of salinity into account, which he says is a crucial step in the salinity mitigation battle.

Economics PhD student Amy Cheung is researching ways to find the lowest cost and highest efficiency value to salinity mitigation.

Amy's preliminary findings indicate that this lies in tradable permits, where companies monitor their own water use and pollution, are informed about consequences and repercussions of overuse, and can sell leftover permits to other users for cash.

Pricing for water scarcity is a technique supported by Professor Fox.

"The behaviour of farmers upstream affects land quality and farming practices downstream. The introduction of water trading is a way to change water and land management behaviour," he says.

However, balancing the needs of the environment with the bottom-line requirements of farmers is a delicate exercise.

Dr Lisa Lee, who completed her PhD in Agricultural and Resource Economics at the University of Sydney in 2007, used Geographical Information Systems (GIS), a 'Google Earth' for soil, to develop a model in which regulators can meet better environmental targets at the least opportunity cost to producers and irrigators.

"There is a trend in resource management to use models which incorporate biophysical and hydrological aspects of layer interactions. Using GIS to model these changes provides realistic data for economic management of natural resources, and enable us to use water in more environmentally, economically and

socially sustainable ways," says Lisa.

Thomas Longden, PhD student in Environmental Economics, says that phasing out inefficient farming practices will help increase water availability and quality.

Thomas has noted that non-point sources, such as agricultural runoff, create problems for tradable permit schemes. What one farmer does upstream may affect another downstream, and it is often difficult to monitor individual farms pollution, technology and practices.

He has suggested that monitoring water trading should occur at the level where pollutants are measurable. Tradable permit schemes internalise the external costs of water use, such as its scarcity, and provides incentives for the removal of inefficient practices.

"Such a scheme will also assist in decision of land use change, with an expected trend towards crops and practices which use less water. Inherent in nonpoint source pollutants, such as agricultural runoff, is the decision of whether you directly measure pollutants at the closest level possible or simply observe water use and the expected consequences," says Thomas.

*Jared Reed, UNSW*

## Inaugural Hub Workshop 20 May, University House, ANU Meredith Bacon, EERH

The Hub held it's first workshop on 20th May with Project Leaders giving a run down on how their projects have been developing. We were pleased to welcome a number of staff from DEWHA and other agencies including ABARE to join us for what was a very productive day. It is proposed that the next Hub workshop will be held in February next year in conjunction with the AARES Conference.



[http://www.crawford.anu.edu.au/research\\_units/eerh/workshops/annual\\_08.php](http://www.crawford.anu.edu.au/research_units/eerh/workshops/annual_08.php)

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## HUB THEME LEADERS



Theme A.  
Establishing viable markets to achieve environmental goals  
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Theme B.  
Climate change analysis  
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Theme C.  
Advancing Australia's capability for social and economic analysis of environmental issues at the regional scale  
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Theme D.  
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