

15 December 2006

Members
CSIRO Sustainability Network

Feature thought:

"Climate change will affect the basic elements of life for people around the world - access to water, food production, health and the environment. Hundreds of millions of people could suffer hunger, water shortages and coastal flooding as the world warms up." "Our actions now and over the coming decades could create risks of major disruption to economic and social activity on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th Century."

Former World Bank chief economist Sir Nicholas Stern

Dear Networkers:

SUSTAINABILITY NETWORK UPDATE – No. 63E

The main feature in this Update ([p. 1](#)) introduces a new theme, linking language to mental paradigms in the agricultural sector. Language, which most of us take so much for granted, may be a vital tool for creating and instilling a new and different culture with a reverence for natural resources and the ecosystems on which we depend. While, at first glance, the theme may seem peripheral to other areas such as science, technology, economics and social systems, it would be a mistake to dismiss it as such. The language we use is fundamental to culture in these areas as well. If we are genuine about building a “more humane, sustainable society” this feature provides new clues for fresh, creative thinking, even as it highlights the magnitude of the challenge.

Also in this issue, we revisit themes of: Biomimicry in design ([p. 8](#)); Australia’s water future ([p. 9](#)); The ‘green’ / ‘consumerist’ culture clash ([p. 10](#)); Backyard billabongs ([p. 11](#)); Debate over aviation impacts ([p. 12](#)); Population ([p. 14](#)); Wind power ([p. 15](#)); and A new ‘green’ revolution in Indian agriculture ([p. 16](#)).

Language as a tool for culture change in agriculture



*Pennie Scott of ‘White Knuckle Marketing’ - white-knuckle@aapt.net.au – is an entrepreneur and developer of opportunities, a dedicated activist for those whose voices can’t be heard, a founding member of the Concerned Farmer’s Network, and mother of five sons. She grew up on family farming and grazing properties in rural Victoria and NSW, developing both an appreciation for the concept of sustainable farming and a passion for the Australia’s unique landscapes and country people. Her own special combination of entrepreneurialism, social activism, family involvement, and deep love for “the bush” is behind her PhD studies at the University of Sydney, Orange, on “Love, Intimacy & Agriculture: Creating the Language of Love for our Natural Resources”. The following feature is adapted from her recent paper with supervisor Geoff Watson – gwatson@csu.edu.au, Charles Sturt University, Orange: Pennie Scott & G Watson “An exploration of language for biodiversity and regeneration in Australian agriculture”; *Extension Farming Systems Journal* 2(1).*

In a nutshell: The language of words is the most commonly used tool in person to person communication and also profoundly reflects and creates an individual's belief systems and behaviours. Although copious information flows out of organisations dedicated to researching and communicating new land-use methods for farmers to implement, uptake to date has been frustratingly low. Exploitive farming practices continue to be widely applied resulting in on-going degradation of Australia's fragile landscapes. Is the language of current policies appropriate to shift the belief systems of decision makers in exploitative agriculture towards more sustainable and regenerative outcomes? Early-stage research to distinguish the 'languages' of Australian culture, especially 'agri-culture', reveals that the dominant language is economic rationalism ('eco-rat') arising from neo-liberal economic policies. 'Eco-rat' is characterised by 'masculinity' – competitiveness, control, reductionism, power and domination – and is counter-productive to sustainable production practices. Conversely, the language of sustainability and regeneration is 'feminine' – nurturing, holistic, supportive and nature-cyclical. In our research, we are exploring the concept that exploitive and regenerative farming are associated with different intrinsic belief systems that are, in turn, reflected in the language of their proponents, as in Wittgenstein's notion that "the limits of my language are the limits of my mind". If this is so, a successful widespread shift to regenerative farming will involve a subtle interplay between policy and information on the one hand and language, metaphor and belief systems on the other.

Introduction

In this feature, we outline the background to research currently being undertaken into the power of language in shaping and expressing exploitative versus regenerative paradigms within Australian agriculture – exploring and characterising the underlying belief systems and vocabularies that perpetuate the paradigms of 'stubble-burners' in broadacre cropping, and comparing them to those of regenerative farmers – with the implication that these distinct paradigms can influence the development of very different land use practices.

Language is our primary communication tool and we use it without conscious effort. Speaking is a survival skill which we continue to practice frequently, so we tend to take the process of thinking and articulating for granted – just like the multitude of separate movements and muscle actions that make up the action of walking. Language is a part of our organism and no less complicated than it (Wittgenstein 1958). The actual words we use are paramount in establishing and endorsing our belief systems which in turn underpin our actions and behaviours.

Speaking, verbalising, 'gas-bagging', bragging, gossiping, explaining, describing, talking, arguing and discussing, all occur very easily for us and almost effortlessly as we are so practiced in applying them. To understand how this happens, however, requires the intrusion of a slow-motion camera into our brains.

To express a thought, an idea, a concept, an opinion, a fact, our brain rapidly goes through a series of processes and, depending on the familiarity of the subject matter, this happens with seemingly little effort. Actually describing this sequence nevertheless is quite challenging, since the use, say, of formal medical jargon detracts from the insights that might be revealed. So, imagine a scenario instead, someone organising three children for breakfast on a school morning:

"Do you know where my homework diary is?"
"On the dining-room table."
"OK."
"Has anyone seen my lunchbox?"
"It's in the kitchen with your lunch in it."
"Thanks Dad."
"How can I use the word 'extirpated' in a sentence?"
Silence.

Whereas all the other words used in this scenario were familiar and often used, what does that word, extirpated mean? If I haven't heard of it before, how can I possibly use it or wrap thoughts and ideas around it?

The German philosopher, Wittgenstein, asserted that *'the limits of my language are the limits to my mind'* (Wittgenstein 1958). The example above illustrates this quite clearly. Yet vocabulary is but one element of a broader collection of factors that influence the way a person thinks and acts, particularly in a setting where a community of practitioners operates. In the 1960's, Thomas Kuhn developed the notion of a "paradigm" to characterise his relativist view of how communities of scientists operate (Kuhn 1962). A paradigm represented the way any particular community of scientists functioned to "see" their practice of science and it embraced:

- a shared vocabulary;
- specific gender experiences;
- shared examples of good and bad practice in defining and solving problems;
- shared devices for teaching the paradigm; and
- shared values which define the bounds of legitimate activity.

Kuhn's notion of a paradigm has since been widely extended to embrace non-scientific communities of practitioners who hold a particular mindset and values that guide and characterise their shared activity. We are proposing that the paradigm framework can be adapted to distinguish the approaches of exploitative versus regenerative farmers, and that characterising the distinct belief systems of these communities can lead to new communication approaches for achieving a shift towards more sustainable and regenerative outcomes.

Scientists are often guided by tacit knowledge – knowledge acquired through practice which cannot be articulated explicitly (Polanyi 1958). Our research has commenced with the aim of exploring a similar scenario with regenerative and industrialised farmers in the Australian context. There appears to be a distinct shift from one paradigm to another, since many of the regenerative farmers once fell into the category of being heavily reliant on synthetic inputs. These shifts are also being explored, together with the details of how, when, why and what occurred that predicated those shifts. The use of narrative and conversation methodologies to collect 'stories in their own words' from both groups of participants, will provide an unstructured opportunity for the collection of vocabularies. Their content will then be analysed to compare lexicons of 'eco-rat' and ecological-literacy,¹ and to judge the influence of language on subsequent attitudes and actions.

The acquisition of a 'new' literacy, especially an eco-literacy (Pretty 2003; Capra 1999) was fundamental in people being able to imagine another 'way of doing things', of seeing the world through different sets of eyes; to appreciating there was more than one 'right' way of achieving outcomes.

'Unfamiliarity is much more of an experience than familiarity' Wittgenstein (1958)

Attributed male-gender characteristics

To discuss the status quo of a situation, it is necessary to know the stages of its development, implementation and maintenance and in this regard, exploitative, industrialised farming has a distinct background. Cartesian mechanistic theories, reductionist science, the laws of thermodynamics, and then economic ideologies based on these theories, have produced a shrewd structure of technology-driven farm production that promotes reliance on continual applications of purchased inputs (Jackson 1991; Diamond 2005) These inputs, coupled with the strategy of producing 'more of the same' known as commodification is resulting in:

¹ Perhaps 'eco-lit' would be a good counterpoint to 'eco-rat'! *E.G.H.*

- increased demands on dwindling soil capital;
- the loss of farming family enterprises;
- desertification;
- soil acidity;
- salinity;
- overgrazing;
- man-made droughts
- loss of habitats and biodiversity; and
- lower equity and income for those remaining who attempt to do more of the same and expect a different result.

(Diamond 2005; Scott 2005)

What do the above have to do with language and our actions? The short answer is – ‘everything’.

To use an example and strategy from advertising, a repeated message is far more likely to be remembered than one heard or seen only once (Kotler, 2006). Repetition works – (just think of the constant requests from children for something they may have seen on television or that one of their classmates now has). This is known as ‘pester power’ in marketing practice (B & T 2002, 2005) and now commands its own range of tactics in advertisements and promotions to eventually reduce parents to the point where they succumb to the child’s never-ending demands for something the child simply ‘can’t live without’.

When analysing the application of eco-rat language in agri-culture today, the prolonged use of ‘pester power’ is occurring with repeated messages from agri-chemical companies, commodity agencies, farmer associations, some Research and Development corporations, and some politicians and economists about the need for ‘higher productivity and efficiencies’ as the solution to competition and declining terms of trade (Single Vision 2004; Main 2005)). Driving this continuous demand is the dominant ideology of neoliberal economics in which the free-market economy is the ‘shining jewel’ (Davies 2004) and globalisation the de-humanising outcome.

But what is this ‘language’ and what are its characteristics? The following words and terms are used constantly in agribusiness, a slave of the free-market economy:

- waste
- bottom line
- financial performance
- risk management
- corporatisation
- power
- cost cutting
- yield
- management
- labour
- competitiveness
- efficiencies
- ownership
- commodities

- raw materials
- agribusiness
- eradicate
- terminate
- dominate
- units of utility
- aggressive marketing
- inventory reduction
- economies of scale
- control
- “Bullet proof” (advertisement for ATV)
- ‘Muscle in now’ (Mazda Bravo advertisement)
- ‘Middle Weight Champ’ (tractor advertisement)
- ‘Built Tough’ (Pacific Seeds canola advertisement)

As Starhawk (2004) comments, ‘when we use language that fits into the established framework of the culture, when we try to make our ideas respectable, we limit what we can say and think’ and perpetual use of this lexicon reinforces the established mindsets. Similarly, ‘certain fixed

standards of our expression prevent us from seeing facts with unbiased eyes which force us to think that the facts must conform to certain pictures embedded in our language'. (Wittgenstein, 1958)

These listed words are also typical of 'masculine' gender-characteristics with a win-lose focus. There are clear losers in this 'battle' of farmers making an income 'against' the odds and elements; the losers are:

- the once-endemic and flourishing species of flora and fauna;
- the rural communities with dwindling populations;
- the children of farming families who feel unable to pursue that option;
- rural and regionally based enterprises and their synergistic relationships with landholders.

The winners on the other hand are the multi-national agribusiness corporations who tirelessly pursue their profits via the eco-rat 'mantra' outlined above.

With the continuing destruction of eco-systems from industrialised farming practices, even the medium-term future appears bleak. The goal of the Millennium Ecosystem Assessment (MEA 2005) was to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to meeting human needs. Because the basis of all ecosystems is a dynamic complex of plants, animals,



and microorganisms, biological diversity (or biodiversity, for short) has been a key component of the MEA. The MEA recognizes that interactions exist between people, biodiversity, and ecosystems. That is, changing human conditions and actions drive, both directly and indirectly, changes in biodiversity, changes in ecosystems, and ultimately changes in the services ecosystems provide. Thus biodiversity and human well-being are inextricably linked.

'Our ordinary language, which of all possible notations is the one which pervades all our life, and holds our minds rigidly in one position.....' Wittgenstein, 1958

Attributed feminine-gender characteristics

To initiate a change from technology-based industrialised production to regenerative-focussed systems, a logical component to alter first is the language used in agri-culture. Such an alteration provides a means for reshaping the exploitative paradigm framework (Diamond 2005) and offering practitioners an alternative standpoint. A worthwhile place to begin is to adopt and implement the following culturally accepted views of 'feminine' gender-characteristics (Tarnas 1995; Starhawk 2004), namely –

- Nurturing
- Caring
- Patient
- Passive
- Mediator
- Gentle
- Consistent
- Observers
- Supportive
- Nature-cyclical

- Menders
- Co-operative
- Curious
- Team players
- Compassionate
- Synergy
- Emotional
- Symbiotic
- Sympathetic
- Empathy

- Respect
- Trust
- Facilitation
- Instinct
- Fertility
- Mystery
- Ambiguity
- Pluralism
- Freedom
- Abundance

- Justice
- Diversity

- Resilience
- Complexity

Having an attitude of 'making a living *with* the land' as opposed to 'making a living *from* the land' (Roe & Hoogland, 1999) implies quite different practices simply from the alteration of one word. The nature of the relationship between the human and the land takes on a significantly different approach, extending to one of co-operation and co-existence ('feminine') rather than one of coercion and intimidation ('masculine').

The account of Colin Seis (Scott 2005) and the transformation from high-input production to creation of an innovative pasture cropping system on his property "Winona", shows differences in language paralleling changes in practice from the late 1970s to the present:

- The measurement of tonnes of fertiliser per hectare has been replaced by measuring tonnes of organic matter;
- The stocking rate now includes sheep, microbes and earthworms;
- Fungi are no longer pests to be sprayed into extinction; mycorrhizal fungi are excitedly welcomed as an indicator of soil health and function;
- The scope of the soil food-web is enhanced with the re-establishment of birds, reptiles and plants that once thrived in this area but had been forced into dormancy and re-location by previous inhospitable treatments of the soils and vegetation;
- The accumulation of soil carbon (new term) is increasing exponentially now that perennial grasses can truly express themselves – and be perennial!
- The wealth of life in the soil is treated with awe and respect as previously unknown systems are steadily increasing the available nitrogen;
- Plant health rather than plant yield is the primary focus since one follows the other..... when given the chance.

Identity

In Australia, there are quite distinct groups of primary producers even within the same industries. When meeting people for the first time who generate their incomes from / with the land, their definition of themselves is frequently based on their occupation:

"I'm a wool grower"
 "I'm a wheat grower"
 "I raise beef cattle".

"I have a cropping enterprise."
 "I'm a farmer's wife."

When one's identity is based on a familiar 'group', there are subtle and subliminal pressures to dress in a certain way, and to behave, speak and think in a particular manner in order to be recognisable and accepted within that grouping.

To alter one's identity, especially within a peer group, can be very difficult. To become a 'harvester of sunlight and water in order to grow grass' (Savory, 1999) instead of being a wool grower, suggests an almost 180-degree shift of focus. The language has altered with the identity transfer, with the new focus of energies *and with the altered management practices*. The primary goal is still to raise sheep to grow wool but with a subtle change; the focus is now on creating and facilitating optimum conditions for that to happen by ensuring the stocking rate does not exceed the carrying capacity and being willing to sell off stock if the property is unable to produce enough fodder to keep the stock in a Score-3 condition.

For broadacre croppers, size of machinery matters (economies of scale) and there are self-confessed 'recreational tillers' who simply love machinery and the ability to transform landscapes in a very serious manner. How can one be a cropper without machinery? That doesn't fit the prescribed identity, and unless there is an on-going 'battle' with broad-acre weeds, or mites, or 'take-all', or wheat mosaic virus..... there is nothing to actually do! To fulfil one's own (and ascribed) identity, there are various accoutrements one needs to fulfil the

image and expectation. Breaking out of this mould to become a 'soil carbon sequesterer' by growing perennial pastures and direct drilling cereals into them, requires a totally different identity together with a vocabulary to achieve that shift.

Conclusions

'When we live in our memories, we recreate history. When we live in our imaginations, we create the future.' Scott, 2000

Fear is probably the most profound barrier to change – a common sentiment is 'I don't mind change; I just don't like being changed'. Fear will keep us rooted to one spot, afraid to try something different, remaining risk averse and erecting barriers to anything with which we are unfamiliar. If change is externally imposed, we are certainly more resistant. However, if we initiate the change, we are in control of the process.

If we spoke a different language, we would perceive a somewhat different world (Wittgenstein 1958). As mentioned earlier, incorporating new and different elements and words into our lexicon is an important starting point. Below are some examples. We need ways to encourage regenerative practices, to smile with passion and emotion on our exquisite landscapes, to speak words of gratitude for the abundance we are blessed with; to replace fear with awe and respect; to see and feel the world from the perspectives of wasps, bees and trees; to imagine what it is like surveying the realm from the eyes of an eagle or cockatoo; creating and nurturing habitats for many species and treasuring biodiversity.



Celebrating the rain with a feast from wholesome and nutritious food grown in your own ecological garden.... intuitively knowing about health – your own, your family's, your animals', your soil's and your ecosystem's at all levels.

Developing symbiotic and respectful relationships with all living and non-living entities; experiencing the manifestations of spiritual awakenings that exhilarate and excite; to feel sincere fulfilment and profound satisfaction in co-existing with and regenerating biodiversity, social capabilities, and communities, and trusting and respecting your own wonderful and valuable self.

Altering and adding language changes attitudes and belief systems and eventually, actions and behaviours. Respecting and trusting Nature's wisdom and systems requires letting go of old beliefs that have enforced offensive action, movement, control and power. Studying the language of Nature can be a dangerous undertaking. To become literate in Nature's idiom, we must challenge our ordinary perceptions and change our consciousness. We must, to some extent, withdraw from many of the underlying assumptions and preoccupations of our culture (Starhawk 2004). We must seek a notation which stresses a difference more strongly and is made more obvious than ordinary language to loosen our mental cramp (Wittgenstein, 1958).

We are often reminded "Don't just stand there, do something!" Are we brave enough to do the opposite and stop thwarting Nature's efforts? Can we **not** do something and just stand there instead?



References:

- B&T Magazine 2002, 'Marketers Plug into Pester Power to Target Parents', B & T Magazine, Sydney, P 13.
- Capra F 1999, The Web of Life, Doubleday Books, New York.
- Davies G 2004, Economia: new economic systems to empower people and support the living world, ABC Books, Sydney pp 9-76.
- Diamond J 2005, Collapse: How Societies Choose to Fail or Survive; Allen Lane (an imprint of Penguin Books) Melbourne, Chapter 13.
- Jackson W 1991, Tragedy of Agriculture, in Only Connect: Soil, Soul, Society, The Best of Resurgence Magazine 1990 – 1999, Green Books, Devon, UK, .pp 52-56.
- Kotler P 2006, Principles of Marketing 3, Pearson, Sydney, pp 443-444.
- Kuhn T 1962, The Structure of Scientific Revolutions, University of Chicago Press, Chicago, p. 25.
- Main G 2005, Heartland; the regeneration of rural place, UNSW Press, pp 67-85.
- Millennium Ecosystem Assessment 2005, Ecosystems and Human Well-being: Biodiversity Synthesis, World Resources Institute, Washington, DC.
- Polanyi M 1958, Personal Knowledge, Harper & Row, New York.
- Pretty J 2003, Agri-culture, Leeds University Press, Chapter 7.
- Roe P and Hoogland F 1999, Black and White, a Trail to Understanding, in Sinatra J and Murphy P, Listen to the Land, Listen to the People University Press, Melbourne, p 22.
- Ryan R 2005, Toyota Taps into Pester Power, B & T Magazine, Sydney.
- Savory A and J Butterfield 1999, Holistic Management: a New Framework for Decision Making, Island Press, Washington, Chapters 2 and 31.
- Scott P 2005, 'Making decisions in agriculture: the conflict between extension and adoption', Extension Farming Systems Journal, 1(1): 85-88.
- Scott, P 2005, 'Pasture Cropping', Australian Organic Journal (64): 36-37.
- Starhawk J 2004, The Earth Path: grounding your spirit in the rhythms of Nature, Harper, San Francisco, pp 8-83.
- Tarnas R 1995, The Masculine Mind, in Only Connect: Soil, Soul and Society, The Best of Resurgence Magazine 1990 – 1999, Green Books, Devon, UK, pp 103-107.
- GRDC 2005, Towards a Single Vision for the Australian Grains Industry 2005 – 202, Grains Research & Development Corporation and Grains Council of Australia, pp 41, 53.
- Wittgenstein L 1958, The Blue and Brown Books, Basil Blackwell, Oxford, pp 31, 43, 59, 127.

"Little Morsels" – Food for Thought

Designs from Nature to capture energy from the sea

University of Sydney researcher, Dr Timothy Finnigan – t.finnigan@usyd.edu.au, is using biomimicry (design inspired by Nature) to develop new systems for conversion of ocean wave and tidal power into electricity. The concepts, based on biological systems that are the product of 3.8 billion years of natural selection in the marine environment, will be commercialized through a new start-up, BioPower Systems Pty Ltd - www.biopowersystems.com. It's good to see innovators picking up on Nature's successful blueprints – there is much we can learn. Here's how the November e-Bulletin of the Warren Centre for Advanced Engineering described these new energy conversion concepts:

These "wave and tidal energy conversion systems move and sway in tune with the ocean, rather than stand firm and attempt to resist the ocean forces. The new technologies move away from traditional engineering, which has proven too expensive when applied to the conversion of ocean power to electricity.



Wave energy systems with long vertical blades (bioWAVE (TM)) respond to oscillating wave forces by swaying back and forth. The motion is partially resisted by an electrical generator mounted at a pivot near the sea floor. When the wave forces become excessive, the device can be made to lie flat against the seabed to avoid damage.

Tidal current systems (bioSTREAM (TM)) mimic the shape and motion characteristics of highly efficient Thunniform-mode swimming species (such as shark and tuna) but instead are fixed in a moving stream. In this configuration the propulsion mechanism is reversed and the energy in the passing flow is used to drive the device motion against the resisting torque of an electrical generator.

Both systems could have nominal capacities of about 1MW and would be deployed in 'farms', much the same as for wind turbines.

There are engineering and business challenges ahead, of course, but if these technologies appeal to you for strategic partnering, see www.biopowersystems.com or contact Dr Finnigan.

Less water and more people – what lies ahead?

Modeling the potential impact of global warming on Australia's climate suggests that the southern and eastern areas could be drier in the future. At the same time, the ABS predicts Australia's population will reach 25 million by 2032, an increase of 25%. What could happen? What will water policy makers need to consider? As part of the CSIRO Research Flagship, "Water for a Healthy Country" - www.csiro.au/csiro/channel/pch8o.html, these questions have been considered by Mike Young, Wendy Proctor and Ejaz Qureshi of the CSIRO Land & Water Policy and Economics Research Unit - www.clw.csiro.au/research/society/peru/contacts.html, and Glyn Wittwer, Centre for Policy Studies, Monash University, and the results published in a monograph entitled "Without Water: the economics of supplying water to 5 million more Australians" [ISBN 0 643 09340 0; CSIRO & Monash University]. The scenarios presented in the report are not predictions, but are presented as a means to assist consideration of policy options. The following 'morsel' is from the Executive Summary:

"With 5 million more people and 15% less water in the Eastern States and South Australia, what will happen to the economy and how will this be reflected in the price of water?"

If water is valued at its shadow price – the price that equates supply with demand – the economic model used to produce this report predicts that, with 15% less water in the east and 25% more people, the shadow price of water will change considerably. The answer to this "price" question depends upon some important policy choices. Starting first, with the most restrictive options that are rapidly being superseded:

- If water trading from rural to urban areas is restricted and no major desalination plants, recycling, or storm water capture systems are commissioned (and Perth's new desalination plant is not completed), the shadow price of water would rise dramatically – *for our worst affected city, a 10 fold price increase is predicted;*
- But by allowing urban water supply utilities to purchase water from the irrigation industry (as some are already doing), the extent of the increase in the shadow price of water will be much less – *for our worst affected city, a 6 fold price increase is predicted;* and
- By providing access to new sources of water by constructing desalination plants (as Perth is doing and Sydney is planning as a drought security measure), or by finding a way to recycle sewage water or capture and use stormwater at a cost equivalent to desalination, the story is changed dramatically – *for our worst affected city, only a 3 fold price increase is predicted.*

The above scenarios assume that by 2032, water use efficiency per unit of output in the urban sector will increase by 22% and by 34% in the rural sector. Other changes in water use efficiency and in water supply are possible. More aggressive demand management policies could be introduced.

Increases in water use efficiency – the amount of water each household and business needs – are easily offset by small rainfall declines. In the last quarter of last century, a 14% decline in Perth's rainfall reduced its water supply by three times this amount – by 52%. A small decline in rainfall can make a very big difference to the amount of water available for consumption.

The scenarios used in this report assume a 15% decline in the total amount of water available for consumptive use the Eastern States and South Australia. This supply decline could be due to adverse climate change or the result of decisions to enhance allocations to the environment.

In summary, expansion of urban-rural water trading and the development of new sources of water offer powerful ways to influence Australia's economy. With 5 million more people living mostly in our big cities, the way Australia allocates and uses water will change significantly. Under the influence of the scenarios selected, the report observes that water policy choices will influence where people choose to live in Australia."

Culture Clash at Home

This 'morsel', stimulated by conversation with a local friend, is a composite of her and our recent experiences with hosting houseguests in 'green' homes. E.G.H.

Who would have anticipated that adoption of voluntary simplicity and low-impact living strategies could have such an impact on hospitality in the home! We are learning the hard way that rejection of consumerism can produce major stress, even alienation, among family members and friends, particularly at Christmas – that over-the-top festival of commercial consumption.

We feel 'put-down' when family houseguests shower each other with expensive commercial presents, rave about them in ways that clearly equate expenditure with love, and then look down on the different way we attempt to express our giving in practical, non-consumerist ways.

We resent watching houseguests daily luxuriate, without a thought, in 10-minute hot showers, when we have carefully limited our water use to a tiny fraction of what they are using in order to live on rainwater and solar heating alone. We have to bite our tongues to avoid lecturing them about the need to not flush the toilet after 'minor' visits, even though it is explained very politely by the little sign on the toilet tank.

Mindful of our own actions to stay within the energy budget of the solar PV cells on our roof, we fret about lights, fans, radios, computers and television left on when not in use, and at the frivolous overuse of electrical appliances in the kitchen – like kettlefuls of water boiled for a single cup of tea, the oven heated full-bore just to "touch up" a couple of bread rolls, and the refrigerator door left hanging open until the temperature sensor beeps in outrage.

It's annoying to have a guest look into the fridge at a stack of fresh home-grown, fresh-picked veggies and say in an incredulous voice "Have you got anything nice to eat, like pizza or something?"

And we dread the sort of conversation that starts out "Let's go for a drive" or "Let's go to (fifty-plus km away). When trying to limit our transport emissions to just the bare essential minimum, we are stressed by the use of our car for amusement or just to relieve boredom.

Did I hear you say "Well – explain the 'rules' of the house!?" We *do* try to explain the principles we live by and the reasons for them. This tactic, however, seems simply to divide guests into two camps. On the one hand, are those who say "Oh – that makes a lot of sense", and then give it their best shot; on the other, are those who look at us in disbelief and give us various versions of "Well, I don't believe in all that silly green stuff. You can stick to your own weird values but let me get on with it the way I'm used to."

We have no problem with the first group. They are welcome in our home at any time. But, needless to say, having members of the latter camp in the house is a very stressful experience, even when we try to be hospitable. They put us in mind of the old proverb – 'Fish and houseguests go off after three days.' Ultimately, of course, what sends houseguests 'off' is selfish refusal to quietly and gently adapt to the customs of the house they are visiting – green or not. Considerate, adaptable houseguests don't go "off".

We love houseguests who visit us to enjoy meaningful conversations, the 'little stuff' of living together, and the interspersed quiet spaces of silent, easy companionship. We are hopeless hosts for those who

would rather tool around the district in cars, 'shop till they drop' at the local mall, or eat junk food at every meal! Sadly enough, family and friendships, like society, can experience the great, green, cultural divide.

When 'green' penetrates the inner core of your being (or, in the terms of the first feature in this newsletter, changes your paradigm for living), a gulf opens to divide you forever from those who live comfortably and enthusiastically in the current status-quo. That this alienation can separate family and friends is the sad part of choosing low-impact living. Hopefully, as public realisation grows of the challenges ahead, we might find more of our family members and long-time friends over on the green side of the divide.

Backyard 'billabong' – new look for an Aussie urban icon

Another effect of the green 'paradigm switch' is a new way of looking at the backyard swimming pool. Suddenly it can change from envied social asset to a water-hogging, power-wasting, work-generating nuisance – a bit like the way wearing of wild-animal furs has turned from status symbol to embarrassment. While removal of an above-ground pool might be relatively simple, removing a concrete in-ground pool is a different kettle of fish altogether. The answer may be not to remove it at all but to see it as a potential environmental asset. Here's how two of our friends have tackled the change:



This old concrete in-ground pool, deep enough for diving into, is now, after just one season, a highly successful billabong hosting native silver perch, water plants and a turtle that arrived spontaneously once the system began to thrive. The depth of the pool is an asset as it protects fish from predatory birds and animals. Frogs, however, need a little help with an accessory small nursery pool as the fish tend to eat tadpoles.

So how does one get a system like this started? Our friends had a very simple solution: Throw the old, green plastic outdoor picnic table and chairs into the pool and use them, as well as the shallow-end

steps, as supports on which to set pots of water plants and provide some 'cave-like' habitats for fish. Appropriate types of water lilies, sunk gently into the pool in fabric-wrapped soil balls are coping well with the full depth, adjusting the length of their leaf stalks to suit. Over time, a fine layer of silt is building across the floor of the pool and the sunk picnic setting, providing a more natural-looking bottom. At first the pool went green and turbid but eventually cleared again as the new ecosystem came into balance. Now, it looks for-all-the-world like a deep bush billabong – lovely to sit beside, watching the fish and feeding the turtle. And there is no more need for chemicals, electricity, or Saturday mornings wasted doing pool chores!

Who knows – maybe the next step will be purpose-built backyard billabongs that don't start life as swimming pools. Perhaps more of us will see natural wet places in the backyard not as something to be piped or drained but something to be dug, planted and enhanced!

Air travel – the gloves are off! Prepare for more debate

Debate on the climate impacts of aviation has been a long time hotting up, but is now really coming out from behind closed doors – pitting new ethics against individual freedoms and corporate interests. In case you didn't see the feature on ABC TV Lateline with reporter Jane Hutcheon on 13 November, here's a transcript. Expect to hear more on this topic, both overseas and, eventually, closer to home.

PAUL LOCKYER: And, as that climate change meeting gets under way in Kenya, a British study has made disturbing predictions about the impact that the booming aviation industry will have on the environment. Short haul flights in particular have been identified as a major contributor to global warming. European correspondent, Jane Hutcheon, reports.

JANE HUTCHEON: It's unusual for British police to search activists embarking on a leaflet drop. But, while Richard George prepares to campaign against the use of short haul flights, other members of his group have chained themselves to the front entrance of a well-known budget airline.

RICHARD GEORGE: What we'd like to see is an end to short haul flights. By "short haul flights" I mean the 45 per cent of flights in Europe that are less than 400 kilometres. For example, London to Scotland, it's a distance easily doable by train, ten times less polluting.

JANE HUTCHEON: Boosted by if findings of the Stern Report, aviation has become a focal point in the battle for the environment.

RICHARD GEORGE: We don't have any time to act anymore, because of the Government's stalling, because there have been climate talks going on. The United Nations has held them since 1991 and nothing has happened. America won't sign up to Kyoto, nothing is really moving internationally and we have to act. I don't want to be the one who turns around to the people of the island nation of Tuvalu, which is going under water, and say, "I'm really sorry but cheap flights are part of our way of life."

JANE HUTCHEON: Eco-activism isn't everyone's preferred response to tackling climate change, but a hard-hitting report published by Oxford University last month gave weight to the group's concerns. Britain's aviation strategy is all about expansion, doubling the number of air passenger movements over the next 25 years, to almost half a billion. London's Heathrow Airport has come a long way since it opened for commercial traffic after the Second World War. A fifth terminal is due to open from 2008. But the Oxford University study says Britain's strategy to increase the use of planes is incompatible with its climate change goals.

SALLY CAIRNS: A fifth of all international flights arrive or leave from UK airports, so for the UK this is a much more significant part of its climate change problem than it is for a lot of other countries, and, we think, therefore, the UK Government has to take the lead in addressing this issue.

JANE HUTCHEON: But the movers and shakers of Britain's environmental movement are sceptical the government is about to make a U-turn on a major strategy.

ZAC GOLDSMITH: Blair and Brown have both acknowledged the gravity of this problem. Years ago they were talking about climate change as the biggest single threat we've ever faced, which makes their

inaction, in my view, unforgivable. How can you talk about climate change while presiding over the biggest expansion of our airports for more than a generation?

JANE HUTCHEON: On any day there are cheap deals to every city in the UK and Europe - £37, or \$90, to fly to Rome. Experts say those prices and that type of demand are fuelling the growth in carbon emissions. The Oxford report says carbon emissions from aviation have doubled since 1990, and are set to double again between 2000 and 2030. That's prompted a fixed response from the aviation industry.

MICHAEL O'LEARY: There's been an awful lot of misinformation and lies being put about by the econuts in this country, particularly on the back of some idiot economist report last week.

JANE HUTCHEON: Last week the head of no frills airline, Ryan Air, Michael O'Leary, said shooting the world's cow population would do more to combat global warming than banning budget airlines. And, in September, billionaire businessman Richard Branson pledged \$3 billion US over 10 years towards renewable energy initiatives.

RICHARD BRANSON: Hopefully, this contribution will help in a small way our children experience our beautiful world and encourage others to also do what they can.

JANE HUTCHEON: Broadly speaking, the aviation industry rejects any action that will damage profits. Britain already levies a passenger duty tax which puts more than \$2 billion into the Treasury's purse. The airline's lobbyist says a specific green tax isn't the answer.

ROGER WILTSHIRE: We don't think tax is the right way forward, so expanding that approach, all that will do is constrain people, be unfair, we think, on our industry compared with other transport industries and it would ignore the fact that emissions trading is the best route forward. It's much more an incentive and captures all emissions and has an environmental effect. Tax has no environmental effect.

JANE HUTCHEON: The European Union has already warned of delays in the plan to include aviation in the carbon trading scheme. That's the global plan to control emissions through economic incentives. But Britons from all walks of life recently turned out in force in support of climate action. There now seems widespread support for a change in lifestyle. So you do think that travelling and using planes is a bit of an evil?

WOMAN IN STREET: I do, very much so, and I think, certainly, there's no excuse to hide away from that fact and I think really we have to change our lifestyles, if we're going to save the planet for our future generation.

JANE HUTCHEON: Now, say the crowds, it's the turn of governments to respond. Jane Hutcheon, Lateline.

And here's an adaptation of the article "Qantas readies for green surcharge" by Nicholas Stuart in the Canberra Times of 2 November 2006:

Qantas has begun secretly modelling the airline's contribution to global warming, as mounting concern over greenhouse gas emissions has led to new calls for environmental taxes on air use. The company is measuring carbon emissions coming not only from flights, but also its ground-based operations. Qantas chief executive Geoff Dixon is up-front about the challenges posed by the airline's contribution to climate change. "This is ultimately an issue for governments and, as always, we would comply with any government requirements that might be introduced in future," he said yesterday. Mr Dixon added that Qantas was already focused on ways it could further reduce emissions.

The introduction of new aircraft, such as the A380, would deliver emission reductions of between 15 to 20 per cent. As part of its bid to head off environmental concerns and manage costs, the airline has established a Fuel and Energy Conservation Group. This is targeting \$100 million in savings by using simple methods, such as shutting down one or more engines while planes are taxiing on the tarmac. Another method of saving fuel is to try altering flight paths.

Nevertheless, environmental analysts suggest these changes would not make any significant difference because of the exponential growth in air travel. A senior lecturer in environmental management at Central

Queensland University, Peter Fisher,² said aviation was a delinquent industry as far as greenhouse gases were concerned. "Tweaking flight paths, or flying by day rather than night might have some impact, but it won't make air travel green," Dr Fischer said.

The aviation industry is significantly concerned about surcharges being introduced to offset the environmental impact of air travel. **Short-haul flights** particularly, such as between Canberra and Sydney or Melbourne, **are proportionately some of the worst contributors to greenhouse gases** because of the amount of fuel that must be used on take-off and landing. Air freight would also be targeted by any environmental levies, because these **aircraft produce between 20 and 100 times the amount of carbon dioxide it would take to move something by rail.**

Currently, emissions produced by aircraft are exempt from the Kyoto Protocol. Introducing taxes on aviation turbine fuel would be complicated because of the Chicago Convention, which regulates international air travel. Nevertheless, many airlines are concerned about the increasing clamour for environmental taxes to be levied on air travel. Some are already adopting methods of coping with environmental concerns. British Airways, for example, has launched a voluntary scheme encouraging people to make contributions to an environmental trust. But, as environmentalists are quick to point out, planting trees is a poor substitute for the damage caused by emissions at such great heights. The Intergovernmental Panel on Climate Change says **carbon produced at 6200m is three times more damaging than it would be if produced on the ground.**

The International Air Travel Association admits aircraft movements create 2 per cent of greenhouse gas emissions. However, the association quickly points out that all transport is responsible for 13 per cent of emissions, with nearly three-quarters of the gases produced by road transport. There are currently no environmental levies on air travel. However, airlines across the globe are concerned that increasing awareness of the damage caused by high-altitude flights mean that penalties will soon be imposed on their activities.

Feedback

Population – that “unspeakable” issue again!

Martin Drerup - mdrerup@bigpond.net.au – has a background in the manufacturing sector, but a broader concern about the interaction of population with consumerism. He speaks out here for many of us – who know where the real problem lies but are nervous about the consequences of all-out debate on the topic.

The summary in Update 62 (pages 16-17) of Chris Rapley's article on "Too many people", highlights what is, to my mind, one of the most relevant and under-appreciated aspects of the environmental debate.

Our human impact on the Earth can be summarised in the simple formula:

$$I = C \times N$$

Where I = Impact

C = Consumption

N = Number of consumers

The entirety of our debate and actions, appear to focus on C, consumption; how can we optimise it, reduce its impact and allow the whole world population to benefit from it.

The overall impact is, however, directly a function of N, yet we appear to blithely accept the projections that our current world population of 6.3 billion, will reach between 10 and 12 billion within the next 40 to 50 years. This suggests that our impact and demand for resources is going to increase by at least 50%, irrespective of what we can achieve in slowing down consumption.

² A Network member and regular contributor

I believe that population planning can contribute more to reducing our future impact than any of the technological or resource optimisation projects we are currently contemplating, can hope to achieve. We ignore the issue at our peril.

Misconceptions about Wind Power

Dr Mark Diesendorf - m.diesendorf@unsw.edu.au – of the Institute of Environmental Studies, University of NSW, addresses the points against wind power being promulgated by the pro-nuclear lobby.

'Intermittent' energy sources:

The pro-nuclear article by Elizabeth Keenan, reprinted in *Update 60*, repeats one of the popular fallacies about the variability of wind and solar energy that is being widely disseminated by proponents of nuclear and coal power in industry and government, and by local anti-wind farms groups. The fallacy is to label wind and solar power as 'intermittent' energy sources and therefore 'unreliable', allegedly requiring large amounts of back-up from coal or nuclear power. This article refutes the fallacy for wind power, although a similar case can be made for solar.



Like several other fallacies, the intermittency notion sounds superficially plausible. Everyone knows that a single wind turbine may start and stop abruptly many times in a day and therefore can be described as 'intermittent'. Nevertheless, further examination exposes several false assumptions, some of which were originally refuted by a CSIRO/ANU research group in the 1980s.

For a start the term 'intermittency' is misleading when applied to a number of dispersed wind farms, because their total power output varies smoothly and very rarely drops to zero³. Large-scale wind power is more appropriately described as 'variable' and the particular kind of variability associated with breakdowns of conventional power stations is better described as 'intermittent'.

There is no such thing as totally reliable power. Because electricity cannot be stored cost-effectively on a large scale, the electricity system is a continuous balancing act between two fluctuating (i.e. stochastic) variables, demand and supply. Integration of wind power merely adds a third fluctuating variable, which can be predicted quite well on an hour-to-hour and day-to-day basis.

In modelling the integration of wind power into electricity grids, there are studies of diverse quality. The better studies find that the additional costs incurred by quite large penetrations of wind energy (e.g. in balancing supply and demand), are small^{4,5,6}.

Even these studies overestimate the net costs, because they do not take into account the economic benefits of optimising the mix of conventional base-, intermediate- and peak-load plant in the presence of wind power. In doing this, Brian Martin and I showed that wind power can replace base-load power stations with the same annual energy generation. For example, 2600 megawatts of wind turbines at a

³ Sinden G 2006, Characteristics of the UK wind resource: longterm patterns and relationship to electricity demand. *Energy Policy* (in press).

⁴ ILEX 2002, *Quantifying the System Costs of Additional Renewables*. ILEX/UMIST, www.dti.gov.uk/energy/developp/080scar_report_v2_0.pdf/.

⁵ Carbon Trust and Department of Trade & Industry 2004, *Renewable Networks Impact Study: Annex 1 – Capacity Mapping and Market Scenarios for 2010 and 2020*. www.carbontrust.co.uk/Publications/publicationdetail.htm?productId=CT-2004-03

⁶ Dale L, Milborrow D, Slark R and Strbac G 2004, Total cost estimates for large-scale wind scenarios in UK. *Energy Policy* 32, 1949-1956.

windy site, with an annual average power output of about 850 megawatts, can replace a 1000 megawatt coal-fired power station with the same annual average power. To avoid any misunderstanding, it is emphasized that wind power can replace *both* the capital cost and variable costs (fuel, operation and maintenance) of the coal station.⁷

To maintain reliability of the generating system at the pre-wind level, some additional *peak-load* plant (e.g. gas turbine or hydro) has to be installed. But, since this is rarely used (for wind contributing less than 20% of annual electricity generation), it is simply a form of reliability insurance with low premium⁸.

There is no technical limit to the penetration of wind power into a grid. In at least three isolated small grids in Australian territory (Denham and Hopetoun in W.A. and the Australian Antarctic base at Mawson), wind power supplies more than 40% of annual electricity generation, while diesels supply the rest.

Technically, it is easier to integrate wind power into a large electricity grid, which offers both dispersed sites for wind farms and a mix of conventional base, intermediate and peak load plant for balancing supply and demand. The real issue is economics: as the wind penetration increases beyond about 20%, the additional costs of balancing and of lost wind energy during off-peak periods start to become significant.

Nevertheless, Denmark already generates 20% of its electricity from the wind and is planning to increase this to around 30% in the near future. The position of Eltra, the transmission operator of western Denmark, was stated when presenting its annual report: *“Seven or eight years ago, we said that the electricity system could not function if wind power increased above 500 MW (megawatts). Now we are handling almost five times as much. And I would like to tell the Government and the Parliament that we are ready to handle even more, but it requires that we are allowed to use the right tools to manage the system”*.

Wind power has the potential to supply over 20% of Australia’s electricity, if it is permitted to do so. Like any greenhouse friendly energy source, wind power costs more than conventional coal power. Nevertheless wind is already significantly less expensive than nuclear power, based on existing technology, in the UK and USA, and is also less costly than most overseas projections of the cost of coal power with carbon capture and sequestration.

Land use:

While addressing fallacies, it must be said that another claim by Keenan, that wind uses much more land than coal power, is the complete opposite of reality. Wind farms are highly compatible with agricultural and pastoral land. While they span approximately 20-25 ha per MW of installed capacity, only about 1-3% of the land spanned (0.20-0.75 ha/MW) is actually occupied by their towers, access roads and other equipment. The rest of the land can continue to be used for crops or grazing. To substitute for a 1000 MW coal-fired power station, 2600 MW of wind power capacity would span 52,000 to 65,000 ha (520 to 650 square km), but only occupy physically 520-1950 ha (5.2-19.5 square km). An open cut coal-mine to serve the coal-fired power station could easily occupy 10,000 ha (100 km²). Indeed, because of the danger of subsidence from longwall mining, even many underground coal-mines occupy more land than wind farms with the same electricity generation.

Abandoning one ‘Green Revolution’ for another

Maarten Stapper – Maarten.Stapper@csiro.au – author of the feature on “Soil Fertility Management” pp 1-11 in Update 61, has recently visited agricultural areas in India, where he found considerable reinforcement for his feature’s concepts of sophisticated low-input farming, using traditional, organic, and biological principles.

After disappointing, expensive and high risk experiences with genetically engineered Bt-cotton, more and more farmers in India are abandoning “Green Revolution” farming practices and returning to low input

⁷ Martin B & Diesendorf M 1982, Optimal thermal mix in electricity grids containing wind power, *Electrical Power & Energy Systems* 4: 155-161.

⁸ *ibid*

organic methods. Indigenous knowledge, which is still present in communities, is being collected and used to make farming systems productive, healthier and economically rewarding. Australian farmers, like their Indian counterparts, are also becoming aware of the negative impact of petrochemical farming on the farm ecosystem and are similarly beginning to turn to low-input biological farming that improves soil health for good productivity without 'standard' inputs.

Biological farming encompasses 'non-pesticidal management' (NPM) that uses natural techniques to prevent insect and disease damage. Preventative measures are important before and after establishment but start with a healthy soil where biological activity builds internal plant resistance to diseases and insects. On any continent and in any climate, biologically healthy soil is a critical basic ingredient in good farm management. Any farmer who treats soil like 'dirt' is heading downhill!

Other Information Resources and Links of Interest

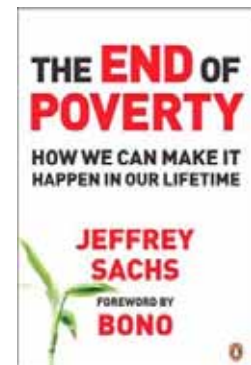
ECOS, Australia's most authoritative magazine on sustainability in the environment, industry and community is published bi-monthly by CSIRO – in print and online. See: www.publish.csiro.au/ecos.

FEATURE RESOURCE

The End of Poverty: Economic Possibilities for Our Time – by Jeffrey D. Sachs

www.earthinstitute.columbia.edu/endofpoverty

Poverty is inextricably linked to environmental exploitation. The world's poor exploit resources because they must – for bare survival from day to day. If we are genuine about preserving our global environment, then ending poverty is one of the most important challenges. This inspirational book gives a blueprint for realizing a poverty-free future in a mere 20 years. Jeffrey Sachs draws on his remarkable 25 years' experience to offer an inspiring vision of the keys to economic success in the world today. Marrying vivid storytelling with acute analysis, he sets the stage by drawing a conceptual map of the world economy and explains why, over the past 200 years, wealth and poverty have diverged and evolved across the planet, and why the poorest nations have been so markedly unable to escape the trap of poverty. Sachs tells the remarkable stories of his own work in Bolivia, Poland, Russia, India, China and Africa to bring readers with him to an understanding of the different problems countries face. In the end, readers will be left not with an understanding of how daunting the world's problems are, but how solvable they are and why making the effort is both our moral duty and in our own interests. [Published 2005 by Penguin UK; ISBN 0141018666 and available using the search facility on title or ISBN at www.penguin.com.au]



AGRICULTURE & WATER

Water and Agriculture – Sustainability, Markets and Policies

www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=9264022562

Agriculture is a major user of water and is responsible for much of its pollution. But the agricultural sector faces increasing competition for scarce water supplies from urban and industrial users and, increasingly, to sustain ecosystems. This conference proceedings explores how both governments and the private sector can expand the role of markets to allocate water used by all sectors and to get agricultural producers to account for the pollution that their sector generates. Propping up market prices of farm goods encourages the expansion of agricultural production, according to OECD work. The new report adds that subsidising irrigation systems and lowering water charges paid by farmers also undermines the efficient use of water. Moreover, providing lower pumping costs to agriculture accelerates the depletion of ground water aquifers and adds to the energy intensification of farming. With demand for water increasing from agriculture, industry and urban households, the papers stress that governments are increasingly giving a higher priority to water resource and environmental management. However, there is still a misalignment between this priority and the overall set of policies resulting in conflicting incentives to farmers, exacerbating water overuse and pollution. [Published Nov 2006 by OECD; ISBN: 9264022562]

AVIATION

Aviation meets ecology – redesigning policy and practice for air transport and tourism Transport Engineering in Australia, Vol 10 No 2 pp 117-128

In this technical paper, author **Murray May** of the Nature & Society Forum, Canberra, examines the changes needed to ensure aviation lowers its greenhouse impact. Air travel has been predicted to grow substantially in the decades ahead. Such growth is based on a worldview linked to economic growth and free market forces. On the other hand, growth based scenarios are increasingly contested on a range of ecological, resource, security and health grounds. For example, the need to curb greenhouse gas emissions and aviation's vulnerability to oil depletion are likely significant constraints. In order to meet these challenges, this paper outlines 11 approaches for redesigning policy and practice for aviation and tourism. [If you are unable to access the Journal, I can forward a e-reprint PDF (200 KB) – Elizabeth.Heij@csiro.au]

CLIMATE CHANGE

CO2 News – New Online Newsletter

<http://news.envirocentre.com.au/co2/newsletter.php>

CO2 News is a fortnightly publication, bringing latest news about climate change, emissions reduction, and renewable energy issues. It is free to receive, but there is a charge to advertise. You can read the first issue and subscribe via the above website. Contents of the first issue include: The Stern Review Report on the economics of climate change; Australia's emissions rising dramatically says UN; Asia-Pacific Clean Development Projects announced; Low-Emissions Technology Demonstration Fund projects announced; Photovoltaic Rebate program gets lifeline; Australasian Mayors Council on Climate Protection established; Technology could mean clean coal becomes a reality.

Zero Carbon Network

<http://zerocarbonnetworkaustralia.blogspot.com/>

The Zero Carbon Network, initiated in Adelaide by Network member John Tons, is a coalition of consumers, businesses, non-profit organizations, and researchers that are committed to waging war on climate change with genuine solutions. The Network will actively promote strategies that provide incentives for businesses to use energy more efficiently. The group also believes that there is only one currency that politicians understand or fully appreciate: voters. Therefore the aim is to grow the network so that governments fully appreciate that Australian voters from across the political spectrum believe Climate Change is the top national priority. Individual membership in the Network is Free. To become a member, send an email to zerocarbonfuture@gmail.com. Free members will receive regular email bulletins regarding network progress.

Climate Institute of Australia

www.climateinstitute.org.au or www.climateinstitute.org.au/cia1/index.php

Established in 2005, The Climate Institute has a five-year goal of raising public awareness and debate about the dangers to Australia of global warming and to find innovative and effective ways to motivate the country to take positive action. The Institute works collaboratively with business, community, scientific, environment and other organisations concerned with climate change through a range of activities. These include research, public information and advertising, seminars, and funding critical ongoing work on the issue in Australia. The site provides access to a wide array of news items, reports and other information.

CONSUMERISM MEETS CLIMATE CHANGE

After the climate backflip, what next?

www.onlineopinion.com.au/view.asp?article=5143

Chris Harries outlines his hope that genuine change is possible in a shorter time than the traditional 40 years from realisation to action: "In the space of just two months climate change has hit home with a bang. Virtually every news bulletin these days contains a climate story - about terrible calamities being experienced around the world or foreboding predictions about what will happen if action is not taken very quickly. However, many well meaning folk still romantically think that energy demand can be met using wind, solar and bio-diesel energy sources, not accepting that our enormous consumer footprint is the real underlying problem, and by far the number one priority to address. But fortunately I believe the 40-year

rule has now been broken by the Internet. There is too much knowledge and free trade of knowledge through the world wide web to keep the world's people blinkered for years on end."

How Much Reality Can You Take?

www.monbiot.com/archives/2006/09/21/how-much-reality-can-you-take/

Author and social commentator George Monbiot deplores the gap between talk and lifestyle: "Almost everywhere, climate change denial now looks as stupid and as unacceptable as Holocaust denial. But I'm not celebrating yet. The danger is not that we will stop talking about climate change, or recognising that it presents an existential threat to humankind. The danger is that we will talk ourselves to Kingdom Come. If the biosphere is wrecked, it will not be done by those who couldn't give a damn about it, as they now belong to a diminishing minority. It will be destroyed by nice, well-meaning, cosmopolitan people who accept the case for cutting emissions, but who won't change by one iota the way they live."

CORPORATE SOCIAL RESPONSIBILITY (CSR)

Models of Success & Sustainability (MOSS) – New CSR Industry Body

www.moss.org.au

Australia's new Corporate Social Responsibility (CSR) industry body will cater to socially aware companies, delivering educational events, leadership, and training to enhance the triple-bottom-line. MOSS aims to improve the sociology, ecology and the economy of Australia, positioning it as a global leader in sustainability.

ENVIRONMENTAL POLICY

Environmental Principles and Policies: An Interdisciplinary Approach – Book

www.unswpress.com.au/isbn/0868408573.htm

This comprehensive tertiary-level textbook by author **Sharon Beder** takes a holistic, interdisciplinary and analytical approach to the development, implementation and impact of environmental policies. Check the Contents and a sample extract at the above website. [Published September 2006 by UNSW Press; ISBN 0868408573]

ELECTRONIC WASTE

ABS 2006 environment snapshot – electronic waste a looming major challenge

www.abs.gov.au (and enter 'environmental snapshot 2006' into the search facility)

Australians now recycle nearly half their waste (46%), but are facing a major electronic waste (e-waste) challenge. The 2006 issue of **Australia's Environment: Issues and Trends**, released this month by the Australian Bureau of Statistics (ABS), features an in depth feature on solid waste that looks at the emerging issue of e-waste, a popular name for electronic goods nearing the end of their "useful life". E-waste is one of the fastest growing waste types and the problem of e-waste is global. Australians are some of the highest users of new technology in the world. Each year, Australians buy more than 2.4 million personal computers (PCs) and more than one million televisions, and the stockpile of used, obsolete electronic products keeps growing. It has been estimated that in Australia, in 2006, there will be around 1.6 million computers disposed of in landfill, another 1.8 million in storage (in addition to the 5.3 million already gathering dust in garages and other storage areas) but only half a million recycled. E-waste in Australia is estimated to be growing at more than three times the rate of general municipal waste! We need innovative, practical solutions – urgently.

"GREEN GROWTH"

The new UNESCAP 'Green Growth' portal

<http://66.226.74.224/index.asp>

Green Growth is a policy focus that aims to combine economic growth with environmental sustainability. It is globally relevant but being promoted by the UN Economic & Social Commission for Asia and the Pacific (UNESCAP) as especially relevant to the Asia-Pacific region where strong economic growth is the main focus for social progress and poverty reduction. To achieve green growth, it is crucial to change development approaches from 'grow first, clean up later' to a more responsible long-term attitude based on innovative approaches to energy, transport, industry, and community needs. The site provides access to news, information, and the 'Green Growth' network.

HISTORY OF PAST CIVILISATIONS

Collapse: How Societies Choose to Fail or Survive

www.penguin.com.au (use title or ISBN in the search facility)

Author Jared Diamond ("Guns, Germs & Steel") presents a visionary new look at the mysterious collapse of past civilizations - and what this means for our own future. Why do some societies flourish, while others founder? What happened to the people who made the forlorn, long-abandoned statues of Easter Island or the architects of the crumbling Maya pyramids? Will we go the same way, our skyscrapers one day standing derelict and overgrown like the temples at Angkor Wat? Bringing together new evidence from a startling range of sources and piecing together the myriad influences, from climate to culture, that make societies self-destruct, Collapse also shows how, unlike our ancestors, we can benefit from our knowledge of the past - and learn to be survivors. [Published 2005 by Allen Lane, and available from Penguin Press; ISBN-13: 9780713998627; ISBN-10: 0713998628]

NUCLEAR POWER

Uranium Mining, Processing and Nuclear Energy Review - Draft Report

www.dpmc.gov.au/umpner/reports.cfm

The Switkowski Draft Report finds that nuclear power would only be economically viable "in a system where the costs of greenhouse gas emissions are explicitly recognised" but even then "nuclear reactors may require some form of government support". Even so, the review concludes that, while the Australian priority should continue to be to reduce CO2 emissions from coal and gas, nuclear power is a practical option for Australian electricity production and, in the right regulatory environment, could lift revenues from uranium exports by \$1.4 billion a year. The commission has advocated constructing 25 reactors to supply a third of Australia's electricity by 2050.

PERMACULTURE

Permaculture International's new Permaculture-Oceania listserv

<http://jasper.cmsarchitects.com/mailman/listinfo/pil-pc-oceania>

The Pil-pc-oceania email list is for general discussion of permaculture and the activities of Permaculture International Limited (PIL). It is run by PIL on behalf of its members. Free to all interested permaculturists.

URBAN PLANNING

Suburban Entropy and the Death of Difference

www.mongard.com.au/articles/2004_sedd.htm

In this paper, subtitled "Finding a green way through the greenfields", landscape architect John Mongard analyses the current model of creating suburbs, finds it desperately wanting, and offers two case studies of alternative models for a more sustainable way of facilitating living places utilizing types of participatory processes. These case studies are of hinterland communities faced with growth and are offered as examples of 'redirective practices' that turn against the unsustainable in the search for sustainability. If you are interested in urban design, community design, eco-villages, and urban biodiversity conservation, then this paper is a good source of ideas.

WASTEWATER REUSE

Water Recycling: Cleaning water the way nature does

<http://waterrecycling.com/>

Describes medium-scale systems in which wastewater is cleaned for reclamation and reuse using constructed wetlands, and a greenhouse containing soil filters and an aquatic ecosystem.

Your Home Technical Manual – 2.3 Wastewater Re-use

www.greenhouse.gov.au/yourhome/technical/fs23.htm

This fact sheet provides information on wastewater re-use on-site for both urban and rural households.

WELLBEING

Australia in 2025: A Happy Scenario

[www.futuresfoundation.org.au/Future-News/Features-\(General\)/Australia-in-2025:-A-Happy-Scenario-20061107398/](http://www.futuresfoundation.org.au/Future-News/Features-(General)/Australia-in-2025:-A-Happy-Scenario-20061107398/)

Network member Andrew Gaines – andrew.gaines@futuresfoundation.org.au – of the 'Project to Make Wellbeing a National priority' draws our attention to this positive and possible scenario developed by

Peter Saul and the Coalition for a Happier Australia Tomorrow (CHAT). Says Andrew, “Now that climate change is mainstream, the next question is *how we will go about reducing greenhouse emissions and attempt to stabilize the climate?* Predictably there will be two main modes of response. One will seek to keep centralized control by hierarchical dominator systems. Proponents of this approach will argue for expensive centralized solutions such as storing CO2 from coal underground and using nuclear power. They will also tend to downplay and underfund less expensive locally distributed solutions such as superb insulation, locally produced alternative energy, and reducing excess consumption by fostering psychological well-being and personal responsibility. In part, this is because no-one can become massively wealthy through decentralized solutions. In contrast, we have an opportunity to move towards ecological sustainability and personal / community well-being simultaneously. This paper by futurist Peter Saul (and friends) looks back from the perspective of 2025 and evocatively describes how Australia made this shift. I regard it as a major synthesis of many strands related to sustainability and well-being. Indeed, having done research in this area myself for more than a decade, I find it inspiring.”

[Readers may also be interested in a second, somewhat different positive scenario: **A Post Howard-Costello Scenario** – by **Sohail Inayatullah**. You can find it on the same website at: [www.futuresfoundation.org.au/Future-News/Features-\(General\)/Australia-2026:-a-post-Howard%11Costello-scenario-20061113399/](http://www.futuresfoundation.org.au/Future-News/Features-(General)/Australia-2026:-a-post-Howard%11Costello-scenario-20061113399/)]

YOUTH VALUES

It's a MeWe World

www.meweworld.se

Today's youth are individualists and collectivists at the same time. Research by Swedish consulting firm Kairos Future - www.kairosfuture.com – shows that they care about their personal self (me) and the collective (we), in terms of their friends and peer-groups, to an equal extent. Hence, they are MeWes and our youth community a MeWe-world! Kairos Future now invites 16-29 year olds to share life stories with young people around the world. Write about everyday life, dreams, wishes, hopes, fears, inspirations, and give your opinion on sustainable development, gender issues, globalization, your favorite countries, branding and more. The content of this site will be used for studies on global youth values and lifestyles. By participating you get a chance to influence decision making worldwide. There are prizes to be won as well, and the organizers will also give to WWF and Red Cross in response to your comments.

Reminders

IEA Open Energy Bulletin – Issue 39, 12 December, now online

<http://spider.iea.org/impagr/cip/index.htm>

Sustainable Development Update (SDU) – Issue 4, Volume 6, now online

www.albaeco.com/sdu/

Courses in Sustainable Development

See our website at www.bml.csiro.au/sustnet.htm under “Useful Links & Resources”

Conferences, Workshops & Events

See our website at www.bml.csiro.au/sustnet.htm under “Useful Links & Resources”

And Finally – Notes and Reminders

Our web site at www.bml.csiro.au/sustnet.htm has CSIRO's “P@NOPTIC” search facility installed – and also features short content summaries for archived newsletters.

The *SustNet* website is maintained by Trudi Prideaux at CSIRO's Black Mountain Library – Comments and suggestions welcome. Contact Trudi at Trudi.Prideaux@csiro.au.

- To **SUBSCRIBE** to the Sustainability Network, visit www.bml.csiro.au/SNabout.htm or send me an email request: Elizabeth.Heij@csiro.au

- **To find back issues of Sustainability Network newsletters directly, go to our web archive at: www.bml.csiro.au/SNnewsletters.htm**
- **Pass it on!** The Sustainability Network is intended to be inclusive rather than exclusive. If you know someone who might be interested in this newsletter, by all means forward it to them or give them our web address.
- **Want to make contact with scientists?** If you can see an application for the science featured in these newsletters and need to contact the scientists involved, let me know by email.
- **Want to see a particular area of sustainability science featured?** If there is a particular area of sustainability-related science that you would like to see featured as a “spot” in a future newsletter, send me an email or call me by phone to discuss it.
- **Give me your feedback.** I am interested in your comments as to whether these newsletters are interesting, useful, and pitched at the right level for your particular purposes. Do you have suggestions? Thanks to all those who have already sent in comments and alerts.



Sincerely,

Elizabeth Heij

Network Facilitator

Network Milestone:
Our Sustainability Network
has 13 hundred members.

BEST WISHES TO ALL FOR A HAPPY HOLIDAY SEASON

Parting Shot



One day, there may be only wildlife monuments left if we continue to take the lion's share!