



Opportunities for a Sustainable Conference

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On behalf of the SSEE 2007 Conference Organising Committee

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1. Introduction

The 2007 Society for Sustainability and Environmental Engineering International Conference on Engineering Sustainability (SSEE07) provides an opportunity to share knowledge and ideas on sustainability and aims to be a showcase for the role of engineering in delivering sustainable outcomes. The SSEE07 Organising Committee has an opportunity to further advance this sharing of knowledge by incorporating the ideals of sustainability into the conference planning, and seeking mechanisms to minimise adverse environmental and social impacts of the conference while maintaining profitability. In this way, the conference itself can provide delegates with ideas and examples for the sustainable management of large events.

Besides the obvious benefits of maximising the social, environmental and economic performance of the conference there are an number of other spin-off benefits from taking a proactive approach to sustainability including:

- Greater credibility for the conference – showing that we can ‘walk the walk’ as well as ‘talk the talk’.
- A higher potential for media coverage by incorporating innovative and quirky ideas on sustainability that will set this conference apart at a time when environmental and sustainability issues are receiving unprecedented media coverage.

The purpose of this document is to outline some of the ways in which SSEE07 can implement the principles of sustainability in the planning and execution of the conference. The following sections outline the opportunities for environmental and social savings and benefits for the conference. Sustainability should be considered in all decision making to ensure the environmental and social factors of all decisions are taken into account. Recommendations are provided below for actions that the conference can implement now to demonstrate our commitment to sustainability.

2. Environmental Opportunities

2.1 Carbon Emissions

Climate change is considered by many to be the key challenge of our era and carbon emissions from transport, energy use and manufacturing, to name a few, are a prime driver for the greenhouse effect and subsequent climate change. By minimising the carbon emissions produced by the conference and committing to offset those emissions which are unavoidable, SSEE07 can demonstrate leadership in environmentally responsible event management.

Conference Aspects that will emit carbon and GHG

The following aspects of the conference have been identified as major carbon emitters:

- Travel by delegates and speakers to and from conference
- Accommodation and activities at the conference venue
- Travel by delegates for other purposes while visiting Perth
- Travel by delegates and speakers within Perth for conference events
- Transport of materials and supplies including food and conference giveaways

Opportunities to reduce or offset carbon emissions

The SSEE07 Conference can reduce its carbon emissions in a number of ways.

The major conference venues have been selected so that they are all located within close proximity. The Perth Mint and Government House, the venues for the welcome cocktail party and the conference dinner respectively, are within a 15 to 20 minute walk of the Sheraton Hotel and delegates may be encouraged to walk. The conference should also offer a shuttle bus service with bulk transport, or a taxi service using hybrid vehicles, also offering savings in greenhouse gas emissions.

Delegates can also be provided with information about public transport in Perth and encouraged to use public transport wherever possible for daily travel to and from the conference, sight seeing and such like.

Where possible, food should be sourced locally to avoid unnecessary transportation emissions. Similarly, conference materials including giveaways should be sourced from Australian based companies rather than internationally.

There is some level of emissions relating to venue usage and delegate travel which cannot be avoided. Several Australian companies can provide an estimate of these conference emissions and offset or neutralise these emissions by funding clean energy programs or by planting trees. This would cost in the order of \$5 per person for the conference venue only, and more if air travel and accommodation in Perth for overseas and interstate visitors was factored in. Rather than placing the financial burden of this on the Conference itself, delegates could be provided with the information and encouraged to offset the carbon emissions generated as a result of their own travel. At least one such company has also indicated that they would be prepared to provide a carbon offsetting service at a reduced rate in exchange for publicity at the conference.

The company chosen for carbon offsetting should be independently verified or be able to provide evidence of how the business operates. Appendix A contains a summary of the proposed carbon offsetting approach for this conference.

2.2 Solid Waste

Reducing waste

As with any conference, the potential to generate excessive solid waste is high. Handouts and advertising are usually given to all delegates, even when irrelevant to an individual's needs, and excess packaging and disposable items are used. We can be conscious of reducing our solid waste by the following:

- encouraging sponsors to find innovative ways of getting their message across without the use of paper, such as by putting sponsors logos and/or messages on abstracts and programs or having sponsors poster boards outside lecture rooms.
- using water jugs and glasses rather than disposable plastic bottles
- allowing conference programs and proceedings to be 'custom built' by providing delegates with a folder and ask them to take the program and extracts of the sessions they attend rather than including all sessions in the booklet when people can only see a third of these speakers
- allowing delegates to download handouts rather than taking hard copies (perhaps supply – or have a sponsor supply – a USB Flash Drive with conference packs)

- ensuring all handouts are printed double sided on recycled paper. Consideration should also be given to the possibility of hosting a paperless conference with proceedings supplied only on CD.
- providing delegates with a simple, useful satchel, possibly made from recycled plastic or fibre, or from natural fibre, and possibly obtained from a developing country
- providing the opportunity for delegates to indicate on their registration form whether they want a satchel, and if not, whether they want the money saved to be given to a charity.
- requesting the hotel to not over supply food for delegates, and considering means of safely re-using or sharing left over food with delegates or the needy.

Recycling waste

The conference can also encourage the recycling of solid waste by:

- providing clearly labelled recycling bins with guidelines on what can and can't be recycled. Arrangements should be made with the Sheraton Hotel for the proper disposal of this waste to an appropriate recycling facility
- requesting the Sheraton Hotel to consider composting putrescible waste.

2.3 Water Use

Aspects that will use water

Water use initiated or associated with the conference will mainly be for personal use and food preparation including the following:

- washing, clothes laundering and toilet usage by delegates staying conference accommodation, including the Sheraton Hotel
- drinking water for delegates
- water use by the Sheraton Hotel for food preparation and washing
- manufacture of conference handouts.

Opportunities to save water

There are limited opportunities to save water at the conference, but there are initiatives that can be put in place such as the following:

- asking the Sheraton Hotel (and other conference hotels) to provide information on annual average water usage per guest and water saving initiatives that have been implemented, and what target or benchmark has been set for water usage in the future, and including this information in the conference information provided to delegates
- providing water saving tips in a conference sustainability handout.

2.4 Energy Use

Aspects that will use energy

Energy use initiated or associated with the conference will include the following:

- lighting, TV, fridge, air conditioning, water heating and cooking in rooms used by delegates staying at conference accommodation, including the Sheraton Hotel
- lighting and air conditioning use at the Sheraton Hotel for conference venues
- energy use by Sheraton Hotel (food preparation and washing).

Opportunities to save Energy

There are limited opportunities to save energy at the conference, but there are initiatives that can be put in place such as the following:

- turning off computers and projectors when not in use
- turning lights off when rooms are not in use. However, care should be taken with fluorescent lights that the energy used to turn on the light again does not exceed the energy saved by turning it off for a short time
- asking the Sheraton Hotel (and other conference hotels) to provide information on annual average energy usage per guest and energy saving initiatives that have been implemented, and what target or benchmark has been set for energy usage in the future, and including this information in the conference information provided to delegates.

3. Social Opportunities

3.1 Accessibility

There are a number of factors that may limit an individual's ability to attend and participate at the conference including financial and physical limits and restrictions on travel due to family responsibilities. There are a number of ways in which these limits can be reduced:

- Accessibility by the general public can be overcome by holding an open lecture to share information with members of the public. This could be in the form of a public debate with key international and national speakers debating on a sustainability and/or engineering topic (e.g., "is engineering sustainable?"). This could be chaired by a high profile science communicator/comedian such as Adam Spencer. An event like this would have added benefits for sponsors and the conference with greater exposure in the public eye and potentially greater media coverage.
- Provide a discounted registration rate for students.
- Offer a full student scholarship to allow the nation's (or the state's) brightest minds to learn about sustainable engineering and take this into their careers.
- Offer a half scholarship for a young professional with less than five years experience. This is effectively allowing a company to send a junior employee for half price or for young professionals to pay their own way to the conference at a price they can afford. Advertising of both scholarships will provide greater coverage within the student and young professional markets and has the potential to be an effective promotional tool.

- For people who genuinely can't make it to the conference, offer a cheap, internet access registration to enable them to receive conference papers and proceedings. Some thought is required to ensure that this does not replace any full registrations. However this is a great opportunity to have a global impact on industry thinking for engineering sustainability.
- Provide the opportunity to pay for the conference registration by instalments, with the balance to be paid upon registration.

3.2 Social Justice

The SSEE07 conference should be able to ensure that no one is harmed by the conference. This would apply to issues such as sweatshop labour, greenhouse gas emissions etc.

The conference may be able to make an active contribution to social justice by donating a portion of any profits to charity and by raising money for a suitable charity at the conference.

4. Economic Opportunities

The economic sustainability of the conference will be assured through sound financial management. The organising committee should define the acceptable (e.g., break even or run at a small loss?) and desirable (e.g., make a 10% profit on the conference) economic outcomes of the conference up front.

Economic sustainability for delegates can be assured by providing an exciting, informative and innovative conference that offers excellent value for money.

5. Decision Making

All decision making by the conference organising committee should actively consider the triple bottom line outcomes of any decision and seek to find solutions that are socially, environmentally and economically acceptable.

6. Key Recommendations

The following are some key recommendations for ensuring a sustainable conference. These recommendations summarise the suggestions above into seven key actions:

1. Reduce carbon emissions by selecting venues within close proximity of each other, and through reduction of energy consumption at the venue
2. Offset conference carbon emissions and provide an opportunity for delegates to offset their individual emissions
3. Reduce the number of conference handouts by:
 - Printing all handouts double sided on recycled paper and encouraging sponsors to do the same.
 - Providing a USB flash drive (or encourage a sponsor to provide one) to each delegate and provide all handouts in electronic format.
 - Encouraging innovative promotion of sponsors that does not require additional printing of handouts (eg adding logos to other printed conference material, using poster and banner displays outside rooms)
 - Allowing delegates to 'custom build' their conference handbooks and only take the abstracts and notes on the sessions they actually attend.
4. Provide clearly labelled recycling bins at the conference venue and arrange with the Sheraton for their proper disposal.
5. Provide conference sustainability guidelines to delegates with tips on how to reduce water and electricity consumption, details of public transport in Perth and outlining what steps the Conference Organising Committee has taken to ensure a sustainable conference.
6. Provide conference sustainability guidelines to venues including requests such as:
 - Provide water jugs and glasses rather than disposable bottles or cups.
 - Do not oversupply food for delegates, and source food locally where possible.
 - Consider composting putrescibles waste.in addition to normal water and energy saving practices.
7. Host an open lecture or debate for the general public on a topic relating to the conference.
8. Provide one full student scholarship and one half scholarship for a young professional with less than 5 years experience.
9. Provide a discounted registration rate for students
10. Require a commitment from all sponsors to ensure that handouts and gifts are not manufactured using sweatshop labour or manufactured in a way which pollutes the environment. Australian made items to be used preferentially.
11. Provide delegates with a simple, useful satchel, preferably made from recycled material and manufactured in an environmentally responsible manner.

Appendix A:
Carbon Offsetting Proposal



Carbon Offsetting Proposal

Prepared by
SSEE Conference Sustainability Subcommittee
April 2007

Introduction

The sustainability sub-committee raised a number of issues regarding the commercial carbon offsetting companies and whether they really offset the full impact. Carbon Neutral was used as a typical example. Questions raised were:

- Is tree planting the best form of offsetting?
- Does the offset cost include the cost of planting?
- Are the seed collectors and growers paid or is this voluntary labour and therefore not properly costed?
- Does the cost include the purchase of land on which to plant the trees?
- How long do the trees stay and will they ultimately be harvested?
- Does the offset cost including long-term maintenance of the trees?

Sources of Information

1. Karen Lane spoke with a Carbon Neutral representative at a Sustainability Practitioners Association on 21 March 2007.
2. An overall perspective was gained from the SSEE seminar on 4 April 2007 by Chris Lund, '*Greenhouse Gas – More Than Hot Air*'.
3. Websites provide many pages of relevant information:
 - www.ecobusinesslinks.com/carbon_offset_wind_credits_carbon_reduction.htm
 - www.en.wikipedia.org/wiki/Carbon_offset
 - www.carbonneutral.com.au
4. Feedback regarding recommendations from SSEE-07 conference committee on 10 April 2007.

Summary Findings

Chris Lund's talk showed a number of different scenarios for climate change, with increasing impact as the predicted carbon gas load increased. The essential message was that we need to reduce that load as much as possible and as quickly as possible.

The most effective way to have an impact is undoubtedly to not create the carbon dioxide, and other climate change gases, in the first place. There is considerable opinion that the concept of carbon offsetting is giving licence to operators to keep emissions at present or even increased rates, provided that they pay offsetting costs.

[George Monbiot](#), an English environmentalist and writer, has compared carbon offsets to the practice of purchasing [Indulgences](#) during the Middle Ages, whereby people with money could purchase forgiveness for their sins (instead of actually repenting and not sinning anymore). (www.en.wikipedia.org/wiki/Carbon_offset). Monbiot says that carbon offsets are an excuse for business as usual with regards to pollution. Their first priority should be to cut back the emissions wherever possible.

Carbon offsetting, however is probably the most effective economic instrument that we have at present to enable schemes to flourish that will reduce the atmospheric load. It creates market forces to deliver the required changes, which many people consider to be preferable to using legislative instruments. Carbon offsetting schemes include schemes to progressively switch from coal power to renewable power generation (wind, solar etc), schemes to improve efficiencies with improving technology and schemes to encourage the take up of Carbon Dioxide, called sequestration, by either plants or by injection into the earth.

The cost of the carbon offsetting varies widely depending on the product (Table 1). Investment in greener energy and the development of greener products will take considerable time to pay any dividends, possibly in the order of a decade or more, and the cost per ton of Carbon Dioxide equivalent is high.

Sequestration by elaborate engineering means requires lots of environmental impact assessment before approval and then the construction of considerable infrastructure, so also has a lead time. The cost appears to be a bit less than some of green energy schemes and therefore it is gaining increasing attention.

It appears that re-forestation schemes show the most immediate on-ground impact and are generally the cheapest option. However they don't have the future leverage that more sophisticated options generate by delivering much cleverer ways of doing things. Planting trees does take up Carbon Dioxide and gradually offset emissions over the tree's life time. Although the process can commence quickly, the full take-up can take 70 years. There is therefore the question of whether these trees will be managed for that purpose in the longer-term, and the availability of land for such a land-hungry, slow process.

Yet, re-forestation schemes are the cheapest and the most immediately visible schemes. At the moment, the most popular carbon-offsetting schemes are the re-forestation schemes, such as Carbon Neutral.

Proposed Approach for Conference

Because of the overall, limiting benefits of carbon offsetting by tree planting, I suggest that we offer our conference participants a mixed bag of offsetting products, whereby they support three different types of schemes designed to expose them to the different forms of offsetting.

Carbon Neutral follows Australian Standards and is active locally. Its headquarters are in Perth. It says that 70% of their costs go directly to tree planting. The money goes to pay Men of the Trees to plant and manage trees on farms and on some public land. The planting takes place on land where the owner wants to rehabilitate the area with trees, often to alleviate salinity and erosion problems. This area of planting is covered by legal covenants, registered to ensure that they remain under trees for at least 70 years. The sequestration process is slow – Carbon Neutral say that about 85% of the CO₂ is sequestered within 30 years and by 70 years all of the CO₂ is sequestered. However, I believe that it is a good product because of its local impact and it has additional positive benefits for salinity and erosion. Some examples of Carbon Neutral's projects in WA are:

- A three-year project involved planting 60,500 seedlings in Lake Chinocup Catchment;
- 50,000 seedlings to assist in stabilising the soil around the creek in Minnivale Catchment east of Dowerin; and
- Planting of over 108,000 Oil Mallees near Mullewa in the north of the WA wheatbelt.

Climate Friendly is a gold standard accredited Australian program. Like Carbon Neutral, they say, *'On average, two thirds of the climate neutral fee goes directly to our projects'*. Climate Friendly supports renewable energy plants that are genuine long-term solutions, by investing in 'new' clean energy projects, defined as those built after 1997. Their projects include:

- wind (such as the Denham wind farm on the Shark Bay peninsula and Challicum Hills in Victoria, which avoids the emission of 180,000 tonnes of greenhouse gas each year);
- solar electric (PV) ;
- solar thermal;
- micro hydro (low-impact);
- geothermal;
- ecologically sound biomass; and
- biogas, biofuels, and landfill gas to energy.

Uncook the Planet is an Australian company that appears to have the most complex operation of all the schemes. It is an accredited program that links greenhouse emissions, such as those produced through travel and tourism, to emissions reductions projects administered by the respected Greenhouse Gas Abatement Scheme (GGAS). GGAS is a scheme to reduce emissions in NSW, particularly from large power plants, and achieve world class benchmarking for efficiency. The GGAS scheme includes a rigorous audit by a panel with representatives from many of the consultants who will be at the conference (Ernst and Young, GHD, SKM, SMEC, URS and others). A contribution to Uncook the Planet will mean that the conference contributions are not just WA-focused, but reflect the participation from elsewhere, particularly other states of Australia.

Examples of efficiency projects are:

- increasing the efficiency of on-site fuel use;
- switching to lower emission intensity fuels;
- abating on-site greenhouse gas emissions from industrial processes; and
- abating on-site fugitive greenhouse gas emissions.

I recommend that the mix is:

33%	Carbon Neutral	Trees	\$13.10 / tonne CO ₂ -e
33%	Climate Friendly	Renewable energy	\$22.00 / tonne CO ₂ -e
33%	Uncook the Planet	Efficiency	\$17.50/ tonne CO ₂ -e *

- ❖ Costs are all in terms of CO₂ equivalent.
- ❖ Price for more than 20 tonnes.
- ❖ Costs exclude GST
- ❖ Carbon offset cost are tax deductible.

All three products have calculators to determine the CO₂ equivalent. Air fares are easy to calculate and emissions per kW of energy are fairly standard. Emissions for some elements, such as waste, are more difficult. The calculation process done previously by members of the SSEE conference committee is probably as good, possibly better, than any of the online calculators that I have seen.

Process for Payment

Per-capita offset cost for venue

It is recommended that a cost per capita be determined for waste, electricity, cooking use and other venue-related costs. The cost per person is expected be low (\$5 to \$10). The committee was keen for attendees to pay this cost at the time of registration because it was easier to administer and the attendees would have a receipt for tax deduction purposes. The offset cost could be included in the existing registration cost, however, the committee reached a general consensus that attendees pay optionally through a tick box and that their nametags be labelled with an icon showing that they had voluntarily chosen to carbon offsetting their person impact during conference. This would provide the publicity and educational elements. It was suggested that the conference pick up the carbon offsetting cost for the remainder of the attendees, although there was a question of equity because it could be argued that those already donating would be subsidising the others. Another option was for a sponsor to pick up the difference. The question of the residual cost should be addressed later when the finances of the conference are known more definitively.

Transport offsetting costs

Transport offsetting costs, particularly air fares and car travel, are expected to be a significant cost and will need to be calculated for the particular person. The committee discussed having three tick box options on the registration form and using an average costs for each, and a fourth, more tailored option:

1. local travel by car;

2. air travel within Australia;
3. overseas air travel; and
4. self-calculated travel offset (in tonne CO₂-e) using an online calculator.

Publicity

Three opportunities for publicity are suggested. The offset costs and the benefits (numbers of trees, contribution to particular efficiency projects and green power etc) could be highlighted at the dinner and also in the sustainability paper being presented at the conference by the sustainability committee. Details of the carbon offsetting associated with the conference could also be presented in a press release.

Karen Lane, 10 April 2007

Table 1 Carbon Offset Product Types

http://www.ecobusinesslinks.com/carbon_offset_wind_credits_carbon_reduction.htm

Ecobusinesslinks.com Carbon Offset Survey						
Carbon Offset Provider	Price (US\$/Metric ton CO2)	Non-profit	Projects Types	Project Choice	Offset Types	Product Certification/ Verification
AtmosClear Climate Club US	\$3.56 ^a - \$25.00	No	Methane	No	Car, Home	Environmental Resources Trust
Carbonfund.org US	\$4.30 ^b - 5.50	Yes	Renewables, Efficiency, Reforestation	Yes	Home, Car, Air, Events, Business	Green-e, Chicago Climate Exchange, Environmental Resources Trust
e-BlueHorizons US	\$5.00	No	Renewables, Reforestation	No	Home, Car, Air	Chicago Climate Exchange, Environmental Resources Trust
DriveNeutral.org US	\$6.93 & up	Yes	Efficiency	No	Car	Chicago Climate Exchange
Terrapass US	\$7.35 ^c - 11.00	No	Renewables, Efficiency	No	Car, Air, Events, Business	Green-e, Chicago Climate Exchange, Center for Resource Solutions
Native Energy US	\$13.20	No	Renewables	Yes	Home, Car, Air, Events, Business	Green-e
The CarbonNeutral Company UK	\$14.00-18.00	No	Renewables, Efficiency, Reforestation, Methane	Yes	Business, Home, Car, Air, Events	KPMG, Edinburgh Centre for Carbon Management, Independent Advisory Committee
Climate Friendly Australia	\$16.00-19.00	No	Renewables	No	Home, Car, Air, Business	Office of the Renewable Energy Regulator, NSW Government, Ernst & Young.
Sustainable travel International US, Switzerland	\$18.00	Yes	Renewables	No	Air, Car, Home, Hotel	See Myclimate
Uncook the Planet Australia	\$19.45	No	Efficiency	No	Air, Car, Home, Business	Greenhouse Gas Abatement Scheme Project
Bonneville Environmental Foundation US	\$29.00	Yes	Renewables	No	Home, Air, Business, Event	Green-e
Myclimate Switzerland	\$30.00	Yes	Renewables	No	Air, Events, Business	Designated Operational Entity
Global Cool UK	£20.00 (\$39.48)	Yes	Renewables, Efficiency	No	n/a	CDM

Services for which we couldn't find independent product certification or verification information						
Carbon Offset Provider	Price (US\$/Metric ton CO2)	Non-profit	Projects Types	Project Choice	Offset Types	Product Certification/ Verification
DrivingGreen Ireland	\$8.00	No	Renewables	No	Car, Air, Events	n/a
Solar Electric Light Fund US	\$10.00	Yes	Renewables	No	External Calculators	n/a
Carbon Clear UK	\$14.48	No	Reforestation	No	Home, Car, Air, Babies	n/a

a: Atmos Clear - Low price for 25 Ton option at \$89

b: Carbonfund.org - Low price for ZeroCarbon tags option: 18 Ton + 5 Ton match, pay \$99 for \$23 Ton

c: Terrapass - Low price when purchasing 204 metric ton of carbon offsets for \$1,499.95

1. Offset Types: There are hundreds of potential offset types. We have limited our survey to just the most common.
2. Verification: "n/a" means we were unable to determine a third-party verification body. The projects may, however, be verified.
3. Choice: refers to whether customers may choose between project types and/or specific projects.
4. Price: prices change and exchange rates fluctuate. The data listed was first gathered from the respective websites July 21, 2006
5. Other offset providers may exist. This survey provides a cross section of the industry, projects may be added or removed over time.
6. Some information may be incomplete or has changed. We welcome updates.