



ATN Sustainability Symposium

8 - 9 September, 2005

Summary Document



**Institute for Sustainable Systems
and Technologies Initiative (ISST)**

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1. Symposium Overview

A group of more than forty researchers representing all Australian technology network universities (and a range of interests across those universities) met at the University of South Australia, Mawson Lakes, Adelaide on 8 - 9 September 2005 to :

1. Identify activities being undertaken in the general area of sustainability across those universities.
2. Based on those disclosures and discussions, identify areas of common interest particularly those where ATN members could benefit from collaboration :
 - a. Create valuable points of difference
 - b. Create areas of research activity which could be developed through scale, quality and complementary skills etc, into significant centres of excellence.
 - c. Report back to the ATN executive with a report based on the above discussions with recommendations for further actions.

Outcomes of Meeting

1. The group established that there was very considerable activity underway across all universities but these varied widely in scale, theme, priority and level of maturity.
2. Furthermore, the group recognised that there were a number of areas where there are opportunities to collaborate. However, these needed to be confined to a manageable number of topics and activities where excellence could be ensured and real outcomes/support would be possible.
3. Following the workshop process five project areas of interest were identified and first cut to the reference established (See Sections 3 - 7).
4. A small steering group – named **ATN Sustainability Committee (ASC)** - was established to move these initiatives forward. The nominees for the steering are as per the attachment. The group noted, however that this group was established for coordination purposes only and future success would depend on concentrated effort of a small number of high quality, but manageable projects. The entire group must commit to work on the advancement of those selected projects.
5. The ATN sustainability committee and others were willing to commit to advancing these projects and to provide more advanced and focused project details and plans to the ATN by the end of calendar year 2005.

2. ATN Sustainability Committee (ASC)

At the symposium a steering committee called the “ATN Sustainability Committee (ASC)” was formed to coordinate activities and programmes that are expected to follow from the discussions held in Adelaide on 8-9 Sept 2005. The initial membership of the committee consists of high profile sustainability scholars of each of the ATN’s, respectively:

Professor Rene van Berkel: Director and Chair of Cleaner Production
Centre of Excellence in Cleaner Production, CUT

Professor Stuart White: Director of the Institute for Sustainable Futures, UTS

Mr Mike Hefferan: Director, Institute for Sustainable Resources, QUT

Professor John Fien: Innovation Professor of Sustainability, RMIT

Professor Jerzy Filar: Director Institute for Sustainable Systems and Technologies Initiative,
UniSA

The committee's immediate tasks for the remainder of 2005 are:

1. To finalise the ATN definition of sustainability
2. To oversee the follow-on activities in five sustainability research themes identified during the symposium
3. To progress the concept of establishing "ATN Sustainability Think Tank"

In this summary report we, very briefly, outline these three tasks.

2.1. Proposed ATN Definition of Sustainability

After soliciting input from a wide cross-section of ATN sustainability researchers. We have arrived at the following definition that focuses on the contributions that ATN researchers can best make to the extremely broad area of sustainability research.

Sustainability is concerned with an economy and society that work for all and forever within the limits of this planet. Its achievement depends on intense innovation in technology, consumer behaviour, social relations and policy frameworks. ATN Sustainability targets innovations that advance Australia to sustainability, at home and in the global society it is part of.

2.2. Oversight of five ATN Sustainability Research Programmes

During the symposium the following five major research programmes were proposed, with the following working titles.

Research Programme A.	Sustainable Cities
Research Programme B.	Sustainability and Organisational Change
Research Programme C.	Social and Cultural Dimensions of Research on Sustainability
Research Programme D.	Integrated Sustainability Assessment
Research Programme E.	Sustainable ATN Universities

It is proposed to develop proposals for funding the projects through submissions for a CRC for Sustainable Cities, 3 submissions under the Commonwealth Environment Research facilities program and other funding bodies.

2.3. ATN Sustainability Think Tank

Our **broad aim** is to establish a pre-eminent national "ATN Sustainability Think Tank" capable of fostering sustainability scholarship in the ATN institutions and contributing to the global discourse on sustainability that will work towards:

AIM 1. Development and design of new products and technologies that preserve integrity of ecosystems and natural capital while facilitating economic development and social advancement, minimising waste, emissions and other adverse consequences.

AIM 2. Promoting more efficient use of natural resources - within closed loops - so they can be re-used or re-manufactured and the product lifetime extended, within the main context of Australian industry.

AIM 3. Developing and promoting, state-of-the-art practices in sustainable housing and urban planning.

AIM 4. Promoting sustainable consumption patterns and lifestyle choices in Australian society, industry, government and business.

AIM 5. Integrated environmental, social and economic assessment of products services and processes, and of policies and programs to reduce Australia's ecological footprint.

The wide interdisciplinary spectrum of research expertise and industry experience of ATN researchers make the “national think tank” aim of the project plausible. After all, where else, in Australia, is there a grouping of experts in nanotechnology, physics, engineering, mathematics, statistics, environmental science, urban planning, architecture, economics, management, sociology and law working towards the common goal of attaining sustainability and, importantly, possessing the freedom to define its research and comment on policy?

Our approach will exploit the “economies of scale” of the ATN pool of researchers to leverage support from state governments for both university-based research and for support (and refinement) of states' local sustainability objectives. We will be able to argue that we can draw on the broadest, unconstrained¹, pool of sustainability expertise in Australia.

Apart from specific contracts with state government departments and EPAs we shall attempt to set-up our “think tank” by approaching each of the five state governments for (modest) matching funds of 100K per year in years 2-5 of the project. Of course, with the greatly expanded capability to deliver research and consultancy services, we shall also explore opportunities to provide expert advice and a new range of technologies to industries and local governments.

In the first phase we shall compile a database of “satisfied past clients”, and of expertise and “track record” of team members. This database will facilitate our ability to procure new projects because of the enhanced capability to put together the “right sub-teams” to bid for tenders.

¹ Unlike, for instance, CSIRO.

3. RESEARCH PROGRAMME A: Sustainable Cities

3.1. Background

The ATN symposium provided an opportunity for a number of key researchers and research leaders in all 5 ATN Universities to recognise commonality and strategic importance of the research interests in the area of sustainable urban development. The group has enthusiastically endorsed one main **aim**;

- To develop an initial bid to establish a new CRC in the area of Sustainable Cities.

The 5 ATN Universities are located in the 5 largest cities of Australia which are experiencing similar challenges in the path towards sustainability. They also have substantial research credibility in various aspects of sustainable cities.

Launching such a CRC is particularly timely as it coincides and would interact positively with the Solar Cities Program being implemented by the Australian Greenhouse Office. ATN Universities are key players in a number of solar Cities bids. However, the proposed CRC will be more comprehensive and will cover the whole spectrum of dimensions associated with the concept of sustainability. The bid is in tune with the national priority area “ Environmentally sustainable Australia” and coincides with the recent Sustainable Cities report released by the House of Representatives Environment Committee.

3.2. Proposed CRC Themes and Participants

Initially, Professor Wasim Saman (UNISA) has agreed to lead the activities of this proposed bid. At this stage, three clearly identifiable research themes have emerged.

Theme 1: Working Towards a Sustainable Future

Leader: Ralph Horne (RMIT)

Researchers: John Jackson (RMIT), Chris Lund (Curtin), Steve Hamnett (UniSA), Jon Kelett (UniSA), Simon Robb (UniSA), John Bell (QUT),

The theme examines the necessary societal changes necessary to transform our current urban environment to sustainable settlements. The proposed projects include:

- How do we get from Here to Here?
- How future cities will perform?
- Implications to businesses and necessary adjustments to business operations
- Resource provision and implications (this links with integrated assessment project)
- Adjusting to the impacts of climate change, population growth / resource availability.
- Community engagement

Theme 2 – Sustainable Infrastructure and planning

Leader: Steve Hamnett (UniSA)

Researchers: Bill Richards (UniSA), John Bell (QUT), Jon Kelett (UniSA), Rocco Zito (UniSA), John Boland (UniSA), Ascelin Gordon (RMIT)

This theme focuses on macro planning and infrastructure issues for the whole city. It includes:

- Urban planning and regulation
- Management of services networks – Water, Electricity, communications, waste
- Transport networks
- Natural environment – Flora and Fauna
- Planning policy, regulations, codes and standards
- Synergies and interaction between different sectors

Theme 3 - Sustainable Buildings

Leaders: Geoff Smith (UTS), Wasim Saman (UniSA)

Researchers: John Bell (QUT), Bill Richards (UniSA), Margaret Lee (RMIT), Chris Lund (Curtin), Wiji Senadeera (UniSA), Frank Bruno (UniSA), Caroliyn Hayles (RMIT), Ralph Horne (RMIT), John Boland (UniSA),

This theme focuses on individual buildings of different sizes and functions including houses, flats, commercial and industrial buildings, schools. The theme focus is:

- Land, water, materials, energy flows, waste, emissions for individual buildings
- Life cycle analysis of existing and new buildings
- Zero energy sustainable housing
- Sustainable appliances and equipment in homes, commercial buildings, businesses, schools and other buildings
- Local natural environment
- Services, how can they provide / meet our social and environmental needs

3.3. Issues for Immediate action:

The next steps to help us decide to go ahead in developing the bid are:

1. Getting the green light from our Universities' research Offices
2. Finding a number of large potential Industry partners. The ones listed include insurance companies, transport and logistics organisations, State Government planning, energy, environment and housing agencies as well as local government, Federal agencies in the transport and environment areas, The Australian Greenhouse Office, Building developers, building material producers, appliance manufacturers and suppliers; food producers, waste management companies, utilities, public transport companies
3. Finding potential champions
4. Nominating other colleagues from our own or outside the ATN Universities who we believe are essential for the credibility of the bid.

4. RESEARCH PROGRAMME B:

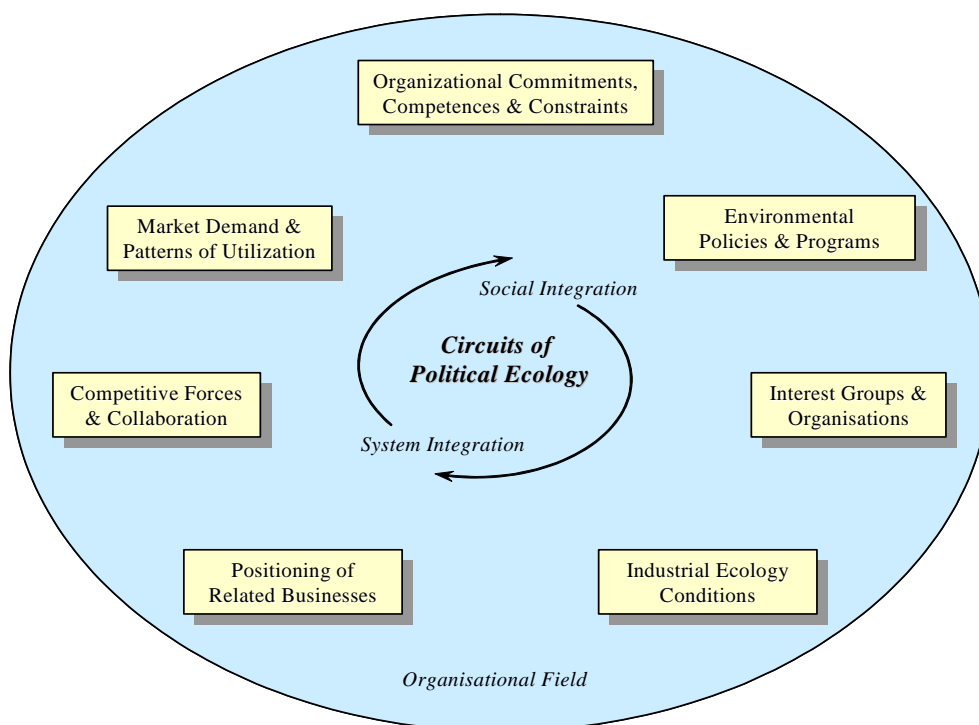
Sustainability and Organisational Change:

Critical links for sustainable systems of production and consumption in the building and construction sector

4.1. BACKGROUND

Organisations operate within a complex context that is characterised by a wide range of external and internal factors. The following diagram was used by the group to visualise this context:

Figure 1: The Ecological Modernisation Framework



Source: Orsato (2001)

The environment-contingent factors – or ‘eco-factors’ for short – represent the influences fostering and inhibiting the ecological modernization of a specific organizational field. Increasingly stringent regulations, consumer demand for cleaner industrial processes and products, the influence of related businesses, interest groups, and competition, all may be determinants of greening. These factors range from the voluntarism of some ecologically-driven practices by particular firms within the construction industry to the will of government to regulate energy or water efficiency or the rates of material recycling. Within this framework, eco-factors should be seen as interdependent components that might sensitize agents to the probable sources of innovation and resistance that are likely to occur in a specific organizational field.

The project will investigate the critical links between components within the organisational field, particularly as they relate to sustainable production and consumption in the building sector.

4.1.1. Purpose and Objectives

The overall purpose of the research programme is to enhance the uptake of sustainable practices on both demand and supply sides within the building and construction sector.

In order to achieve this overall purpose, the research programme will have the following specific objectives:

1. To identify and understand the links between factors that influence the uptake of sustainable systems of production and consumption in the building and construction sector;
2. To develop testable propositions for how those linkages interact with the overall purpose and objectives;
3. To develop methodologies for testing linkages, and
4. To develop a decision-support tool for quantifying likely outcomes associated with the linkages.

It will be necessary to demonstrate that objectives 2, 3 and 4 lead to consistent and sustainable outcomes.

4.1.2. Deliverables

The research programme will deliver:

- a detailed breakdown of the model, including linkages;
- empirical tests and measures;
- practical decision-support tools for policy and decision-makers in planning, implementing and monitoring of results.

4.2. Sustainability case

The building and construction sector provides for the needs of growing urban populations and their aspirations. However, the sector also has significant environmental and social implications. While some of these are positive, the potential for adverse effects is large. When activities are undertaken without considering these effects, developments can strip urban areas of remaining native vegetation, destroy habitats for native fauna, radically alter hydrological features, and make excessive demands on resources (e.g. water, materials, energy) and infrastructure (e.g. sewage plants, roading). They can also create unhealthy social contexts where people live in isolation, physically and emotionally disconnected from their neighbours, and unable to contribute towards and benefit from community well-being.

The built environment is therefore one of the major challenges for sustainable development. The building and construction sector has a significant role to play in the pursuit of more sustainable built environments. Land clearance and building for urban housing development is proceeding at a rapid rate throughout Australia. While there are some companies within the sector that are applying sustainability principles to their developments, there are significant numbers that are not. There is an urgent need to understand the context within which the sector operates and to develop mechanisms for:

- reducing resource use (e.g. by keeping resources in loops);
- unlocking or acting on bottlenecks that limit innovation and the diffusion innovation;
- education;
- integrating and enhancing triple bottom line outcomes within the sector.

4.3. Business case and Funding

The research will provide insights into the critical linkages within the sector, including social relationships between the key actors, and how they contribute towards the uptake (or otherwise) of sustainable practices. These insights will provide detailed information that will assist in the development of institutional frameworks for enhancing the environmental, social and economic outcomes of the built environment. In particular, it will provide information that will assist strategic decision-makers, including: financial planners within the organisations themselves; property owners, developers and investors; tenants, users and buyers, and government agencies (e.g. those responsible for planning and infrastructure, and environmental protection).

Potential sources of funding include:

- government agencies (federal, state, local);
- larger, more progressive companies in each of the business case areas (e.g.: investors such as Investa, AIG, Swiss Re; owners/developers such as Bovis, Australand, Stockland; suppliers such as Interface);
- related supply chain members.

4.4. Research case

The focus of sustainability-related research in this area tends to be on buildings themselves or urban design, and the criteria that can be used to help make them more sustainable. Because of the significant contribution that construction and demolition waste makes to solid waste in cities, research has also been directed at how such wastes can be reduced. Mechanisms (e.g. building regulations, codes of practice, sector-specific educational programmes) are currently developed without much research (and therefore consideration) of the organisational field within which members of the building and construction sector operate and what drives and influences them and their relationships with each other. Without this knowledge, such mechanisms may lack resonance and fall short in their ability to effect change. This research will provide insights that will minimise this and enable the development of more creative and organisationally cognisant mechanisms. The research will add rigour to existing ‘magic formulae’ and address the poor linkages between organisational leadership and change management, organisational and inter-organisational decision-making and triple bottom line outcomes for the sectors activities.

4.5. Leaders

The group members identified below are prepared to lead the project. There is a strong belief within the group that the project reflects common interests within the ATN. Initially, Dr. Lesley Stone has agreed to coordinate the activities of this research programme

Researchers: Caroline Bayliss (RMIT), Jordan Louviere (UTS), David Ness (UniSA), Renato Orsato (UTS), Tony Stapledon (UTS), Lesley Stone (CUT). Sue Benn (UTS) .

The group members believe that the mix of expertise and experience available within the group, but also within ATN as a whole, will make the project academically competitive. Credibility will depend on the industry partners and key issues or focus areas chosen.

4.6. References

Orsato, R. (2001). The Ecological Modernization of Industry: Developing Multi-disciplinary Research on Organization and Environment. PhD Dissertation, University of Technology, Sydney, Australia.

5. RESEARCH PROGRAMME C: Social and Cultural Dimensions of Research on Sustainability

5.1. Background

To preserve human well-being over the long term, people need to move toward new ways of meeting human needs, adopting consumption and production patterns that maintain the earth's life support systems and safeguard the resources needed by future generations. Yet if current trends in population growth, consumption of energy and materials, and environmental degradation persist, many human needs will not be met and the numbers of hungry and poor will increase.

Such a dismal forecast need not come to pass. Scientific, technological, and health capabilities--if supported by the necessary worldwide political will and international cooperation, and mobilized by appropriate social and economic policies--can produce substantial progress over the next two decades toward a sustainable human future.

World's Scientific Academies: May 2000

Sustainable development is perhaps more a moral precept than a scientific concept, linked as much with notions of peace, human rights and fairness as with theories of ecology or global warning.... While sustainable development involves the natural sciences, policy and economics, it is primarily a matter of culture: it is concerned with the values people cherish and with the ways in which we perceive our relationship with others and with the natural world.

UNESCO, 2002

The concept of sustainable development has infused the policy, business and NGO world in recent decades, and is a principle focus of numerous city, regional, national and international initiatives. While the concept has achieved wide currency, there remains uncertainty over its meanings and applications in different cultural, political and geographic contexts, as well as an emerging sense of disillusionment over the lack of progress in implementing sustainable development strategies. There is also a recognition that the concept of sustainability often embodies lofty ambitions that are rarely matched with the kind of structural change that is essential to reduce human impacts on the environment and, at the same time, promote economic vitality and social equity. Lack of public understanding and acceptance of the need for these structural changes is a major impediment to sustainability. This may be a product of declining trust in state institutions and a declining interest in civic engagement, especially when sustainability is often portrayed as a technical and scientific concept that does also require widespread social, and economic change. Yet it is clear that governments cannot make policy decisions that require significant change without a supportive public constituency; nor can companies make major steps towards cleaner production unless there is the demand for sustainable goods and services.

The need to address such concerns underpins the role of the social sciences and humanities in research on and for sustainability. Indeed, the dilemma of current attempts to achieve sustainability without research in the social sciences and humanities demonstrates that "most aspects of the structure and functioning of Earth's ecosystems cannot be understood without accounting for the strong, often dominant influence of humanity" (Vitousek et al. 1997, p. 494). Or as Mascia et al (2003) argues the foremost influences on the success of *environmental* policy are *social* in that "conservation interventions are the product of human decision-making processes and require changes in human behaviour to succeed" (p. 249).

This situation was recognized in the Millennium Development Goals (MDGs) of the United Nations General Assembly through their focus on education, gender, poverty alleviation, maternal, child and

sexual health, and sustainable development policy. It is also reflected in the values of sustainability that underpin the MDGs.

VALUES UNDERLYING THE MILLENNIUM DECLARATION

The Millennium Declaration—which outlines 60 goals for peace; development; the environment; human rights; the vulnerable, hungry, and poor; Africa; and the United Nations—is founded on a core set of values described as follows:

“We consider certain fundamental values to be essential to international relations in the twenty-first century. These include:

- **Freedom.** Men and women have the right to live their lives and raise their children in dignity, free from hunger and from the fear of violence, oppression or injustice. Democratic and participatory governance based on the will of the people best assures these rights.
- **Equality.** No individual and no nation must be denied the opportunity to benefit from development. The equal rights and opportunities of women and men must be assured.
- **Solidarity.** Global challenges must be managed in a way that distributes the costs and burdens fairly in accordance with basic principles of equity and social justice. Those who suffer or who benefit least deserve help from those who benefit most.
- **Tolerance.** Human beings must respect one other, in all their diversity of belief, culture and language. Differences within and between societies should be neither feared nor repressed, but cherished as a precious asset of humanity. A culture of peace and dialogue among all civilizations should be actively promoted.
- **Respect for nature.** Prudence must be shown in the management of all living species and natural resources, in accordance with the precepts of sustainable development. Only in this way can the immeasurable riches provided to us by nature be preserved and passed on to our descendants. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants.
- **Shared responsibility.** Responsibility for managing worldwide economic and social development, as well as threats to international peace and security, must be shared among the nations of the world and should be exercised multi-laterally.

Source: United Nations General Assembly, “United Nations Millennium Declaration,” Resolution 55/2, United Nations A/RES/55/2, 18 September 2000, page x.

This widespread recognition that science needs to engage with people and social issues via the social sciences and humanities has generated significant international and national research effort. The most significant of these is the UNESCO Management of Social Transformations (MOST) program, which has resulted in the publication of *Sustainability and the Social Sciences* (Becker and Jahn 1999) and on-going international collaboration in research on the sustainability themes of: human security, poverty eradication, international migration, urban issues, ethics and philosophy and prospective (future) studies. International collaboration on social scientific decision making for ecosystem management has led to the development of a major new approach based upon the concepts of resilience and adaptive management and the formation of an international interdisciplinary network of researchers called the Resilience Alliance (<http://www.resalliance.org>).

In the USA, leadership is coming from the National Academy of Science which is integrating social and behavioural science into all its sustainability programs, and has published major reports for over a decade on this theme, including: *Decision Making for the Environment: Social and Behavioral Science Research Priorities* (G Brewer and P Stern, 2005), *New Tools for Environmental Protection: Education, Information, and Voluntary Measures* (T Dietz and Stern 2002), *Nature and Human Society: The Quest for a Sustainable World* (P Raven and T Williams 2000) and *Our Common Journey: A Transition Toward Sustainability* (Board on Sustainable Development 1999). In Australia, there are many similar initiatives although these lack the organizational structure to coordinate such research. Major initiatives include:

Land and Water Australia's Social and Institutional Research Program which focuses on: how people value and perceive natural resources; how they learn about and understand natural resource management; how people live in and manage natural resources; and the processes and governance at various scales that influences natural resource management. Many environmental CRCs also have major social science programmes. The scope of these and similar Australian initiatives are detailed in an ARC Special Research Initiative report on *Nature, Culture and the Challenges of Environmental Sustainability: Bridging the Science/Humanities Divide* (Head, Trigger and Woodward 2004).

5.2. Research on Social and Cultural Dimensions of Sustainability

Initially, Professor John Fien has agreed to coordinate the activities of this research programme

Researchers: John Fien (RMIT), Soumitri Vardarajan (RMIT), D. Baker (QUT), V. Lee (UniSA), R. Flowers (UTS), Jodi Smith (UniSA), S. Robb (UniSA), L. Williams (RMIT), S. Cunningham (QUT), J. Hartley (RMIT), J. Handmer (RMIT).

The following themes and opportunities were discussed by those who participated in the ATN Sustainability Workshop on Research on Social and Cultural Dimensions of Sustainability. From their interests and knowledge of interests of colleagues not present, the following research themes were identified.

- Risk management
- Sustainable consumption and lifestyles
- Indigenous issues and sustainability
- Sustainable community development
- Sustainability in the creative industries
- Gender
- Natural resource management
- Inter-faith dialogue, cultural diversity and peace
- Globalisation and sustainability
- Law, governance and institutional frameworks for sustainability
- Public participation in planning – urban, rural
- Corporate social responsibility
- Sustainability ethics and philosophy
- Work, welfare and equity in social sustainability
- Education for sustainability
- Public understanding of science

There was also a strong interest in social and cultural concepts and research methodologies which were seen as relevant to almost all areas of research on sustainability and could therefore be seen as integral to all other projects. These methodologies include participatory and action research approaches that have come to be known as "Citizen Science" (Coastal CRC 2004) and "Sustainability Science" (see <http://sustsci.harvard.edu/>).

Six sample projects were scoped by participants at the workshop.

5.3. Conclusion and References

This is by no ways a complete listing of areas of research in the social sciences and humanities of relevance to sustainability nor is a full scoping of the wide range of related expertise in this field across the ATN universities. Rather, these examples stand as typical of the scope of work possible within the ATN.

_____ (2004) Transition to Sustainability in the 21st Century: The Contribution of Science and Technology: A Statement of the World's Scientific Academies: May 2000. [On-line at <http://www4.nationalacademies.org/iap/iaphome.nsf/weblinks/SAIN-4XVLCT?OpenDocument>

Becker, E. and Jahn, t. (1999) Sustainability and the Social Sciences, MOST and ISOE and Zed Books, London.

Brewer, G. and Stern, P. (2005) *Decision Making for the Environment: Social and Behavioral Science Research Priorities*, National Academy Press, Washington.

Board on Sustainable Development (1999). *Our Common Journey: A Transition Toward Sustainability*, National Academy Press, Washington.

Coastal CRC (2004) Citizen Science Toolbox [Available on-line at www.coastal.crc.org.au/toolbox/index.asp]

Dietz, T. and Stern, P. (2002), *New Tools for Environmental Protection: Education, Information, and Voluntary Measures*, National Academy Press, Washington.

Head, L. Trigger, D and Woodward, E. (2004) *Nature, Culture and the Challenges of Environmental Sustainability*:

Bridging the Science/Humanities Divide [On-line at www.uow.edu.au/research/rso/grants/outcomes/external/reports/lhead/LHDTweb.pdf]

Mascia, M.B., Brosius, J.P., Dobson, T.A., Forbes, B.C., Horowitz, L., McKean, M.A. and N.J. Turner. 2003. Conservation and the social sciences. *Conservation Biology* 17(3): 649.

Raven, P. and Williams, T. (2000) *Nature and Human Society: The Quest for a Sustainable World*, National Academy Press, Washington.

UNESCO (2002) *From Rio to Johannesburg: A Decade of Commitment in Education for Sustainable Development*. Report submitted to World Summit on Sustainable Development.

Vitousek, P.M., Mooney, H.A., Lubchenco, J. and Melillo, J.M. 1997 Human domination of Earth's ecosystems. *Science* 277: 494-9

5.4. Topic Name: Design guidelines for indigenous housing in remote communities.

<p>Purpose (what does the project seek to achieve)</p>	<p>To develop flexible guidelines for the design, construction and management of indigenous housing in remote indigenous communities.</p>								
<p>Requirements (how can we measure whether the project is a success)</p>	<ul style="list-style-type: none"> • Improved housing standards <ul style="list-style-type: none"> - culturally appropriate - cater for different family types - climate/geography responsiveness 								
<p>Objectives (what are the specific objectives)</p>	<ul style="list-style-type: none"> • To understand housing aspirations of different family types • Analyse relationships of aspirations and existing dwellings stock • To develop/test guidelines for design 								
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>Address inequalities and health impacts of poor housing stocks in remote indigenous communities.</p>								
<p>Business Case (who can act on the output and why would they bother)</p>	<ul style="list-style-type: none"> • State housing agencies • Aboriginal housing co-operatives 								
<p>Research Case (why is this interesting research)</p>	<p>Applied participating research</p>								
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<table border="0"> <tr> <td>Professor J Fien</td> <td>RMIT</td> </tr> <tr> <td>Assoc. Professor S. Varadarajan</td> <td>RMIT</td> </tr> <tr> <td>Assoc. Professor D. Baker</td> <td>QUT</td> </tr> <tr> <td>Professor V Lee</td> <td>UniSA</td> </tr> </table>	Professor J Fien	RMIT	Assoc. Professor S. Varadarajan	RMIT	Assoc. Professor D. Baker	QUT	Professor V Lee	UniSA
Professor J Fien	RMIT								
Assoc. Professor S. Varadarajan	RMIT								
Assoc. Professor D. Baker	QUT								
Professor V Lee	UniSA								
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>AHURI State agencies</p>								
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Yes</p>								

5.5. Topic Name: Sustainable Community Development: An asset-based approach

<p>Purpose (what does the project seek to achieve)</p>	<p>To provide frameworks, guidelines and tool boxes which build capacity for an asset-based approach to sustainable community development.</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<ul style="list-style-type: none"> • flexible guidelines • tool kit • case studies • dissemination training courses
<p>Objectives (what are the specific objectives)</p>	<ul style="list-style-type: none"> • To analyse organisational/institutional change requirement for ABCD • To pilot ABCD approaches through case studies • To build capacity in the use of guidelines and tools
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>Project provides tools for building social capital.</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<ul style="list-style-type: none"> • Local/State/Federal government • Welfare NGOs. Planning industry • Local developers
<p>Research Case (why is this interesting research)</p>	<p>Practical application of social sustainability concepts</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Professor J Fien RMIT Dr R Flowers UTS</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>Local/State government Greensite property developers</p>
<p>Are we competitive? (do we have the track record, to be credible when trying to launch this project)</p>	<p>Yes</p>

5.6. Topic Name: Alternative Strategies for understanding and redressing unsustainable lifestyle/consumption.

<p>Purpose (what does the project seek to achieve)</p>	<p>Assist people to understand social pressures leading to consumption patterns so that they can choose whether they want to buy in to that or not.</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<p>Greater understanding and outcomes of behaviour change. Training programs/workshops. Publications of support materials.</p>
<p>Objectives (what are the specific objectives)</p>	<p>Case studies with different consumer groups to explore pressures and practices leading to change. Ways to reconnect individuals and communities.</p>
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>Current consumerism patterns not sustainable, societal breakdowns in families and communities leading to crime, environmental destruction etc.</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<p>Local governments can implement initiatives to encourage societal cohesion in their areas – enhance community development</p>
<p>Research Case (why is this interesting research)</p>	<p>Applied participatory research</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Dr Jodi Smith, UniSA Professor John Fien, RMIT Dr Soumitri Varadarajan, RMIT</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>Government agencies, social and environmental family support agencies, NGO's.</p>
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Yes?</p>

5.7. Topic Name: Sustainability in the Creative Industries

<p>Purpose (what does the project seek to achieve)</p>	How can the creative industries contribute to social sustainability?
<p>Requirements (how can we measure whether the project is a success)</p>	<ul style="list-style-type: none"> invest in link between creative industries and social sustainability government level contribution to academic sustainability research
<p>Objectives (what are the specific objectives)</p>	<ul style="list-style-type: none"> analysis of creative industry impacts on community building, social justice, equity and empowerment. develop policy inputs for government.
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	Developing relationship between cultural and social sustainability is necessary within academic field and for government.
<p>Business Case (who can act on the output and why would they bother)</p>	<ul style="list-style-type: none"> local State and Federal government recognising links between social policy and creative policies advocates and produces in creative
<p>Research Case (why is this interesting research)</p>	Address research need in sustainability field and policy need in government.
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Dr S Robb , UniSA Dr S Varadarajan RMIT Dr L Williams, RMIT Prof S Cunningham, QUT Prof J Hartley, RMIT</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<ul style="list-style-type: none"> Local, State and Federal government Arts Council
<p>Are we competitive? (do we have the track record, to be credible)</p>	Yes

5.8. Topic name : Capacity building for promoting sustainable consumption and production.

<p>Purpose (what does the project seek to achieve)</p>	<p>To address problems of low implementation of SCP policies.</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<ul style="list-style-type: none"> • improved institutional SCP frameworks • increased adoption of SP in industry • increased demand for sustainable products
<p>Objectives (what are the specific objectives)</p>	<ul style="list-style-type: none"> • to identify/analyse system weaknesses in implementation of SCP policies • to develop/pilot capacity building frameworks/tools
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>Reduced material flows Dematerialisation of economy</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<p>Reduction in social and environmental externalities and improved brand value</p>
<p>Research Case (why is this interesting research)</p>	<p>Losses in production – consumption/supply side, demand/supply side divide in policy implementation</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Professor J. Fien RMIT</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<ul style="list-style-type: none"> • State EPAs • Leading edge corporate firms • AGO
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Yes</p>

5.9. Topic Name: Risk management in a highly organised society

<p>Purpose (what does the project seek to achieve)</p>	<p>To develop broad strategies that will minimise the risk of catastrophic disaster (and or other things).</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<p>The project could look at particular case studies (eg, New Orleans) and the development of structural planning that will limit damage.</p>
<p>Objectives (what are the specific objectives)</p>	<ol style="list-style-type: none"> 1. Strategic planning of remedial action 2. Community acceptance of the plans 3. The role of the individual 4. The measurement of risk.
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>A highly organised and interdependent society will break down (possible in catastrophic mode) if one or more links are broken. Maintaining alternative linkages is part of sustainability.</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<p>Costing the worst case scenario and the preventative measures (eg New Orleans)</p>
<p>Research Case (why is this interesting research)</p>	<p>Because it is broadly applicable and at the same time specifically identifiable (eg New Orleans, alternative sources of supply for consumables, etc.)</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Prof J handmer RMIT</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>Federal/State governments Local government DSTO Bushfire CRC</p>
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Yes</p>

6. RESEARCH PROGRAMME D: Integrated Assessment of Sustainability

6.1. Background

“Integrated Assessment” (IA, for short) is a name attached to a holistic approach – and an associated body of, predominantly analytic techniques – to assessment. The following is a quotation from the scope statement of the international Integrated Assessment Journal.

“...Integrated Assessment combines knowledge from diverse disciplines to accurately represent and analyze policy-relevant real world problems.

Integrated Assessment provides a systematic approach to interdisciplinary research that bridges traditional disciplinary boundaries.

Through model-based systems, simulation gaming, scenario analysis, and qualitative studies, Integrated Assessment creates open and flexible tools to provide timely, relevant analysis at the level of aggregation appropriate to the problems and issues at hand....”

The IA-Sustainability theme was proposed during the conference in recognition of the fact that many underlying sustainability issues demand an integrated perspective in order to arrive at policies and technological solutions that will do more good than harm.

During the ATN Sustainability Symposium, the following five IA-topics were formulated. The first three of these were developed to the point where follow-up action may be warranted. The remaining two topics are not without merit but do not have identifiable “champions” committed to their advancement.

6.2. IA-ATN Sustainability Topics

Initially, Professor Jerzy Filar (UniSA) has agreed to coordinate the activities of this research programme.

Researchers: Jerzy Filar (UniSA), Mike Taylor (UniSA), Liuping Wang (RMIT), Tim Grant (RMIT), Phil Kimmet (QUT), Ralph Horne (RMIT), John Boland (UniSA), Wasim Saman (UniSA), Rene van Berkel (CUT)

1. Multicriteria, dynamic “sustainability footprints” assessment.
2. Sustainability Scorecards
3. Integrated Assessment and Industrial Ecology
4. Integration of Sustainability Databases
5. Nexus Between Life Cycle Analysis & Industry Sector Assessment

In the remainder of this section we present a case for the viability of topics 1-3 from the above list.

6.3. Topic Name: Multicriteria, dynamic “sustainability footprints” assessment.

<p>Purpose (what does the project seek to achieve)</p>	<p>To develop multiple, dynamic, “footprints” (e.g., for energy, water, greenhouse gas emissions. Jobs, well-being, resource inventory). Inspired by, but going beyond the “ecological footprint”. As a consequence to provide a more responsive and comprehensive assessment tool than the current ecological footprint.</p>						
<p>Requirements (how can we measure whether the project is a success)</p>	<ul style="list-style-type: none"> (i) Sufficient interest from State Government Agencies and/or potential industry clients (ii) Membership of the Global Footprint Network 						
<p>Objectives (what are the specific objectives)</p>	<ul style="list-style-type: none"> (i) Development of a predictive modelling and scenario analysis framework for sustainability policies. (ii) Increase in public awareness of the sustainability issues through the use of IA tools. 						
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>As above</p>						
<p>Business Case (who can act on the output and why would they bother)</p>	<p>State government offices responsible for sustainability programs. Alternatively, large corporations if the approach is scaled down to a level of company such as General Motors, of BHP.</p>						
<p>Research Case (why is this interesting research)</p>	<p>The research is challenging if: (i) the approach incorporates dynamics of these multiple sustainability indicators, and (ii) the concept of “feedback control” is incorporated into sustainability policy making.</p>						
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<table border="0"> <tr> <td>Jerzy Filar & Mike Taylor</td> <td>UniSA</td> </tr> <tr> <td>L. Wang and Tim Grant</td> <td>RMIT</td> </tr> <tr> <td>Peter Grace</td> <td>QUT</td> </tr> </table>	Jerzy Filar & Mike Taylor	UniSA	L. Wang and Tim Grant	RMIT	Peter Grace	QUT
Jerzy Filar & Mike Taylor	UniSA						
L. Wang and Tim Grant	RMIT						
Peter Grace	QUT						
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>State government departments; ARC (?), large corporations</p>						
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Provided that we collaborate with people like Manfred Lenzen, Univ. of Sydney and Mathis Wackernagel from the Global Footprint Network</p>						

6.4. Topic name: ATN Sustainability Scorecards

<p>Purpose (what does the project seek to achieve)</p>	<p>Measure integrated sustainability practices and outcomes.</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<p>Sufficient interest from industry clients and professional bodies</p>
<p>Objectives (what are the specific objectives)</p>	<p>To develop “ATN Sustainability Standards” for various products and industries. To establish these scorecards as proactive assessment tools.</p>
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>Will enable business, government & public to monitor progress in an easily understood way</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<p>Clients pay fee for access to the scorecard tools</p>
<p>Research Case (why is this interesting research)</p>	<p>Challenge: to integrate scientific, commercial, political and environmental concerns in a valid way</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Phil Kimmet – QUT Ralph Horne – RMIT John Boland – UniSA Wasim Saman –UniSA</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>Possibly bodies such as Commerce Queensland, Business SA and similar organisations in other states. ARC Linkage grants with those state organisations?</p>
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>The case remains to be made.</p>

6.5. Topic Name: Industrial Ecology & Integrated Assessment

<p>Purpose (what does the project seek to achieve)</p>	<p>To demonstrate the feasibility of R. C. Anderson’s vision of designing industrial systems that mimic sustainable ecosystems (e.g., a forest).</p>
<p>Requirements (how can we measure whether the project is a success)</p>	<p>A high level research team needs to be formed that includes expertise in ecology, mathematical modelling and manufacturing systems. Access to industrial input/output data is needed.</p>
<p>Objectives (what are the specific objectives)</p>	<p>(i) To demonstrate that the analogy: product lines = species, waste=food can be made in a concrete, quantifiable, way.</p> <p>(ii) To identify the sustainability characteristics of ecosystems that are extendable to manufacturing systems. E.g., symbiosis between species as interdependence of product lines.</p>
<p>Sustainability Case (why is this relevant to advancing sustainability)</p>	<p>This will be a fundamental research program aimed at rigorous formulation of “sustainability principles”.</p>
<p>Business Case (who can act on the output and why would they bother)</p>	<p>To demonstrate that some of the above sustainability principles are already being applied and that others can be realised via new, innovative, practices. Possibly, a project like Kwinana in WA can be used as a test case? Possibly, Interface’s Sustainability Practices can also be used as a laboratory.</p>
<p>Research Case (why is this interesting research)</p>	<p>There is a major, fundamental research, challenge here to identify and establish the existence of “parallel principles” between ecosystems and manufacturing systems.</p>
<p>Who are the leaders? (are there at least two ATN researchers, from different institutions, willing and able to champion this project)</p>	<p>Jerzy Filar – UniSA Rene van Berkel - Curtin Liuping Wang – RMIT Peter Grace – QUT</p>
<p>Who will fund it? (are there funding agencies or industrial sponsors willing to support this project)</p>	<p>Suitable for an ARC Special Research Centre? Approach to Interface Sustainability Inc?</p>
<p>Are we competitive? (do we have the track record, to be credible)</p>	<p>Provided that we can find a top notch expert in biomimicry to join the effort.</p>

7. RESEARCH PROGRAMME E: The Sustainable University

7.1. Background

There was a consensus at the symposium that if ATN Universities are serious about promoting sustainability then they ought to commit themselves to implementing best practice sustainability initiatives on their own campuses. In particular ATN Universities should;

- exemplify triple bottom-line sustainability since we research and teach in the subject area
- address both the physical (campus operations and design) as well as the social (staff/student well-being) aspects of sustainability within their organisations
- take responsibility for outreach function (to show other organizations) in relation to sustainability.

The group discussed the following main issues;

1. Corporate operations at Universities, so possibility to change exists
2. Student/staff demand for sustainability exists
3. Must practice what we preach
4. If Universities, with stable management and long-term control of investments/properties can't manage to work toward sustainability, who will?
5. Sustainability education and practice can differentiate Universities, leading to marketing advantages and increased enrolments
6. Universities need specific responsibility for sustainability
7. Must exemplify sustainability – through leadership
8. Demonstration of sustainability must be a progressive array of actions (from simple to complex, cheap to expensive)
9. In many cases we already know what to do to improve negative impacts, so it becomes a matter of packaging tools/practices (sell IP?); adapt what is known
10. Must bring together academics with facilities staff; facilitate a management group
11. Sustainability ratings systems do not exist for institutions
12. Chance to trial technologies on campus and integrate into teaching (e.g. electric car at UniSA)

7.2. Project Outcomes:

It is envisaged that the project group will recommend best practices to ATN Universities. These recommendations will include;

1. Communication of principles of sustainability
2. Rationale/justification including cost-benefit analyses
3. Engagement : list of priority areas
4. Practical implementation ideas

It is envisaged that changes will be achieved via the following processes that are inclusive of all the stakeholders.

1. Audit of planning documents and performance
2. Engagement : students are critical [e.g. students at UniSA prepare campus sustainability plan....]
3. Learn from success stories at other universities: how did they get there?
Leadership analysis, e.g. ANU, Newcastle, Harvard, Yale,

4. research methodology should include Delphi process of asking experts in water/energy etc. about best practices
5. Cost-benefit analysis and tracking costs/payback periods is also research phase

7.3. Specific Research Topics

The group identified a number of specific research topics aimed at achieving the above stated outcomes. These topics can be classified into two main categories:

Content Orientated Research

Water
Energy
Waste

Transportation

Landscaping
Purchasing policy
Design/new buildings, construction

Process Orientated Research

Connection to teaching
Reward and recognition
Variation and rating scales
(published score)
Measurement issues

The group recognised the importance of establishing and maintaining links with Research Programme B: Social/organizational change and dynamics. ATN Universities could serve as a setting for a case study on organizational change and innovation/adoption.

7.4. Researchers and Resources

Initially Mike Heffernan (QUT) has agreed to coordinate the activities of this research programme. Researchers: Frank Bruno (UniSA), Peter Pudney (UniSA), Barbara Koth (UniSA), Carolyn Bayliss (RMIT).

Resources

- Ian Thomas @ RMIT
- UniSA Mawson Lakes campus draft Sustainability Plan
<http://www.unisanet.unisa.edu.au/mlsustainabilityplan>
- Websites: www.ulsf.org University Leaders for a Sustainable Future

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