Welcome to Issue 2, 2012, in which we focus on aspects of ISDRC18, introduce plans for ISDRC19, and reflect on the outcomes of the UNCSD – Rio+20.

The archive for the ISDRS Newsletter is available on the Society's website: www.isdrs.org/

CONTENTS **Page**

1 EDITORIAL: RIO+20 – MORE THAN HOT AIR?

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With UNCSD - Rio+20 - having been held from 20 to 22 June, just days before ISDRC18 at Hull University, this issue includes the ISDRC18 report and some programme content while reflecting on Rio+20 and what its outcomes indicate for future research on sustainable development. The Board welcomes incoming President, Associate Professor Walter Vermeulen, Vice President, Dr Pauline Deutz and Executive Secretary, Professor Rupert Baumgartner. Our warm good wishes and thanks also go to Dr Richard Welford, Founding President, for his leadership and long-standing service to the Board and the Society.

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Mark Edwards, Hard Rain Project

It has not been easy in the weeks since Rio+20 to find positive reporting or comment on the UN Conference on Sustainable Development. As with UNCED in 1992, the outcomes were distinguished by significant 'silences' in the formal discourse: once again, there were many voices struggling to be heard that were under-represented in the outcomes. The slipping and sliding of the language in the past two decades has been significant. UNCED was to be built on the principles of the WCED Report (1987), *Our Common Future*, which brought 'sustainable development' into the formal debate, based on the concepts of 'needs' and 'limits'. Despite charges made in the intervening years that the Report was 'vacuous', the Commission had taken a stance that challenged traditional power structures, acknowledging the inseparability of environmental and development issues and the link between poverty and environment – 'the pollution of poverty' that Indira Ghandi had brought to the attention of the Stockholm Conference in 1972. Ten years after UNCED, 'sustainable development' was replaced at the WSSD in 2002 by 'sustainable growth', and at UNCSD by 'sustained growth'.

Did Rio+20 produce more than hot air? Many of the commentaries included in this issue (see, in particular, Sections 9 and 11) reflect disappointment, rejection, anger and frustration. Prior to the UNCSD, UN Secretary General, Ban Ki-moon, warned that the Summit was 'too important to fail' and that the international community was 'in danger of squandering a once-in-a-generation opportunity to use the Rio+20 meeting to map out a new course for economic and social development.'

Sadly, the official text of *The Future We Want* failed to live up to the vision its title had promised. The Brazilian hosts released the final version of the conference agreement before heads of state arrived in Rio and it was not revisited. This led to the common reaction amongst many participants and observers that the Rio conference was over before it had even started. The UK *Guardian's* environment correspondent noted that Brazil removed every item of controversy from the negotiation text: 'As a result, there were no discussions of any substance because there was nothing to discuss. The text was so anodyne there was nothing in it which could be disagreed.'

The final text lacks any set of concrete new commitments and actions, relying on vague expressions such as, 'we reaffirm', 'we acknowledge' and 'we recall'. As Joachim Spangenberg observes in this issue, the preparatory process for Rio+20, as for UNCED and the WSSD, was politically shaped in the interests of the major - that is, the most affluent and powerful - players.

Post-UNCSD, Ban Ki-moon has claimed that the event strengthened political commitment to sustainable development and that poverty has been recognized as the greatest challenge to economic, social and environmental well-being. We are reminded of Indira Ghandi's forecast four decades ago that the biggest challenge facing the world was 'the pollution of poverty': it still is.

Ban Ki-moon has also emphasized the need for active involvement and support from major groups of civil society. Incoming ISDRS President, Walter Vermeulen, notes that, if we are seeking a more optimistic perspective on the future, it is work at grass roots level and within academia that is contributing to a 'creative commons' and provides some direction and hope after UNCSD. One of the ways in which the ISDR Society has increased its active support for major groups of civil society since Rio+20 is to become a signatory to the *Peoples' Sustainability Treaty on Higher Education Towards Sustainable Development* and to call on academics to promote its principles in their own institutions (see Section 9, viiia and viiib).

Looking to the future of the ISDRS, Professor Alan Brent provides information about the next conference – ISDRC19 - to be held at Stellenbosch, South Africa (see Section 6). Please note that Alan has issued an invitation to nominate suggestions for programme tracks that tie in with the key themes of the Conference. Suggestions should be sent to Professor Brent at: acb@sun.ac.za

Finally, it is with regret that I have to advise readers of my resignation forthwith from the position of Editor. Opportunities have come my way recently that will not leave me the time to edit the Newsletter. Information about submissions to the Newsletter will be found on the ISDRS website. My thanks to all contributors who have given support in 2011 and 2012.

2 FROM THE PRESIDENT

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The second half of June 2012 has been an important period in the field of Sustainable Development and also for the ISDR Society. Immediately after global public policy makers and private peers met at the UNCSD in Rio de Janeiro, the Society had its 18th ISDRS Conference at Hull (UK) with over 200 participants from all continents, discussing their most recent research results in the field. Some direct connections were made by participants that had just left Rio+20.

This 20th anniversary of the first UN Summit on Sustainable Development marks a difficult period for the improvement of life on our single Earth. While major threats to our ecological and social systems tend to be very persistent, increasing economic instability appears to be a serious obstacle for making the needed additional efforts on the level of our global institutions to address the ever-increasing impacts of human society on our resource base. The economic and financial crisis seems to be copied into an 'earth system governance crisis'. Not many global leaders have demonstrated their political decisiveness in Rio this June. Looking at the outcomes, the 'glass half full' would be: yes, the world community has sustained its attention for 'the future we want' (which is the title of the final document of Rio+20). And yes, it is a good thing to start working towards measurable goals and to monitor them. But 'the glass half empty' is that the "The Future We Want" document's most often used active verb is 'we reaffirm ….", not bringing a lot of news.

Still, working in this field with academics and connecting to emerging practices on the ground, my observation is that a lot more is happening in practice, than the policy documents would make you expect … More and more "coalitions of the willing" are making big steps, working in the "creative commons". During the Hull conference we have seen again quite a lot of examples, either developed and suggested or already implemented and critically assessed on their contribution to the sustainable development goals (even if they still need to be written down ….).

This is exactly where we as the ISDR Society have our place. Sustainable Development professionals, linking science and practice, need to have their global place for meeting and exchanging of experiences. We have been doing this with our conferences now for 18 years. Last year we started building a stronger Society organization, creating a Charter and opening the route for a more active organization. On our LinkedIn discussion group over 1150 persons around the world are now interacting. We will further develop our formal membership base and create more active working groups.

During the Hull conference, the annual meeting of the ISDRS Board has chosen new elected officers. I have taken up the honour of being the new President, taking over this role from Richard Welford, who has been the founding father of the Society and looks back on a long history of annual conferences linked to the highly respected scientific journal Sustainable Development. We are all very thankful for his long lasting energy in this!!

Pauline Deutz, the organizer of the Hull conference, has now taken the role of Vice-President on the Board and Rupert Baumgartner (Graz University) is now the Secretary in the Board. We will inform you in coming Newsletters and on the website about our new activities

At the Conference in Hull, the hosts of ISDRC19 presented their plans for the next Conference, to be held in Stellenbosch, South Africa, 1-3 July, 2013. The Conference will focus on the theme: "Just Transitions: A global perspective", and Conference Chair, Professor Alan Brent, invites your attendance in his Conference overview in this issue. We hope to meet you all over there again!

3 FROM THE VICE PRESIDENT: REPORT ON ISDRC18
PEOPLE, PROGRESS AND ENVIRONMENTAL PROTECTION

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ISDRC 18 in Hull this June had 224 delegates from 35 different countries, presenting a total of over 190 papers and posters. Many thanks to all the delegates, track chairs and speakers who attended the event and in any way contributed to its success.

This conference set out to ensure that people are firmly on the agenda for sustainable development, which in the developed world context is too often conflated with environmental protection. In a time of widespread financial distress, the challenges for promoting a *sustainable* form of development are magnified, which is confirmed by the greater media attention (at least in the UK) to the G20 Summit in Mexico than the Rio+20 Summit in Brazil. Miranda Schreurs provided us with an interesting response to the agreement from Rio+20. The World's leaders, and/or their representatives, continue to fail to provide leadership on sustainability, declining to make the compromises that progress requires. Nonetheless, the plenary speakers provided us with graphic reminders of why development is necessary. In Rio itself, 1/3 of the population still live in poverty, as Felipe Guanaes showed us, even whilst the country's economy has grown to be the 6th largest in the world. Other speakers, in rather contrasting styles, also emphasised the need to consider human equality alongside environmental quality. As Julian Agyeman pointed out, too much institutional effort has been put into the latter without due regard for the former. Former Conservative minister, Lord Deben reminded the conference not to believe that the argument for sustainability has been won. Too many people in the rich world (wherever they may happen to live) continue to see the root of environmental problems as being that there are too many poor people. No doubt in some respects the poor would agree, yet the rich are far more profligate with resources. Lord Prescott, a former Labour minister, provided a valuable insight into the world of international climate negotiations. This disturbingly demonstrated the intransigence of the rich (nations in this case) in hold on to their advantages, but that progress can still be made by artful negotiation and timely compromise.

Technological developments are a significant part of progress towards sustainability, with the potential to ameliorate damage to the environment whilst protecting lifestyles. It was interesting, therefore, to hear the perspective of Mainstream Renewable Power, a company involved in the development of off shore wind energy in the North Sea. Heather Laurie described proposals for a European 'Super grid' to link electricity from potentially complementary renewable sources (e.g., wind from the North Sea, solar power from the Mediterranean countries). This generated lively discussion as the audience sought to remind her that technological 'fixes' need to remember the people whose assumed problems they are deemed to solve. In a very different presentation, Simon Bell and Stephen Morse demonstrated how the decidedly low-tech use of pen and paper can break down cultural and knowledge

divides via the generation of 'rich pictures' to exploration of people's attitudes to and expectations of sustainability.

However, some of the most important work of the conference occurs away from the plenary sessions in the parallel sessions. Some of these tracks you can read about elsewhere in this newsletter. In general, however, it appears that sustainability research is flourishing, with the cross fertilisation of a wide range of empirical and theoretical approaches, and with the ISDRS much in evidence and many promising new researchers coming through.

A major question for the future is how best to link the good work being done with decision makers? Of course, a vital role for the conference is to bring together the people doing that work to provide intellectual support and stimulation and a renewed sense of purpose. We need also, though, to reflect on the pessimism generated by the apparent lack of ambition in the official Rio+20 report. Notwithstanding the challenging circumstances, arguably this apparently unambitious report is more realistic and honest in its offerings than predecessors. It is time for us as academics and other sustainability stakeholders to collectively re-sharpen our critical faculties and seek sustainability solutions beyond the confines of an economic reality that inevitably benefits the few at the expense of the many.

No doubt the discussions will continue. I'm already looking forward to next year, and wish all the very best to the team at Stellenbosch as they continue their preparations for ISDRC 19.

Conference Videos
The plenary lectures were videoed and streamed live over the internet to an invited audience by Libré Communications. The material is still available to view: please email Pauline Deutz (p.deutz@hull.ac.uk) to request a free e-ticket to watch one or more lectures. You can request an e-ticket to be sent to someone else's email address: they cannot be forwarded.

4 FROM THE EXECUTIVE SECRETARY

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It is a great honour for me to follow Professor Van Miller and Dr Pauline Deutz as Executive Secretary of the ISDRS. Van led us through the important process last year of developing the Charter for the governance of the Society that has formalised our professional processes. I wish Pauline all the best for her new role as Vice President and Conference Liaison Officer following Walter Vermeulen's appointment as President. The task as Secretary is to support the Board's internal business, but also to be a connector between ISDRS members and the Board. As a rather young society we are still in the phase of implementing our new governance structures based on the Charter. It will also be important to further develop services and activities for our members with the main goal to increase our professionalism to contribute to the

overall goal of ISDRS – providing an interdisciplinary, critical and global platform for sustainability science to support sustainable development!

**Professor Rupert J. Baumgartner is full Professor for sustainability management at University of Graz. He is a Board member of the International Sustainable Development Research Society (ISDRS) and subject editor for CSR and industrial ecology of the Journal of Cleaner Production (Elsevier). Before joining the University of Graz he was senior researcher in the field of strategic management and industrial ecology at the Åbo Akademi University in Finland. He finished his post-doctoral studies in the field of corporate sustainability management at the University of Leoben and received the Venia docendi for business administration. His research interests are (corporate) sustainability management, sustainability assessment, LCA, industrial ecology, inter-organisational management and innovation.*

5 ISDRC BOARD MEMBERS

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6 ISDRC19, 2013, STELLENBOSCH, S. AFRICA: ANNOUNCEMENT

JUST TRANSITIONS – A GLOBAL PERSPECTIVE

The Sustainability Institute and Stellenbosch University, South Africa, 1-3 July, 2013.

Chairman's Introduction And Invitation

The 19th annual International Sustainable Development Research Conference (ISDRC⛈19) will be hosted, for the first time, in the global south, where the many challenges of an emerging economy are actively being researched, at the **Sustainability Institute**, in collaboration with **Stellenbosch University**, and specifically the postgraduate programme in Sustainable Development and the TsamaHub in the School of Public Leadership (SPL), in the Faculty of Economic and Management Sciences; and the Centre for Renewable and Sustainable Energy Studies (CRSES), in the Faculty of Engineering.

Themes of the Conference

The central focus on Just Transitions will bring together perspectives from the global north and south and will revolve around the following central themes:

- The crisis, complexity, and transitions, with a critical analysis of the science of sustainability;
- Rethinking development, in terms of greening the developmental state, new forms of urbanism in the context of soils, land and food security, and effective governance, institutional and economic structures to support such sustainable development; and
- Sustainable living, in terms of regional approaches to decoupling production and consumption, and pioneering liveable and sustainable contexts.

Venue and dates of ISDRC⛈19

ISDRC⛈19 is scheduled from the 1st to the 3rd of July 2013. It will be held on the Spier wine estate where the company's core values comprise: Confront, Protect, Aspire, Unite, Pride – the Spier Way: www.spier.co.za/spier_sustainability//

Call For Track Nominations For ISDRC⛈19

At this time suggestions for tracks, in line with the themes of ISDRC⛈19, can be made directly to the Chair of the conference: Prof Alan Brent (acb@sun.ac.za).

For further details about the Conference, see http://www.isdrc19.co.za

Professor Alan Brent
Conference Chair
ISDRC19
July, 2012.

7 ISDRC18: TRACK CHAIR SUMMARIES OF THEMES.

Theme 1: Critical Perspectives on Sustainable Development.

(i) *Whose development? Environmental and Social Justice* (Track 1b)

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The various ideological, moral, ethical, value-based and religious dimensions of development, including sustainable development, were explored in this track. Competing as well as conflicting interests define development and as such, the speakers addressed the question of *whose development* is sought to be defined, articulated and implemented, based on categories of analysis such as gender, environment, race, caste, poverty, justice and class. Interestingly, all the speakers for this track were female – and, in line with the arguments of feminists like Vandana Shiva, this seemed to suggest that countering mainstream notions of capitalist development and exploring alternative methods of socially and ecologically equitable development was a task of paramount of importance to women. Five delegates spoke on a highly varied and rich range of topics that addressed the track theme using a multidisciplinary and multifocal lens.

The first two speakers examined the issue of citizenship and values and their implications for sustainable development, albeit from starkly varied perspectives. Deborah Fenney, PhD scholar in Sociology from the University of Leeds, opened the session with her paper, *'Disabled People as Environmental Citizens: Implications for Environmental and Social Justice'*. She argued for a strong conceptual link between disability and environmental issues, stating that people's right to participation as 'full citizens' of a democracy is threatened if their ability to participate in issues of environmental concern is undermined. Furthermore, the opportunity for disabled persons to reduce their own ecological footprint may be blocked by their lack of an adequate "environmental citizenship." Using a small pilot case study from the United Kingdom, Fenney thus argued for a clear interface between disability and environmental justice, which in turn would bring together issues of accessibility, sustainability and agency for disabled persons.

Oana Apostol from the Institute of Advanced Social Sciences, University of Tampere, Finland, presented her paper on *'Sustainability values: is there a clear understanding and support?*' Her paper undertook the important task of identifying what specific values and aspirations define sustainable development in the selected parts of the non-Western world, for neither is the notion universally understood, nor is its conceptualisation necessarily always sustainable. In particular, she was interested in the juxtaposition of values defining sustainable development between the primarily Western Europe-dominated European Union, and the new members from Eastern Europe. She used the specific case study of Romania to illustrate how their eschewing

of *all* values related to communism - including values such as equality, secure employment and community cohesion - may have unforeseen tensions in defining the EU's development policy. Her research, still in progress, seeks to understand what exactly 'sustainability' means in Romania and the significance of values as equality, security employment, community cohesion and human rights, as well as their relationship to sustainable development. This would, she hopes, be useful in forewarning of any impediments to a sustainable development path in Eastern Europe.

The third speaker, Cynthia Peabody, from the Centre for Science and Religion, Columbia University, New York spoke on *'Teaching an Ethic of Sustainable Development: A Report on the Center for the Study of Science and Religion Roundtable 2012'.* Peabody presented the findings from the roundtable on teaching the ethics of sustainable development that was hosted by Columbia University earlier in 2012. To that end, the roundtable drew on the perspectives from a range of stakeholders directly concerned with value-based sustainability principles and approaches, such as theologians, philosophers, artists and activists, to consider the following questions: What exactly are we teaching? Who are we teaching; and who is teaching us? How do we teach effectively in classroom and community? Based on the conclusions of the roundtable, Peabody argued that an education on the ethic of sustainable development must make an honest assessment of the ecological and social conditions of the planet in multidisciplinary terms, identify the values that are important in mediating a response, and be willing to apply "predictive wisdom" in articulating strategies that adequately respond to injustice. The goal should be to work towards a common understanding of problems and solutions, even as engaging with the sometimes conflicting assumptions and methods of different disciplines and stakeholders. (Cynthia's paper is included in this issue.)

The last two papers used empirical case studies to make a larger comment about the ethical and moral underpinnings of sustainable development. Mei-Fang Fan from the University of Taiwan presented her paper on *'Scientific Uncertainty and Environmental Justice: The Controversy over Water Resources Development in Taiwan'.* Fan used the case of the Tseng-Wen Reservoir Trans-basin Water Diversion Project in Taiwan to explore how environmental justice is understood and enacted (or not) in times of scientific uncertainty and cultural diversity. The case highlights the old conflict between tribal and non-tribal communities on the use of natural water and land resources, foregrounding the issue of whose development (and thus whose values) was actually being prioritised by government agencies. The paper also highlighted the challenge of understanding highly specialised scientific information while making critical decisions and formulating policy. Fan emphasised the importance of early involvement and public deliberation on water resource planning, and seeking consensus through continuous intercultural and interdisciplinary dialogue.

Yamini Narayanan from Deakin University, Melbourne, presented the final paper on *'Religious symbolism and the politics of urban space development: The case of Manushi Swachha Narayani in Delhi city'.* Narayanan was interested in the contemporaneous religious influence, especially of religious symbolism on the development and use of urban space, which has not been adequately examined in the developing, ostensibly 'secular' cities of India. She used the particular case of the neo-Hindu goddess symbol 'Manushi Swachha Narayani' in Delhi who was created as a

religious mascot in 2005 to represent the rights of the street vendors to hawk their wares in the public spaces in the city. Ideological conflicts on spatial politics between the upper/middle and the lower/working classes of Delhi mark the use of urban space in the city, thus again foregrounding that the question of whose development is a highly contentious and fraught one. The use of the goddess symbol as a motif of self-determination for the poor hawkers indicates the validity of religious symbolism and metaphor for a large proportion of the population, which is typically neglected by mainstream secularist development.

This was a rich and engaged session, with substantial audience participation and interest in the varied themes and areas discussed under the broad theme of ethics, religion, values and morality as they relate to sustainable development. The track's growing popularity, both in terms of the abstracts received as well as audience representation is strongly indicative of the growing recognition of the importance of values and ethics in informing policy to enable sustainability. In its 5th year as an established track at the ISDRS conferences, it also distinguishes the ISDRS conferences from other conferences on sustainable development by having a distinct forum for discussions on and contributions to this burgeoning area.

Theme 2: Science of Sustainability: Determining the need for transitions and assessing progress and trends.

(i) *Assessing and reporting limits in natural and human systems.* (Track 2a)

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In the assessment and monitoring of sustainability, one of the main goals is to support decision-making and policy processes, thus improving the management of natural and human systems and achieving more sustainable outcomes with less negative effects. The main goal of this track was to discuss new approaches, concepts, methods and frameworks or case study applications that deal with the understating of the limits in nature, when assessing and reporting sustainability issues, particularly through indicators initiatives.

The papers presented within this Track covered several different issues, showing a great diversity and at same time significant cohesion among those working in this

field. Therefore, the presenters stimulated much interest, lots of good questions and discussion flowed over into coffee and meal breaks. In general the contributions included could be grouped into three main themes: (i) Conceptual Models and Theory); (ii) Politics and People; (iii) Business and Management.

In the first contribution, by Jia Li and Tomohiro Akiyama, Jia presented the work, "Perspectives on Sustainability Assessment: An Integral Approach to Historical Changes in Social Systems and Water Environment in the Ili River Basin of Central Eurasia, 1900-2008". The paper proposed an integrated framework for sustainability assessment, developed by modifying Ken Wilber's All Quadrants: physical perspective, personal perspective, cultural perspective and social perspective. The framework was applied to the Ili River basin across the period 1900-2008, located in the arid and semi-arid regions of central Asia. The presentation and discussion emphasized the role new and modified approaches could have in sustainability assessments and how we should reevaluate the use of the traditional versus nontraditional dimensions and domains of sustainability.

Oguz Morali and Cory Searcy then provided an analysis of how sustainable supply chain management (SSCM) has evolved in corporations, using Canada as a case study in their presentation titled "Evolution of Sustainable Supply Chain Management: A Canadian Perspective". They have used Corporate Sustainability Reports to verify through content analysis how these organizations are implementing SSCM practices and to identify the evolution over a period of time. This study stressed an increasing need and sense of urgency for corporations to address sustainability issues in their supply chains and conduct further research investigating the evolution of SSCM practices, their driver approaches, drivers, strengths and weaknesses. The study of sustainability reports, produced by corporation or public authorities, plays a growing fundamental role for supporting several research initiatives, including the different areas of environmental and sustainability practices and tools adopted and communicated by business and management.

A label to transfer standard environmental information along the product chain – The EcoBlock – by João Joanaz de Melo, António Galvão and Maria João Flôxo, was the third presentation. The study discusses the application of a life cycle inspired approach through the development of an eco-label for products (goods and services), mainly supported by environmental performance indicators. The method was described and some, of the assumptions, limitations and possible applications were vigorously discussed with the audience. The use of environmental performance indicators as a friendly approach to assess and communicate the eco-performance of products appears a very promising approach, despite the inherent complexity of trying to define general limits that broadly applicable.

The fourth presentation, by Meg Holden, was entitled "Principles and Practices of a Politics of Sustainability Indicator Systems". Meg analysed several aspects of indicator practices and outcomes, such as how the indicators stimulate a process to enhance the overall understanding of environmental and social problems, facilitate community capacity building, and help guide policy and development projects. Also discussed was the need for indicators to promote policy change and agreement on the desired ends of this change. Several North American sustainability indicator systems

were presented to analyze the operationalisation of such a politics of sustainability indicators: Vital Signs, the Seattle Happiness Initiative, the Canadian Index of Wellbeing and the LEED-ND system. The author stressed that these systems share a common challenge of operating outside of formal government and demonstrate different rhetorical approaches to the move to establish discursive legitimacy and epistemic meta-consensus.

"Stakeholders' own assessment of environmental performance: How it fits with real indicator data" was a contribution by André Mascarenhas, Luís M. Nunes, Pedro P. Coelho and Tomás B. Ramos. The presentation showed that beyond public participation in the design and development of indicator systems or in data collection to feed indicators, stakeholders could play a different role, producing their own environmental and sustainability assessment. It was stressed that this kind of informal assessment could allow qualitative comparative analysis with the formal technical assessments that are usually provided by indicators. A self-evaluation carried out by stakeholders can also be used as an indirect way of evaluating the strengths and weaknesses of the technical indicator sets and drawing conclusions about its overall utility and societal value. The Algarve region – the most southerly region of Portugal – was used a case study to evaluate how stakeholders' own assessments of environmental performance fit with technical indicator data and evaluations.

The concepts of weak and strong sustainability were discussed in Bruno Kestemont's presentation, titled "The conditions for strong sustainability". Bruno discussed these concepts and how they imply different aggregation functions that involve different assumptions of substitutability between factors. After describing equity as equal share of the cake to be achieve by negotiation not by science, he went on to discuss the adoption of sustainable development metrics under the framework of strong and weak sustainability.

In addition to presentations prepared for Track 2a we welcomed Dionisia Tzavara whose presentation "CO_2 emissions, output, energy consumption, and regulation on Renewable Energy Sources in EU-15" had been prepared for Track 2c. The work completed by Dionisia and her colleagues found that, conditional upon energy consumption, the effect of regulation of renewable energy sources on CO_2 emissions is negative and significant.

In conclusion, different aspects, approaches and visions were highlighted in Track 2a, emphasizing how complex and diverse is this vast domain of "assessing and reporting limits in natural and human systems", particularly where indicators initiatives are involved. The two track sessions were very dynamic with significant participation coming from an enthusiastic audience, showing the relevance of this theme in sustainability research. Some of the initial challenges identified early in the track session remain with us and the importance of keeping them on the agenda for the future was reinforced. Further than support policy and management issues, sustainability evaluation, reporting and governance initiatives should be ready to integrate and well reflect the uncertainty values of non-linear complex processes, where the limits are often unknown. In the near future, sustainability tools and approaches should evolve and deal with non-traditional aspects of sustainability, particularly those involving global changes and threats, goal and target/limit uncertainty, sustainability ethics, cultural, aesthetics and general non-material values,

blurred distinction between peacetime and wartime, collaborative learning, voluntary monitoring and crowd sourcing. They should also be able to rethink the new and old limits of natural-human systems.

(ii) *Sustainability Science* (Track 2b)

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Track overview: This track contained papers that spanned the breadth of sustainability science research, from ecological economics to population modelling, and from natural to political sciences.

*A radical approach to sustainability economics (*Frank Beckenbach, Moritz Remig), was presented by Moritz Remig, who introduced us to the debate on sustainability economics within the Ecological Economics community, and suggested the need to steer the debate from its current basis in neoclassical economics towards the broader and more appropriate context of complex adaptive systems. The current debate is based on the core imperatives of neoclassical, resource economics, defining sustainability as an issue of efficiency and allocation. From an ecological economics point of view, sustainability economics should define itself as a trans-discipline motivated effort to reconcile the inter- and intra-generational issues of justice, poverty eradication and respecting the limits of nature's carrying capacity. Currently proposed criteria are not sufficient for sustainability, and the authors propose avoiding the shortcomings of the neoclassical economic foundations by using approaches such as ecological economics (including issues of scale), system dynamics and complex adaptive systems methods to frame the problem space.

Dynamics of a population under different energy scenarios (Geoffroy Berthelot, Claire Bouchigny, Nour El Helou, Vincent Bansaye, Bernard Swynghedauw, Giles Boeuf, Jean-François Toussaint) was presented by Geoffroy Berthelot, who began by using the evolution of human sport performance to present the concept of overshoot – with the parallel reference to humans exceeding the carrying capacity of the planet. He reported on research that shows that the increase in energy use over time correlates with longer life-spans and more people. In contrast to the majority of the existing literature, he did not ask the question how human population influences energy consumption, but rather the so far unexplored complementary question of how energy consumption influences human health, life expectancy and demographic trends – a highly relevant question in times of Peak Oil. While the models he

presented were still in early days, the authors are working to create a model that can describe population development under different energy scenarios. Unlike neoclassical models, their work will focus on cooperation vs. competition between people, and will validate their model using data from the 1960-2012 time period.

A multidisciplinary sustainability understanding for corporate strategic management. According to Friederike Neugebauer, sustainability is a societal concept that is the first assumption she makes in her literature-based paper on the understanding of sustainability. In her paper she analyzes the sustainability understandings of four research streams in the natural sciences. She finds in physics, biology, chemistry, and engineering disciplines, that systems thinking and the acknowledgement of the finiteness of resources on earth are central to the sustainability understandings in these four sciences. Another interesting finding is that the humanities, such as the Rawlsian theory of justice, are referenced to provide ethical arguments that cannot be derived from natural laws. The sustainability understanding that results from this multidisciplinary review thus consists of two basic elements: 1) acknowledging the finiteness of natural resources, and 2) considering present and future generations. Friederike's research will continue to explore what this means for management and the influences it may have on corporate strategy making.

In the presentation, *Strengthening the institutional frameworks for risk management and sustainability in trans-boundary ecosystems and environment in Asia,* Masanori Kobayashi shared his insights on how Asia deals with trans-boundary environment management and promotes sustainable development. His presentation contained a number of case initiatives in the areas of acid rain, marine, forestry, wildlife and international rivers. The case of haze illustrated how the process of a regional legally binding haze control agreement have evolved and interfaced with the policies of a country in the region in the areas of forest management including REDD+. The case of Mekong River also showed how the Mekong River Commission member countries and partner countries reacted to trans-boundary concerns, such as building dams. He concludes that Asia still needs to intensify its efforts to institutionalize mechanisms for trans-boundary environmental management by integrating key features therein such as peer policy review, information disclosure, civil society organization engagement to promote optimal policy-level decision making. During the Q&A he compared Asia to Europe where civil society are given opportunities to provide comments in the decision making process, and submit communications to international/transnational bodies without going through their national governments in the event of failure to obtain remedies at the national level.

Sustainable De-growth - Beyond "isms". Joachim Spangenberg began by observing that the many suggestions of the prior two days for a new definition for sustainable development were unnecessary if one took the time to read in the full Brundtland definition, instead of only its first sentence. The second sentence names overcoming poverty and respecting limits as the two core elements of sustainable development. Unfortunately Rio+20 (from where he had just returned) did not mention limitations at all. He warned us not to rely on markets to overcome poverty, as the poor have hardly any purchasing power; to move beyond the one-dimensional concept of 'needs' to that of Max Neef, combining 'needs' and 'satisfiers'. Using this approach the world population can be seen in three tiers – those living below the 'line of dignity,' those living within sustainable boundaries, and those over-consumers who

live above the line of greed. Research suggests that the physical resource consumption level of a sustainable society would only be slightly above the level of hunters and gatherers, but Joachim asserts that technology and changing consumption patterns together have the potential to 'complete the cycle' from low resource, low technology hunters via higher technology, relatively low resource agriculturalists and high resource, high technology industrialism towards a high technology, low resource society that reduces environmental pressures to a sustainable level.

Regarding sustainable consumption, he pointed out that goods fall at least into three different categories – market goods, merit goods and entitlements (for different population groups) and which kinds of goods falls into which categories is a choice every society must make on its own. The result should guide practices of redistribution of wealth, which currently are not working. During Q&A he also presented two concepts of land ownership that have a serious consequence for how humans behave; i.e. dominion (free choice what you do with your property) versus patrimony (moral obligation to sustain and care for one's heritage).

(iii) ***The role of academia in sustainability science, advocacy and education*** (Track 2d)

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The objective of this track was to provide an opportunity to discuss the extent to which academia has already been providing a meaningful contribution to the societal transformation towards sustainability, but also to discuss what still remains to be done. Generally, there are high societal expectations in academia to contribute in sustainability science, advocacy and education. Fundamental changes to our way of living are required due to global threats like climate change, resource scarcity, malnutrition, and so on. This track was designed to address the central role of academia for transition towards a sustainable human development.

First of all, Tomohiro Akiyama, from the Graduate Program in Sustainability Science at the University of Tokyo, gave his presentation on "Integral Leadership Education for Sustainable Development". In his study, he developed an integrated framework for environmental leadership education, called Integral Leadership Education for Sustainable Development (ILESD) suggesting a framework of four quadrants that are indicated by "It, Its, I, and We." This kind of integrated model enables us to examine the integration level and interaction of a program for environmental leadership development and environmental leadership itself, and thus can assist in the holistic evaluation of such educational programs. Tomohiro Akiyama applied the ILESD framework to analyze the Asian Program for the Incubation of Environmental Leaders (APIEL), established by the University of Tokyo, and came to the conclusion that APIEL accomplishes a certain level of integration, but also presents the following three challenges: (1) the establishment of environmental studies, (2) further

development of curricula focusing on the development of environmental leadership, and (3) the establishment of an evaluation methodology vis-à-vis educational effectiveness.

Chris Riedy, Associate Professor at the Institute for Sustainable Futures (ISF), University of Technology, Sydney, presented the ISF, a flagship research institute, as a consciously trans-disciplinary organisation, bringing together engineers, social scientists, architects, planners, modelers and artists to tackle sustainability challenges, which are always wicked problems that defy easy resolution and require diverse perspectives and forms of knowledge to address. ISF has developed management, reflection and learning processes to support working collaboratively across disciplines. In his presentation, Chris Riedy introduced the concept of outcome spaces to structure a discussion of ISF's achievements and key lessons. The following three distinct but overlapping outcome spaces were addressed: First, positive change in the situation or problem space that it is working on. This may be a sector, a situation, a societal issue or problem or an aspect of practice in some domain. Second, contributions towards peer reviewed, academic knowledge in the more conventional sense. Third, transformational learning among the researchers and stakeholders involved in, or influenced by, the research. One of the key lessons from the case studies of ISF's impact was that pathways to impact are unpredictable and researchers need to be ready to seize political opportunities as they arise.

Subsequently, Alfred Posch discussed whether and how universities can take the role of initiators for sustainable innovations in industry. For this, a transdisciplinary case study (TCS) of a project on mobility management, that aimed at more sustainable commuter travel behaviour of employees of a large enterprise, was presented and discussed. The findings of the TCS showed that the knowledge integration amongst academics and practitioners seems to be crucial for initiating innovation. Only if experiences, values, and attitudes of practitioners are integrated and reflected on can the factual knowledge provided by academics and reasonable solutions be achieved. It was shown that the TCS approach provides an effective organisational framework, in which this mutual learning between practitioners and academics can take place, and consequently in which universities can become initiators for sustainable innovations in industry, for example, for sustainable mobility management at company level.

Finally, Olalekan Elijah Ojedokun, Institute of Education, Obafemi Awolowo University, Ile-Ife, Nigeria, discussed the following question: "How ready is the Nigerian Social Studies Education Programme for the Mainstreaming of Education for Sustainability (EfS) concepts?" In his study, he investigated the learning content and perspectives from the lecturers in order to assess whether the course could or could not serve as a carrier-subject of the learning content of Education for Sustainability. Findings of the study show that a lot of EfS concepts are already accommodated and currently taught within the selected Social Studies Teacher Education programme; but also that there exist courses that may be modified or restructured. Moreover, Social Studies lecturers in the selected University Teacher Education Departments appear to have a high degree of understanding of concepts related to Education for Sustainability. Nevertheless, some important emerging EfS concepts (such as carbon-footprint, life-cycle-analysis, consumerism, fair trade, global citizenship, secure livelihood, and so on) still need to be included in the Nigerian Social Studies Education Programme.

Through these presentations, and especially the intense discussions they generated, we were able to gain a better understanding of international developments and trends in sustainability science, advocacy, and education. By sharing models of good practice and opportunities in responsible teaching and research, we were confirmed that higher education institutions play an important role in the societal transition towards Sustainable Development.

Theme 3: Effectiveness of governance, institutional and economic structures for sustainability

(i) *Institutional Arrangements and Stakeholder Cooperation for Sustainable Development at Multiple Scales* (Track 3a)

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Five papers were presented in this track, which was formally titled - *Institutional Arrangements and Stakeholder Cooperation for Sustainable Development at Multiple Scales*. As summarized in the next two paragraphs, each paper dealt with a distinct theme, and it was not easy to find a unifying thread in the five presentations. This point will be discussed briefly in the final paragraph.

The first paper by Kwatra, Singh, and Sahay dealt with corporate social responsibility (CSR) efforts in an Indian context. It noted the lack of such corporate efforts in India, and the government's desire to see more happen along these lines. The paper by Duggan, Smith, and Thomsen developed a conceptual framework for how firms could scale up their sustainability initiatives through better education of their relevant stakeholders. The econometric study by Madhoo explored how fisheries around Mauritius had been sustained by substituting imported fish for local catches.

The fourth paper, by Orchard-Webb, focused on social sustainability in economically devastated communities within the UK. She noted that social sustainability has been much neglected in the literature and that community regeneration presents a challenging task requiring much stakeholder involvement. The final presentation by Su, Pisani, Perez and Miller looked at the Green Watch program in China and its ability to provide a more sustainable trajectory for Chinese corporations via a rating system that may invoke stakeholder pressures.

The missing thread for unifying the five papers can be traced to the way that each paper's creator(s) used key terms. First, there was no agreement on what an institution is or should be. Is it governmental rules/regulations, e.g. limits on fishing, or is it ongoing stakeholder relationships, such as in UK neighborhoods? Though the presenters revealed no common ground for resolving this issue, it should be noted that institutional theory itself suffers from this same problem. For now, perhaps researchers would be well advised to position their work within an overarching institutional framework (Scott, 1995) that would allow others to know how his/her particular study fits within an institutional context. Second, the organizing concept of the Conference, sustainable development, seemed to be viewed myopically by each of

the presenters. Instead of integrating, or at least trying to integrate, the three pillars of sustainable development, the presented studies narrowed the viewpoint to their preferred pillar and then neglected to discuss why the other pillars were ignored. This non-holistic perspective, though understandable, presents a serious challenge to sustainable development researchers and should be more explicitly addressed in future studies and writings.

(ii) *The governance of the transition to a low carbon economy/society: What roles for public, private and civic actors?* (Track 3b)

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The track entitled 'The governance of the transition to a low carbon economy/society: What roles for public, private and civic actors?' comprised a total of ten papers delivered in two sessions on the second day of the conference. All of the presentations addressed some aspect of the core theme of the track: to explore the role of, and relationships between, governmental, business and civic actors in contributing to the transition to a low carbon society. Overall, the geographical focus of the research reported ranged from Europe to the Americas and Asia. The scale of the actors examined in the papers varied from highly localised studies of 'Eco-Towns' in Norfolk in the UK to the role played by national states and large multi-national corporations on the global level. In between other papers explored the role played by regional level actors. The studies also drew on range of disciplinary foundations, such as economics and political science, although all of the papers presented did draw on the conceptual framework of 'governance', or multi-level governance, and commented on observed changes in governance relations in their chosen study.

More specifically, several of the papers dealt with or reported on the role of towns and cities and assessed their role (or otherwise) in making a shift towards a low carbon society. Rachel McCrorie (the University of East Anglia), Stephen Hall (the University of Hull) and Beth Perry (with Mike Hodson from University of Salford) all examined this phenomenon, with Rachel focusing on a recent top-down 'experiment' undertaken in Norfolk to create 'Eco-towns', Stephen exploring 'green-growth machine' developments in cities such as Hull, Leeds, and Sheffield, and Beth tackling the issue of the increasingly complex governance in Greater Manchester in the wake of a diminishing role for central government and devolved powers to the city-region. All three papers raised serious questions about the effectiveness, efficiency and/or legitimacy of the new governance patterns that they had uncovered.

Three further studies had a UK focus. Jenny Fairbrass (University of Bradford) and Frank Schiller (from the University of Surrey, with Alex Penn, Amy Woodhead, Ozge Dilaver, Lauren Basson and Angela Druckman) and Catherine Bale (from the University of Leeds with Ahmed Abu Hussein, Timothy Foxon, and William Gale)

each took UK based actors as their focal point. Jenny concentrated on the role of UK registered business actors and their relations with governmental bodies and civic organisations to investigate their contribution to international and national climate change policy. Frank's study examined governance structures in the UK in promoting more energy and material efficient production as part of the National Industrial Symbiosis Programme. Frank highlighted the work being undertaken at the regional level in Yorkshire and Humber and in particular commented on the role played by the business-led Local Enterprise Partnerships (LEPs), a theme that was also present in Stephen Hall's paper. Similarly, Catherine's paper explored the role of local authorities in the delivery of a recent UK initiative, the Green Deal. Catherine analysed and evaluated the role played by national/UK government departments (such as the Department of Energy and Climate Change), energy providers, and local authorities, seeing the latter as being pivotal to the success of the scheme.

Three of the papers shifted the focus to places outside the UK and into issues such as bio-fuels and agriculture. Robert Ackill's study (from the Nottingham Trent University, with Adrian Kay) focused on the development of transport bio-fuels policy in three countries/regions: the EU, the USA and Brazil. Similarly, Jacqueline Vel's research examined the development of a top-down, outsider-initiated 'experiment' in Indonesia to establish schemes to grow crops for bio-fuels. The paper given by Herman Stal (UMEA University, with Karl Bonnedahl-Johan) explored the issue of climate change and the role to be played by the farming community in Sweden in meeting green-house gas reductions. Their case study centred on efforts by public authorities in Sweden, assisted by privately operated farm consultants, to educate and inform Swedish farmers. Together these papers provided a very important international dimension to the track.

Finally, the paper presented by Richard Nunes (University of Reading), offered a more reflective, conceptual consideration of the issue of scaling-up from 'grass-roots' activities and niche innovations to a broader scale in trying to shift society towards a low carbon regime. Richard suggested that 'localism' could be one way forward in attempting to create low carbon societies and perhaps be a way of resisting globalisation in this policy area.

All of the papers presented offered thought-provoking assessments of the governance structures, processes and actors, in the search for low carbon societies. Many of the papers raised serious questions about the effectiveness, legitimacy and efficiency of past and present governance arrangements and posed important questions about the capacity of humans to successfully manage the transition to a low carbon society. Together the papers throw down a challenge which demands further research on this highly significant topic. It is a challenge that should be directly addressed to all categories of governance actors: government, business and civic organisations.

(iii) ***Public participation: civic action for sustainable development and state engagement.*** (Track 3c)

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As has been repeatedly emphasised, sustainable development is primarily and irreducibly about people. But what does this truism mean exactly? Is it about people achieving sustainable development? Is it about people who are sceptical about it? Or, is it about people having different opinions, multiple perspectives on the nature of the unfolding world context? This is our focus. This track on public participation aimed to generate critical discussions about a fundamental process by which individuals participate in collective activities and become the 'people' to claim, construct, or contest sustainable development. We wanted to know how the process of participation works in different contexts and what policy implications can be drawn from a variety of participation experiences to advance the sustainable development agenda.

Given that any sustainable development attempts involve people, unsurprisingly, there were contributions from various disciplinary fields. In the first presentation, Kei Otsuki presented her work in international development, which explores the question of what exactly happens at the sites of participatory development promoted in the developing world. Her argument emphasised that participants' experiences in development projects themselves are potential sources of transformative change, as participants are neither passive recipients of development instructions nor unruly clients of externally funded services but are civic agents who reflect on situations shaped by the projects, make deliberations, and open new spaces for change. Her case studies on participatory slum upgrading programs in Kenya and community natural resource management in Brazilian Amazonia showed that the participants' reflexive deliberations eventually led to unexpected reconfiguration of the participatory projects. We need to be flexible enough to be willing to put in place means to anticipate such outcomes as the results of empowerment in relation to the wider context of governance and always think of the follow-up intervention.

The second presentation, by Fiona Wotton from the University of Exeter, drew on her contribution to a state intervention that sought to turn ex-mining communities in Cornwall in the UK into sustainable communities. In her detailed study of the Look Group Network delivered by Tate St Ives and Cornwall Council, she showed processes through which visual art influences informal learning groups in order to address the societal cultural poverty and how this can influence possibilities to

become drivers of change in their communities. The processes are ongoing, and her study offers a valuable opportunity for us to observe different patterns of learning outcomes that will emerge from people's participations in the Network. Her presentation also clearly visualised her own participation in the Network, locating researchers both as change agents themselves and observers of the change.

The question of how the state–society interactions could shape sustainable communities was also explored in the third presentation by Anita Orthofer and the team of researchers led by Thomas Burdermann at the University of Graz, Austria. Their research demonstrated that very complex institutional arrangements were emerging from the promotion of small-scale, renewable power generation systems called photovoltaics (PV) in the Austrian countryside, which involved actors including individual farmers (either ecologically conscious or economically motivated), their cooperative societies, non-cooperative experts and engineers, governments of different levels giving permits and outlining policy guidelines, and conventional power supply companies. It is a fascinating case study that traces how all these participants in the PV promotion learn from the interactions and shape collective experiences. Also in this study, researchers play an important role in visualising the learning processes.

The last presentation by Edison Kondo drew our attention back to the fundamental question: What 'people' are we talking about after all? His illustrations of Rio+20 Summit taking place in a city where slums and gated communities for the rich stand side by side were provocative. We all know about this dualism and yet are reluctant to confront the fact that oppressed and marginalised people are often made invisible by official media coverage and the very discourses and practices of participation. He and his team of researchers from the Catholic University of Brasilia thus embarked on the participatory action research to reach out to the marginalised street vendors who are largely undocumented or unregistered commercial actors, often considered to be illegal and always on the run. Their message is: we need a much more engaging approach to understand worldviews of those who cannot be easily organised or have never had opportunities to participate in any collective activities. There are people – perhaps a majority of the world's population, living in poverty – who do not even know if they can claim civic rights to participate in sustainable development.

While the four cases varied, the underlying themes of civic agency and reflexivity, learning and autonomous development, state engagement and researchers' participation in sustainable community building emerged from the four insightful and provocative presentations at our Track. These themes shift the focus on 'people' in sustainable development from the usual alternative (and radical or progressive) research domain to the heart of sustainable development research. In this shift, as Kondo's example showed, we must remove physical and mental 'gates' that have been built to make the others' world invisible to ourselves. Then, after removing the gates, participation is no longer another tool to enrol 'them' into 'our' agenda. Our Track's presentations clearly showed that participation involves a continual opening of spaces for new encounters and negotiations, ultimately among *everyone*.

At the conference, failure of the Rio+20 was manifested and reasons for the failure sought in terms of lack of concrete political commitments and binding agreements to materialise 'The Future We Want'. Our Track now asks: who are 'we'? Whose future

are 'we' really talking about? Meanwhile, from Kenya and Brazil to the UK and Austria, everyone keeps on accumulating experiences of participating in and learning from constructing their own sustainable futures within each and everyday contexts. We, the researchers,, naturally take part in this accumulation by visualising, sharing, and analysing the experiences, as we believe that the separate futures will one day be seen in an integrated and necessarily systemic whole.

(iv) *Redefining Development: New views on Economic Systems, Progress and Transitions* (Track 3d)

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Rio +20. The discussion goes on, but while the unsustainability of modern societies is more firmly established than ever, the mainstream economic development model, emphasising growth and individual consumption, remains unchanged. The hopes held in the Brundtland report for improvement of technology and social organization to make way for an era of sustainable economic growth has not come true. Our targets are also moving. We are 1.5 billion more people than we were twenty years ago and the trajectories are showing continuing and rapid ecological degradation.

This indicates an urgent need to reform or replace mainstream understandings and conceptualisations regarding development, human progress and our relation to nature. The track thus recognized fundamental insufficiencies of the ecological modernization project. Whilst technology and market mechanisms may certainly be important, trusted as key dimensions in the solution they are likely to remain key parts of the problem. To enable rapid transitions to sustainability, there is also a need to emphasise new dimensions of innovation. Innovation can be seen as a vital function of progress, however, it remains rooted in mainstream conceptions as economic progress alone. The need to reconceptualise and understand what progress means within the context of the human survival project is now clearer than ever before.

The responses to the call described above where interpreted by the various delegates in this track in a variety of ways, as social, structural, conceptual and normative as well as from a macro and more micro perspectives. These responses will be briefly described and below and reflect some of the discussions that were raised within the track session.

Tarja Ketola from the University of Turku, spoke about *'Responsible Leadership for Genuinely Sustainable Development'*. The concept of genuine leadership was for her

evident in the behaviour of Dame Kiri Te Kanawa, a classical singer from New Zealand, who had discovered, inspired and nurtured other young talented classical singers. In Ketola's words responsible leaders, *"look after the sustainable wellbeing of humans and nature – both current and future generations. Responsible leaders take over the reins of threatening situations and serve as models for others. Responsible leaders pull others with them to higher ethical levels of behaviour and enable environmentally, culturally and economically sustainable development."* Ketola's response for change is to point out the need for an equally strong top down social movement to that of bottom-up organizations such as Greenpeace and the Occupy movement. These movements could learn from leaders such as Dame Kiri, and the necessary structures to support such responsible leadership on a global scale should be strengthened.

The next response to the above call, by Moritz Remig from the Institute for Advanced Sustainability Studies, Potsdam, was about the challenging topic of *'Payments for Eco-systems Services in the Context of a Green Economy.'* In line with the discussion above, Remig pointed out the issue that fundamental change on a macro scientific and policy level is not taking place, and concepts such as 'Green Economy', 'Green Growth' and even 'Sustainable Development' remain rhetoric. As he suggests, *"In the case of the Green Economy and its conceptual sisters, it seems that rhetorics do play a more important role than conceptual novelty."* Furthermore, he suggests that academic fields such as ecological and evolutionary economics that try to cross the divide between a variety of disciplines is a more apt framework than current mainstream disciplinary conceptions. An emerging concept that potentially bridges the divide between conventional approaches to economics and ecology - payments for eco-system services (PES) - was discussed. What emerged from Remig's talk is that different ideological power structures are evident in the discourses and tensions surrounding the concept of PES. For example, the environmental economics school, the ecological economics school and those outright rejecting PES. The questions that are dealt with in the paper within the context of the Green Economy are: *'How to change the way economies work in order to implement sustainable development and are PES schemes appropriate instruments?"*

Giuseppe Feola, from the University of Reading's Department of Geography and Environmental Science, spoke about, *"Voluntary Simplicity and Transition Networks."* He pointed out that often responses to sustainability challenges in the form of innovations at the grassroots are more appropriate according to local conditions and contexts. Grassroots Innovations (GI) have been described by Seyfang and Smith (2007) as *"networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved"*. Feola comments on this further and adheres to the framework of the track debate pointed out above by suggesting that, *"GI's at least criticise some features of the Western model of development, experiment with often radical social and technological innovation, and develop new systems of provisions that reflect different worldviews and systems of values (e.g. De-growth). Consequently they represent niches of experimentation that challenge the mainstream regime and aim to foster resilient and/or sustainable alternatives to it."* Feola points out that often there is a dearth of research and understanding of the complexities of local contexts and experiences, and the literature would benefit from a more in depth understanding of i) specific internal dynamics [of

local networks] and ii) interactions with the regime [or incumbent networks] that may resist change. He goes further by describing two cases in Italy that are representative transition cases. He found that there were significant similarities between the two networks after assessing the narratives contained in the organizations' respective documents. This included their main narratives of environmental crisis, enhancement of wellbeing, in their innovation practices and the way they operate. However, there were also differences that included: conceptual differences such as resilience vs sustainability, agents of change, ie. families vs. communities, as well as the scale of action ie. cultural vs. practical. The conclusion of the study showed that a finer grain of analysis of GI's was required to understand the internal dynamics of such grassroots innovation networks and their interaction with the regime level.

The next presentation by Pieter van Heyningen from the School of Public Leadership, Stellenbosch University, fitted well with the previous talk. His analysis dealt with similar questions about transitions to sustainability but dealt specifically with the interaction between the various levels as grassroots innovations, the regime and landscape levels. He began his talk however, with a summary of the big picture topic of the track. He posed the question about progress and development and how we really shift or transition to sustainable societies and economies: What are the underlying fundamental structures that need to be changed, as a radical project? He moved on to frame the debate from an innovation systems perspective and spelt out the need for a reconceptualization of innovation as the driver of economic progress to the driver of transitions to sustainable development.

He asked questions about how to challenge mainstream definitions of innovation through creating novel meanings of innovation in different contexts (such as developed country and developing country contexts). He criticized the standardized and heavily biased conceptualization of the term which was centred towards Western and mainstream economic discourse. Furthermore, he went on to discuss how a reconceptualization of innovation systems for sustainability could become the central driving force for transitions to more sustainable economies and societies.

A model of sustainability-oriented innovation systems was presented, which showed the core of the model as knowledge production which is depicted as an iterative process between universities, research institutes, business and industry the government and society. In support of the knowledge production are resources and institutions, such as human and financial resources that aid in knowledge and technology transfer for sustainability through various push and pull mechanisms, legislations and policy. In the model, both the core and supporting institutional spheres are embedded within the context of the well-known model of the triple-bottom line of sustainability.

Finally, he showed three case studies, the 22@Barcelona Innovation District, The Zurich Cleantech Innovation Park and the planned Stellenbosch Innovation District as examples of agglomerations that fitted with the model described above. These were manifestations of sustainability-oriented innovation systems at the local or agglomeration level that existed within cities or towns. They are regarded as examples and beacons of change in economic society, but also provide capacity for transitions to sustainability.

The final speaker was Karl Bonnedahl from Umeå School of Business, who spoke about *"The Absence of Nature: A remaining Flaw in Business Theory."* Bonnedahl pointed out that if well-educated and influential global leaders continued in their ideological perspective that nature was an 'infinite resource', there was little chance of attaining sustainability. However, the crux of this argument is that this 'kind of thinking' is not only present in global leadership but also embedded within mainstream literature and business practice*, "Undeniably, if visions and models in which nature is non-existent or assumed as infinite or fully substitutable are still prevalent, we have a formidable impediment to sustainable development."* He further criticizes this ideology of practice in which the outside world of nature's limits, in Herman Daly's words, is neglected by global elites and nations such as the United States. He makes it clear that there is a need to re-evaluate and consider that the lifestyles of the privileged over time and space are unsustainable.

In his talk he explained that there was a real problem with our development pathway that was *'guided by economic theory and run by economic practice.'* Within his research, Bonnedahl reviewed numerous texts and business literatures seeking words or phrases that indicated a focus on nature or sustainability. "*Preliminary results regarding the role of nature show an amazing conservatism and absence of adaptation to a new situation for the business disciplines; a situation in which the capacity of the Earth no longer allow for accelerating exploitation of natural resources and expansion of human societies*." Bonnedahl concludes that there is a clear need to reform mainstream business and economic theory if we are to transition to a more sustainable growth path.

(v) *Decision making for sustainability: models, uncertainty and risk* (Track 3e)

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This track was an especially broad one and, given the number of abstracts submitted before the conference, it was decided to have two sessions, with 3 and 5 papers for each and scheduled for the third day of the conference. Here it is not our intention to summarise each of the papers as abstracts can be found on the conference website. Instead we will focus on some of the issues that emerged from our perspective as track chairs and how the track dovetailed into the conference. It goes without saying

that these are very much our personal reflections and give the number of parallel sessions at ISDRC is was not possible for the two of us to attend everything and hence we may well have missed some other points of contact between tracks.

Our process for handling applications to the track was straightforward. We read them (of course!) and began to look for synergies between them so as to ensure that an audience would not find themselves having to change too many mental gears. This should not be all that much of an issue for 'sustainability' people - it is, after all, what we do all the time - but a degree of linkage helps. The breadth of the track was initially a concern for us but, as it turned out, this was not a difficult exercise as the abstracts submitted did fall into a pattern. Indeed the papers that comprised Track 3e can broadly be broken down into two themes; one focused upon methodology (environmental/sustainability assessment) and another that encompassed sustainability within the private sector. These are broad themes, of course, with some significant overlap between them, but that is the nature of the sustainability beast.

In the first category there were papers such as:
Can local sustainable development be measured to ensure outsourcing of public services is socially and environmentally focused? (John Watt)

Developing tools for low-carbon society scenarios in a developing country: a case study in Malaysia (Kei Gomi et al.)

Using indicators in collaborative landscape management (Katrin Prager)

In the private sector theme there were papers such as:
Environmental Management Accounting for Sustainable Development and the Eyes of Chinese Wisdom – Yì Jīng (Christopher Tsui et al.)

Drivers from the market - reaction of the company (Nani Pajunen et al.)

Indeed the breadth of the track did inevitably mean that there were overlaps with other tracks at the conference, most notably Track 4e on corporate behaviour and Track 2a on assessing and reporting limits in natural and human systems.

Nonetheless, given the strong sense of audience engagement in the track this was clearly a positive. Each paper was followed by series of questions and reflections from the audience, and given constraints on time these unfortunately had to be curtailed. It was also encouraging how the papers tended to present a more positive slant on current trends in sustainable development, contrasting (for us at least) with the more gloomy picture that tended to emerge from a number of the plenary sessions. An example of this was the paper delivered by Volker Mauerhofer on *Ignorance and uncertainty in conservation conflicts* in the EU and how legal processes were helping to address some of the problems that had emerged. Another example was the analysis of Eduardo Ortas and colleagues (*Does it pay to be clean?)* regarding monetary investment in renewable energy companies, even if they come with a degree of risk. While the papers in the track identified challenges there was a sense that not all is lost and there has been some progress for us to build upon.

The track also highlighted – in microcosm – the relevance of all sorts of spatial and sectoral scales in sustainability. From the very local at one end of the scale (the Argyll and Bute Local Services Initiative in Scotland) through to countries (papers on Malaysia by Kei Gomi et al. and the UK by Daphne Mah and Peter Hills), comparisons between countries (paper by Katrin Prager), regions (papers on the scale of the EU presented by Nani Pajunen et al. and Volker Mauerhofer) and the globally-generic (papers by Christopher Tsui et al. and Eduardo Ortas Fredes et al.). The track theme of decision-making no doubt contributed to this variety but it did bring home how what we do is relevant and important at so many levels.

The session provided a good balance between quantitative methods (models, metrics) to more qualitative descriptions on the perceptions size (direct link and experience with the actors). In our view this link between models of reality and real human perception was especially important in keeping the audience interested and raised active discussions. The basic interpretation, ignorance, communication, motivation and risk assessment were treated from the point of view of various actors. From the possible cultural or religious incentive (Tsui et al) to the drivers of trust and perception of nuclear risk (Mah and Hills) or the motivations for companies and their investors (Pajune et al, Ortas and Moneva). Papers thus covered the public, private and so-called 'Third' (non-government and non-private) sectors. This span was reflected elsewhere in the conference, of course, but within this track it was especially pronounced.

Thus in Track 3e one was left with a welcome sense of some optimism even if there are many clouds in the sky, some of which are getting darker. Challenges abound but there is good work taking place and there are people out there trying to make a positive difference and having a degree of success. The track chairs would like to say a big thank you to all of the contributors and audience for leaving us with that positive vibe. Given the depression that set in at times we really needed it!

Theme 4: Sustainable production and consumption.

(i) *Green Design and Architecture* (Track 4a)

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Green design and architecture is the challenge to create sustainable and user-friendly products, services and buildings. It works on various levels, for example through minimizing the negative environmental impact by enhancing efficiency and moderating the use of materials, energy, and development space. Measures to relate form and plan of the design to the climate, the site, and the region seem equally

important. In order to establish harmonious, long lasting interactions between inhabitants and their environments, good form-giving is essential too – green products as well as architecture should be well designed, easy to use and beautiful.

The presentations of the track took up these aspects while particularly focusing on three key areas: measurements for sustainable strategies in design, architecture and housing, new building techniques and materials, and applications of green design and architecture.

In terms of measurement, Palich[1] points to a core problem in design and architecture: "Measuring environmental performance in residential architecture can be a challenge thanks to the array of tools available, which measure different performance indicators and are used for varying purposes – for example, regulatory compliance versus best practice. Add to this the different levels of expertise in the architectural profession, and housing described as "green" by one architect is considered "green wash" by another"(2010, 33).

Measurements and regulations were discussed in the presentation: 'A checklist for Sustainable Product Development: the example of innovative lightweight technologies in automotive product engineering', which introduced a decision support tool in the first concept development phase thereby providing a holistic overview over the sustainability performance of the technology under consideration. Another presentation in this area, 'Development of Guidelines for a "Greener" Product with bio-based Materials for a B2C Electronic Company', measured the impact stakeholders have on sustainability of products and discussed guidelines to increase product sustainability while considering the constraints of minimal impacts on quality and costs.

Assessing impacts of building policies and regulations, the presentation 'A Program Evaluation of the Air Force Sustainability Program from an International Perspective', a cross-sectional study, focused on the US Air Force Energy Plan called the USAF Sustainable Design and Development (SDD) policy. This policy is devised to decrease energy and water consumption on USAF bases through the utilization of the United States Green Building Council (USGBC). Leadership in Energy and Environmentally Design (LEED), within the United States and other international green building certifications in foreign countries where USAF facilities exist in relation to two USAF bases were presented, with one located in the US and the other in Germany, in order to show country wise differences and similarities in the USAF SDD policy.

The final presentation on measuring sustainability in design and architecture was an 'Approach to Sustainable Housing in form of a critical assessment and evaluation of core drivers and issues'. The contribution presented research findings on criticality of incorporating emerging non-traditional perceptions in building sustainability assessment strategies and adoption of bottom-up approaches for strategic niche management and mainstreaming sustainability. The study builds on the current

[1] Palich, N. (2010), Houses, Issue 74, p. 33, accessed 10 July2012, http://www.figurehead.com.au/img/home/H74-Zen-case-study.pdf

perceptions of sustainability in housing assessment against macro-level requirements and covers wide range of pivotal stakeholders, from regulatory bodies through to construction, and end users.

The second area of the track was related to new and improved building techniques and materials. The presentation 'High Performance Building Design Strategy to achieve Resilience towards Climate Change' focused explicitly on the development of sustainable buildings, which will stand a rise of temperature in the future. The presented project aims at achieving benchmark energy consumptions, enhanced green plot ratio, reduced energy footprints, reduced solar heat gain and ETTV values. The speaker introduced the concept of 'urban farm' which is designed here an outer envelope for the building to suit climate change. Urban farm is a novel trend in sustainable architecture, it can be applied with help of planning as well as with material means and has the potential to confer several benefits including a reduced environmental footprint, enhanced energy management of the building envelope, and improved physical and psychological comfort for residents.

The presentation 'Effect of Aggregate Size Distribution on the Carbonation of Reactive Magnesia Based Porus Blocks' proposed improvements for the building environment by material alteration in form of introducing reactive magnesia cements, which are blends of PC and MgO in different proportions. This new group of cements is an alternative material to improve the sustainability and enhance the mechanical performance of mixes with Portland cement (PC). PC suffers from significant environmental impacts, making it a critical sector for CO2-emission mitigation strategies.

The final presentation in this area 'Socio-Political Dimensions of Introducing Novel Green Cement For Slum Development In Mumbai, India', analyzed the benefits and challenges for novel technologies when applied at the bottom of the socioeconomic pyramid. Exemplifying the study, socio-political prospects for introducing novel cement with significant ecological and economic benefits were discussed. Dimensions included pervasive socio-political challenges, regulation, conflicts of interest, and imbalances of power. Possible interventions were described, and in this case, an open-source approach favored.

Not surprisingly, some presentations in Track 4a were devoted to practical cases and applications in specific regional settings. The thematization on 'Senior Living: The Environmental Sustainable Approach' illustrated the impact of the architectural environment affecting the users' physical and mental state. The study explained living issues of senior citizens and their transition to the elderly centers, the adaptation to the new setting and the effects of a positive architectural environment based on the results of the studies. By presenting programs like Eden Alternative and projects like Sociopolis, positive outcomes were subtracted for further development in the studio proposal.

The presentation 'Incremental Revitalization: Abandoned Industrial Buildings' emphasized the importance of re-using valuable, un-used buildings like outdated factories and revitalizing them while at the same time, keeping a piece of their memory and their important contribution through their life cycle.

Considering the discussions in Track 4a, upcoming challenges in green design and architecture and recommendations for a future track, two topics seem to be most relevant:

First, an increasing need for stakeholder participation, which mirrors the insight that sustainability practices need participation, or as Chansomsak and Vale[2] put it: "The relationships between people and place as well as people and people are basic concerns for architects" (2009, 111). Secondly, a requirement for more research, on how to e.g. standardize building measurements that comply with sustainability guidelines and rules.

In the first case it is interesting to research how design and architecture can facilitate collaboration between academia, industry, professionals, decision-makers and users/citizens, which also implies creating new arenas, roles and ways of networking towards "sustainable design for society". Design methods for sustainability have to be developed complimentary, meeting different values of individuals and groups such as access to knowledge, improved environmental quality, participation in society and well-being. A future track can e.g. focus on greater inclusion of stakeholders in green design and architecture, methodologically as well as through 'best practices' discussions.

Regarding sustainability measurements in design and architecture, a greater coherence of measurements and standards is desirable to make smart applications more transparent and performances traceable. Further, a structural view and measurements for neighbourhoods, towns and cities were considered beneficial, accompanying single case studies and examples on sustainable building and housing.

A personal observation of the track chair was that none of the presentations explicitly referred to theories on sustainable design or architecture. Being practical disciplines, this is probably not unusual; however theory is considered as an important topic for a track in green design and architecture. A designer's professional profile (and even more the design researchers') includes not only the sustainable utilization of the environment, how to achieve (or avoid) what we expect, but also to understand values and criteria what is worth to achieve and why. This insights could start with questions like "how do we want to dwell in the future" and lead to future methodologies, decisions and strategies for green architecture and design.

[2] Chansomsak, S., Vale, B., The Roles of Architects in Sustainable Community Development, Journal of Architectural/Planning Research and Studies, Volume 6. Issue 3, 2009, accessed 10 July2012.
http://www.ap.tu.ac.th/jars/download/jars/v63/06_The%20Roles%20of%20Architects%20in%20S%20Community%20Development_Sant.pdf

(ii) ***Resource strategies: Industrial ecology, waste management, material cycles, and life cycle analysis*** (Track 4c).

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A main challenge for Sustainable Development is to develop products and to organize production and consumption processes in a way to constrain negative ecological and societal impacts within acceptable limits. Key elements are sustainable resource strategies. To enable an efficient and effective use of resources the whole life cycle of products and services has to be analyzed and improved.

The first presentation, entitled "Towards integral modelling of material-energy relationships in resources cycle", by Maaria Wierink (Aalto University, Finland), showed a conceptual system dynamics model to model material and energy cycles. It takes into account material quality and embedded energy of materials as well as the location and manner of introduction of material into the material cycle that determines its lifetime and interaction with other materials. The model approach is Lagrangian, i.e. follows the material in a product and follows the decrease in the embedded energy related to the "start" of the cycle with fresh primary production material. Work on the described model is ongoing and aims to give a better description of energy consequences of material quality degradation and the length of the time scales of the material cycles. Mapping of material cyclic dynamics is a basis to develop sustainable resource strategies and to optimize the life cycle perspective of products and product service systems.

Rafael Laurenti (KTH Royal Institute of Technology, Sweden) presented in his talk on "Identifying limitations of current life cycle assessment practices: case studies on household appliances and road vehicles". He discussed results from two case studies analyzing current practice of LCA use and their limitations from a systems science perspective. Defining the functional unit is the starting point of LCA studies, but from a systemic point this is not sufficient to fully acknowledge our present sustainability challenges of globalised system of production and consumption. Therefore it is suggested to complement current LCA practice with industrial ecology and system design perspectives and to implement policies to foster industrial initiatives to close material cycles in the systems of production, consumption and waste management.

Suat Sevencan (KTH Royal Institute of Technology, Sweden) presented on the topic "A Comparison of Electricity Production Cost from Fuel Cell Based Cogeneration Systems in Swedish Conditions". In this study, the electricity production costs of several fuel cell based cogeneration systems in Swedish conditions are calculated. The calculations are made using a model based on annuity method. Data used in these calculations are collected from literature, personal interviews, technical reports and product brochures. Different fuel alternatives for the cogeneration systems, such as biogas, are also taken into account in the study. When compared with the conventional CHP systems, fuel cell based systems have much higher electricity

costs. Relatively shorter lifetime and high capital costs due to production by order are the two main reasons for this. Fuel cell based cogeneration systems neither today nor in 2015 can compete with the conventional systems without governmental subsidies or a leap on the development status.

Helen Baxter (University of Hull, UK), in her presentation, "The potential for the production of sustainable adsorbers from waste material", compared possibilities to produce adsorbers to clean waste water from abandoned mining operations. Metal contamination of aquatic fluxes is a major problem from abandoned mining sites. This contamination causes both chronic and acute damage to groundwater and water courses, from highly localized effects to impacting upon entire river basins at a nation geographical scale. Adsorbsion of contaminants onto an adsorbate is a widely accepted method of treating contaminated water. The development of an adsorber from available waste streams which is both effective and sustainable is a challenge for the removal and recovery of metal contaminants. This study is investigating the pyrolysis of spent coffee grounds to produce a carbonaceous char for the production of an effective material for the removal of metals from contaminated mine waters. Work so far suggests that there is the potential to create a useful adsorber, which balances the environmental benefits and impacts of the method of production, against the benefits and impacts of deployment and disposal in terms of the overall life cycle.

Ioannis Mastoris (University of Cambridge, UK) presented on "Towards a framework of products Life Cycle Sustainability Assessment (LCSA)", a conceptual idea to integrate Environmental Life Cycle Assessment (ELCA), Life Cycle Costing (LCC) and Social Life Cycle Assessment (SLCA). LCSA as a tool could map the product life cycle and help to understand the problems that are related to the three dimensions of sustainable development. A review of the lifecycle literature will be conducted with a focus on the issue of integration. Methodological gaps to the integration of life cycle tools will be identified and the findings used to develop soft prototype for assessment and evaluation.

Peter Moore (Ryerson University, Canada) discussed finally in his presentation "Reducing the Carbon Footprint at an Electric Transmission and Distribution Company" technical and organizational options to reduce GHG emissions of a major utility company by fifty percent over the next ten years. The research contributes to the organization's ongoing reduction efforts by providing three principle outputs: 1) process maps whereby the company may systematically identify its current carbon footprint, 2) a scenario analyses to help it project its future carbon emissions over the next ten years and, 3) a set of recommended actions to reduce GHG emissions over the next decade.

The presentations in this track covered a wide range of key elements of sustainable resource strategies focusing on a life cycle perspective of production and consumption systems, development and comparison of technologies or reducing the corporate carbon footprint. The presentations revealed the need for approaches and instruments taking into account the dynamic nature of production and consumption systems from a systems science perspective in order to contribute to the vision of sustainable development. Thanks to the conference organisers for the opportunity to organise a track on this important topic and all presenters for the inspiring work. Looking forward to the 19th Annual International Sustainable Development Research

Conference in South Africa to see further progress on the conceptual ideas presented this year and new results on the challenging topic to develop more sustainable resource strategies.

8 STUDENT AWARDS, ISDRC18

Awards were made for the top three conference papers presented by students as follows:

First: Raili Lakanen, University of Toronto

Second: Imogen Bellwood-Howard, King's College , University of London

Third: Baoli Liu, Hull University

Our thanks to Raili, Imogen and Baoli, who have provided the following short articles based on their conference papers.

(i) *What Happened, Eh? Canada's Sustainable Development Spiral*

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I arrived at the 18th annual International Sustainable Development Research Conference tired, confused, and weary. After all, I had just arrived by train from London - after having flown out of Rio de Janeiro, Brazil, on the last day of the UN Conference on Sustainable Development (also known as Rio+20).

Yet, while Rio+20 was criticized for its weak and generally stagnant approach to sustainable development (the outcome text does not advance countries' commitments much beyond those in previous agreements), the ISDRC demonstrated innovation in the field of sustainable development research. Despite some minor jetlag, I was pleased to have arrived among colleagues who both critiqued and championed notions of sustainability, its inherent contradictions, challenges, and opportunities.

I attended Rio+20 as a member of a civil society delegation of Canadians who had engaged with more than 8,000 citizens to collect their priorities and policy suggestions for sustainable development in our country and beyond. Our efforts were undertaken in the absence of federal government leadership; in fact, most of our volunteer work occurred during a time of government hostility toward, and austerity measures within, the environmental sector.

At the ISDRC, I framed my paper presentation, entitled "What Happened, Eh? Canada's Inability to Meaningfully Institutionalize Sustainable Development, 1987-2012", with some current Canadian context. Just days before my presentation, Bill C-

38, the so-called 2012 "omnibus" budget bill, was passed in the House of Commons, setting back environmental law and policy by several decades. Notably, the budget bill weakened Environmental Assessments by shortening timelines, a move that the pro-industry Conservative majority government hopes will push through pipeline projects servicing the infamous tar sands - which have been framed as "responsible resource development" of "ethical oil."

Indeed, the outcomes of the research I presented at the ISDRC suggest that effective institutionalization of sustainable development policy has not occurred in the Canadian federal context over the past 25 years. The paper focuses on three case studies of sustainable development policy: the National Round Table on Environment and Economy; the Commissioner of the Environment and Sustainable Development; and the Federal Sustainable Development Strategy. Despite all three appearing as examples of potentially "game-changing" policy strategies, they have failed to effectively institutionalize sustainable development. Rather, the government has defined sustainable development so that it is mainly dealt with through piecemeal, incremental, or backward-facing approaches. The research is ongoing; this part was undertaken through a literature review, scan of policy documents, websites and news items.

The first case study is the National Round Table on Environment and Economy, which first met in March 1989. The mandate was to assemble leaders with diverse backgrounds, with an aim of generating discussion to inform high-level, long-term policy development on cross-cutting issues of environment and economy. Originally intended for membership composed of Ministers, the National Round Table reported directly to the Prime Minister. Yet this reporting role was devolved to the Minister of Environment a number of years ago, and membership shifted to appointed public servants and civil society representatives.

These changes demonstrate a lack of integration of environment and economy in high-level decision-making (as in its management by a traditional Environment Ministry rather than combined responsibility with other governmental agencies), and relatively weak political leadership (the Prime Minister would be able to effect more political change than a cabinet Minister).

Further diminishing its policy impact, in recent years the role of the National Round Table has shifted from developing long-term policy recommendations to one that generates "state of the debate" reports.

I argue that this gradual combined diminishment of status plays into the federal government's agenda to delegitimize the need for objective scientific monitoring and long-term policy development beyond a four-year political term. Ultimately, the 23-year old National Round Table was one of the casualties of Bill C-38; its funding and mandate have now been discontinued.

The second case study is the role of Commissioner of Environment and Sustainable Development, created in 1995. This position falls under the Office of the Auditor General, and was created in response to the pervasive gap between rhetoric and action in the decade following *Our Common Future*.

The Commissioner is tasked with holding the federal government accountable on issues of sustainable development by performing audits of the departmental sustainable development strategies. While this is a very useful and necessary position, the Commissioner is unable to advocate for policy direction or advance new debates. The Commissioner must simply review past decisions, policies and programs to determine whether they meet their objectives.

The third case study is the 2010 Federal Sustainable Development Strategy (FSDS). Originally conceived as an overarching framework for sustainable development policy in Canada, the FSDS was created to replace existing departmental-level sustainable development strategies. Yet within the FSDS document itself, there exist opportunities to find loopholes; in particular, there is a sensational section that provides a basis for inaction, discussing the economic imperative to make trade-offs between meeting energy needs and reducing greenhouse gas emissions.

The overall analysis suggests that sustainable development has been defined by the federal government so that it is mainly dealt with through piecemeal, incremental, or backward-facing approaches rather than a holistic perspective. Further, policies are not led by key, influential, high-level federal departments: they remain in second-tier government departments like Environment Canada. Finally, environmental considerations are unequally integrated in decision-making: this is seen through the overwhelming focus on economic growth in all supposed sustainable development policy development, as in the FSDS and the weakening and eventual discontinuation of the National Round Table.

Thus, the roughly 25-year history of sustainable development policy in Canada has been marked by some visionary plans with good intentions that were just never implemented well. Today, public concerns over the current government's disregard for ecological integrity, sound scientific monitoring, and socially-progressive policy direction shape the debate around sustainable development in Canada.

(ii) *Access systems to sustainable compost transport in Ghanaian Savanna smallholdings.*[3]

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The livelihoods model of development (Carney 1998)[4] describes five types of resource or 'capital' that people use in the course of making a livelihood: natural,

[3] This article is based on Bellwood-Howard, I. (2012). "Donkeys and bicycles: capital interactions facilitating timely compost application in Northern Ghana." *International Journal of Agricultural Sustainability*: 1-13.

[4] Carney, D. (1998). Implementing the sustainable rural livelihoods approach : Paper presented to the DfID Natural Resource Advisers Conference. London, DfID.

financial, physical, human and social capital. However, more important than those assets themselves, the model describes the mechanisms and institutions that act at different scales to give people access to them. More effective access mechanisms mean people's livelihoods are more sustainable.

In Northern Ghana, farmers rely on natural capital, including land, seeds, water and soil, to farm. When those natural resources are depleted, they substitute for them with other forms of capital. One way they do this is by using compost, which improves the fertility of soils that have not had time to regenerate naturally through fallowing. As populations have risen and land has become scarcer in recent years, fallowing has in turn become less common, with a concomitant reduction in soil fertility. Compost is an economically and environmentally sustainable solution to this problem: cheaper than chemical fertiliser, it establishes soil organic matter, improving water retention, nutrient use efficiency and soil biological activity. However, smallholders' limited financial and physical capital means they struggle to carry enough compost to their farms, constraining the extent to which they can use it sustainably. In order to compost effectively, they need vehicles to carry it to the fields, and the functioning of the institutions they use to access those vehicles dictate how sustainable their compost use is.

In two villages in Northern Ghana, Ypilgu and Zaazi, farmers were using headpans and bicycles to carry their compost to their farms. A study aimed to find out which of these and four other vehicles were most suitable for this task (Bellwood-Howard 2012). More importantly, it also examined which systems best allowed access to those vehicles, and at which scales those systems acted.

Sixty farmers agreed to join the experiment in 2010. As well as the six different vehicles that were tested there were three initial systems of ownership – personal ownership, hiring, and participatory ownership by special groups instigated within the study. Thirty-seven of the 60 farmers continued to use the bicycles and 23 the headpans they already owned. Secondly, 52 joined the participatory groups to gain access to wheelbarrows and a donkey and cart, appointing a facilitator to oversee those vehicles' maintenance and allocate use. Thirdly, ten who owned bullocks used a hired cattle truck and nine a handcart. In addition, some participants autonomously hired bullock trucks and handcarts outside the experimental context, and other farmers approached the participatory groups in order to hire their donkeys. Adding to quantitative data recording how many people used each form of transport, all 60 farmers were interviewed thrice about their experiences. They ranked the different forms of transport they had used and justified their opinions. Participant observation was another extremely valuable tool.

Farmers used all of the three systems successfully to some extent, but preferred to own the vehicles either themselves or through the group than to hire them: 42% said they would prefer owning a vehicle in a group to owning one individually, and 45% preferred individual to group ownership. Yet 100% of those asked said they would prefer to own a vehicle in either of those systems than to hire one from someone else. Nevertheless, these three systems co-existed within the study villages. They also used different forms of capital at different scales.

Self-ownership relied mainly on the accumulation of financial capital by individual farmers. In the case of the headpans and bicycles these amounts were fairly small, but at the start of 2011 some farmers were able to save enough cash to acquire larger bullock carts. However, individual ownership of these items of physical capital also intersected with the use of human capital, or labour, at the household and community scales, as people enlisted their family and friends to help them in work parties when loading and carrying compost to their farms.

Group ownership relied on social capital at a scale similar to that of the community, as people negotiated with their peers to decide who was going to use the donkey and wheelbarrow and when. This option was difficult, with just one donkey between around 30 farmers in each group, but was necessitated by their limited access to financial capital on an individual scale. Until bullock carts became available in the study villages, hiring involved an extra-community interaction as farmers sourced larger vehicles from outside their villages. In some cases, vehicle owners from other communities withdrew the vehicles from the farmers who had hired them. This lack of local control may be one reason hiring was initially the least popular of these three systems.

However, participant observation showed that as well as these three systems tested within the experiment, farmers used a fourth institution to access vehicles, especially larger ones. This involved sharing and borrowing between neighbours and peers according to traditional norms of obligation and reciprocity. The vehicles that some farmers had acquired at the start of 2011 were lent to their relatives and neighbours free of charge within long-standing networks. This system was only practicable once some individuals had acquired larger items of physical capital. As such it could be seen on the one hand as thriving on inequality and on the other as spreading the effects of accumulation throughout the system.

As these four systems interacted and overlapped, to some extent they relied on each other to function. Thus, rather than any one of them being preferable to the other, it is most sustainable for farmers to be able to use as many of them as possible. A community with a variety of capital access mechanisms acting at different scales comprises a more resilient system within which farmers can more sustainably practice composting.

The study focuses on the interactions between transport and soil fertility that act at a local level. It is important to remember that this system sits within a wider political context: actors and processes framing it are the Structural Adjustment Policy that removed fertiliser subsidies in the 1980s, the state that reinstituted them in 2008 and the NGOs and private lenders who offer pre-season interest-bearing fertiliser loans. All of these have a bearing not only on how much cash farmers have available to spend on compost carrying vehicles, but how likely they are to use compost in the first place.

Policy-makers and non-state actors seeking to implement sustainable development must therefore consider which combinations of systems and institutions best facilitate smallholders' access to the capitals they need in their agricultural livelihoods. Links and synergies between such systems at multiple scales determine how sustainable

different practices can be in different contexts. This prepares the ground for further useful work on how to facilitate them.

(iii) *The Effectiveness and Feasibility Analysis of Low Impact Development Stormwater Management on Xiamen Island*

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Introduction

This paper is based on research carried out at Xiamen University, China, as part of a Master's degree. It focuses on stormwater management on Xiamen Island. One of the results of modern social development is intensive urbanisation: as more and more people live in cities, more buildings are constructed and impervious surface area becomes greater. This results in increasing surface runoff, decreasing groundwater recharge and base flow, and other environmental impacts (Dietz, 2007[6]; Tang et al., 2005[7]). Water resource protection at the local level is becoming more complicated, largely due to the recognition of non-point source pollution, or polluted runoff, as a major problem. This diffuse form of pollution is derived from contaminants washed off the surface of the land by stormwater runoff, and carried either directly or indirectly into waterways or groundwater. Stormwater runoff brings more problems associated with the increase of impervious surface area. In order to control stormwater runoff, many techniques have been applied - Low Impact Development (LID) is one of them. The definition from the Unified Facilities Criteria, America (UFC, 2004)[8] states:

> Low Impact Development is a stormwater management strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfil environmental regulatory requirements.

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[5] The author acknowledges the input to the original research in Xiamen of her colleague, Longyan Cai, PhD student, Graduate University, Chinese Academy of Sciences, Beijing 100049, China. aloncai@hotmail.com

[6] Dietz, M.E. (2007) 'Low impact development practices: a review of current researches and recommendations for future direction', *Water air soil pollution*, vol 186, pp351-363.

[7] Tang, Z., Engel, B.A., Pijanowski, B.C., Lim, K.J. (2005) 'Forecasting land use change and its environmental impact at a watershed scale', *Journal of environmental management*, vol 76, no 1, pp35-45.

[8] Unified Facilities Criteria (UFC). 25/10/2004 *Design: low impact development manual* http://www.lowimpactdevelopment.org/lid%20articles/ufc_3_210_10.pdf viewed 14/03/2011 viewed 13/03/2008.

In LID, a series of natural and artificial technologies, e.g. bioretention facilities, rain gardens, vegetated rooftops, rain barrels and permeable pavements, are applied to infiltrate rain water, filter pollution, and reduce the impacts of stormwater on the environment as much as possible.

LID provides not only environmentally sustainable tools but also new economical methods for local officials, the private sector and others to better address non-point pollution and wet weather flow regulatory challenges for the protection of receiving waters. Instead of the large investments in complex and costly centralized conveyance and treatment infrastructure, LID allows for the integration of treatment and management measures into urban site features. Urban green space, buildings, landscaping, parking lots, roadways, sidewalks, and various other techniques can all be multifunctional and cost-effective, used to detain, filter, treat and reduce runoff. Through LID's new, advanced technological tools it is possible to have better environmental protection for significantly less cost. The LID idea has been developed in many other ideas like Low Impact Urban Design and Development (LIUDD) in New Zealand, Water Sensitive Urban Design (WSUD) in Australia and the Sustainable Urban Drainage System (SUDs) in UK.

Xiamen Island faces problems of shortage of water and pollution, including surface runoff drainage to the sea associated with rapid urbanization. Therefore, it is necessary to discover sustainable stormwater management that can effectively apply to city development. In this study, a porous parking lot and an extensive green roof in the campus of Xiamen University have been selected as the study area and their effectiveness tested.

Case Study

The porous parking lot was built in 2003 and has been used under high frequency since then. The green roof was built on 2004 and 2007 separately, with different cover types. Six rain events were observed from January to May on 2008, and runoff samples were taken on both sites during the rain events and tested within 24 hours. The results show that both of these technologies can improve local environmental quality.

First, flood control ability. The LID practices can be relatively effective in controlling peak discharge rates. Under the condition that the rainfall intensity <3.88 mm·h^{-1}, when the direct runoff appears on the grass-pave pervious parking lot area, the run-off time can be delayed by up to 30 minutes compared with the impervious area. In general, as the study examined, the rainfall intensity will result in a noticeable gain in precipitation retention. The infiltrations in the grass-pave pervious area were hardly measurable, and greatly delayed compared with the time when the runoff appeared in the impervious and pervious area. Hydrologic improvements are smallest for large events and high antecedent water contents. The green roof can delay up to 200 minutes under the same conditions. Even when the infiltration appeared, the flow rates of infiltration occurred very slowly. There was no measurable runoff on the surface of the soil. This means the green roofs have a high performance in infiltration and can retain a lot of rainfall. The retention ability of green roof increases with the intensity of rainfall. When the rainfall intensity ≤1.5 mm·h-1, the green roof has 100% retention of precipitation.

Second, pollution prevention and removal ability. The LID practices can effectively reduce and remove the pollutants from the runoff. The pH of runoff can be maintained between 7.5-8.0 after the pre-treatment of the grasspave parking lot; the retention of total suspended solids only being 13.86%. Nitrogen behaviour is complex because of the biogeochemical complexity of the nitrogen species. Ammonia capture is somewhat variable: with 39% removal, NO_3-N removal was good, at 76.55%. High concentration reductions (>60%) were found for zinc (Zn), copper (Cu) and lead (Pb). The concentrations of pollution in the infiltration are higher than in the runoff. In general, this grasspave parking lot has good pollution control ability. The water quality of runoff from green roof is very good and can hardly influence the environment.

Third, using LID practices is feasible on Xiamen Island. In terms of costs, LID techniques can reduce the amount of materials needed for paving roads and driveways and for installing curbs and gutters. But using LID techniques might not always result in lower projects costs. The costs might be higher because of the costs of plant material, site preparation, soil amendments, underdrains and connections to municipal stormwater systems, and increased project management. But the benefit of using LID techniques can be: reduction in pollutants, protection of downstream water resources, ground water recharge, reduction in pollutant treatment costs, reduction in the frequency and severity of CSOs, and habitat improvements, increases in real estate value, increased parcel lot yield, increased aesthetic value, and improvement of quality of life by providing open space for recreation. The environmental condition of Xiamen Island is suitable for using the LID stormwater management strategies.

Discussion

Both of the two LID technologies can improve local flood control and pollution prevention and reduction, which confirms the prospect of its application in China. However, some problems may restrict performance. First, unqualified construction methods may decrease the technologies' effectiveness. Some construction methods do not meet standards, a common phenomenon in China. Second, routine maintenance is needed, such as soil amendment, preventing clogging, or replacing vegetation after long use. Maintenance will ensure the facilities work well. Third, the limitations of the study focus and the period of study may not fully demonstrate the performance of these two technologies. It would be better to have further study as well as integrating with other LID technologies, so that the effectiveness and application of LID strategy in China can be fully explored. Finally, the cost of some facilities construction and maintenance are more expensive than the conventional ones, which may constrain the development of these sustainable technologies. Fortunately, China's government has made some policies that may greatly promote their development in the future.

9 REFLECTING ON RIO+20

The following articles are provided by speakers at ISDRC18 and others who attended Rio+20, and also include outcomes from the non-formal process at Rio+20.

(i) *Sustainable Development Post Rio+20: What Lies Ahead?*

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With many of the world's top leaders distracted by the state of the global economy, few had high hopes for the United Nations Conference on Sustainable Development (Rio +20). About 100 heads of government did attend the three-day meeting, including from Brazil, China, France, India, and Russia, but the leaders of Germany, Great Britain, and the United States sent their deputies instead. The will to achieve a major political outcome at Rio was simply not there.

In contrast to the 1992 United Nations Conference on Environment and Development (UNCED), where conventions were formed to address climate change, biodiversity loss, and desertification and agreement was reached on Agenda 21, an action plan for sustainable development, (Rio +20) did not lead to any new global environmental conventions or firm commitments to action. Instead, its main achievement was a statement, *"The Future We Want: Our Common Vision."* This vision statement is basically a 283 paragraph-long list of wide-ranging goals for future action related to the "promotion of an economically, socially and environmentally sustainable future" and the eradication of poverty and hunger. The statement reaffirms the 1992 Rio Principles and past action plans and calls for greater efforts at implementing existing conventions. It calls for achieving the Millenium Development Goals by 2015; supporting efforts towards the creation of a more just world; affirming the United Nations Charter; respecting human rights and religious rights; furthering gender equality; and basing decisions in an inclusive, participatory manner that includes young people, farmers, trade unions, and indigenous peoples.

The document reveals as much about the disagreements that were present at Rio as it does about areas of consensus. There was considerable contention regarding what to include in the statement. The concept of the green economy, strongly promoted by European governments, for example, was viewed with suspicion in some parts of the developing world. Thus, while the document has an entire section on the green economy, it is laden with statements that seek to make sure the promotion of a green economy does not lead to barriers to growth, does not infringe upon each country's national sovereignty over their natural resources, is consistent with international law, does not lead to "unwarranted conditionalities on official development assistance (ODA) and finance," and does not lead to disguised restrictions on trade. Thus, the statement comes to the awkward conclusion: "We view the implementation of green economy policies by countries that seek to apply them for the transition towards

sustainable development as a common undertaking". There is no strong consensus on the green economy in part because there is so little global trust.

Although the Vision Statement does contain some important ideas—such as the strengthening of UN operational activities, the document lacks clear paths to action. It is an agglomeration of important ideas, but by trying to include so much and accommodate so many diverse views, it achieves little.

Reflecting on the conference, Naoko Ishii, incoming director of the Global Environment Facility and a delegate to the Rio negotiations remarked at a conference in Yokohama, Japan in late July, it was as if "there were two different planets" in Rio. One was the air-conditioned room where the delegates were locked up in meetings with each other. Here the political process was "very frustrating" and the room filled with a great deal of "suspicion". The other was outside the meeting room, in the side events and on the streets where there was a lot of exciting activity, a sense of possibility, and a real willingness to act.

In fact, the most important outcome of Rio +20 was not the Vision Statement. Rather, it was the recognition of the myriad of local, bottom-up sustainable development initiatives that are occurring around the world. These include the many local communities and cities that have pledged to enhance their use of renewable energy or even to go 100% renewable; the activities of non-governmental organizations to bring safe drinking water to local communities, to promote the education of women, and to address health care needs; the activities of businesses promoting sustainable development; and the efforts of cities to network among themselves to share ideas about promoting sustainable development and energy efficiency.

Considering the international political gridlock that is hindering action on many pressing global environmental and sustainable development issues, it is clearly time to focus greater attention on how best to foster, strengthen, and scale-up the many initiatives that are going on outside of the international negotiations. In one of her last articles before her death, Elinor Ostrom stressed the potential for addressing climate change through an array of local and regional initiatives, in a kind of polycentric mosaic of inter-connected activities. Such a polycentric approach, she argued, permits experimentation and the discovery of best practices. What is important is finding ways to facilitate exchange of information among entrepreneurs and activists through the development of networks and monitoring at all levels.

While the international negotiations remain an avenue for global dialogue, one is left wondering where we will be by the time of Rio +30 or Rio +40? Can the world's political leaders be convinced that more ambitious, far-reaching goals are needed? Can they be convinced to put real resources towards sustainable development?

It will be necessary to continue to challenge status quo practices that work against sustainable development—for example, the subsidies to environmentally, and socially-harmful industries (e.g. fossil fuels, mining), corruption that diverts finances away from their intended targets, and environmentally and socially unsustainable consumption.

At the same time, much can be done through the power of example. It is important to continue to promote renewable energies and recycling to show that alternatives are possible. It is critical to support organic and fair trade agricultural production. More should be done to put communities that are at the forefront of developing in sustainable directions into the spotlight. There is a large, albeit still fragmented community of actors willing to seek change. In the coming years, the best approach to promoting sustainable development may well be by doing more to understand and promote these initiatives.

(ii) *Rio plus 20: Hardly a Plus*

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The preparatory process for the Rio+20 UNCSD conference took place in a political environment shaped by the post-2008 world economic crisis. In this situation, the policy priority of the affluent countries most affected by the crisis was an unparalleled focus on economic growth, while the emerging economies played their new relative strength as a trump card. The discussions were shaped by dichotomies: North versus South (ignoring the differences between US and EU as well as those within the G77 plus China group), and environment versus development (betraying the basic concept of sustainable development and thus the main UNCED 1992 outcome). Those already involved in the initial conference in 1992 were labelled the "Rio elders", but, unlike the elders in other tribes, their word did not carry any weight in the 2012 process.

The preparation process for the Rio United Nations Conference on Environment and Development, UNCED 1992, had been shaped by left versus right conflicts involving US Democrats, European social democrats and Latin American leftist governments on the one hand and free trade liberals in EU and US governments (the Bush senior administration) on the other. The process of preparing the 2002 Johannesburg World Summit for Sustainable Development WSSD was a tug of war between the Bush junior government and its (mainly Anglo-Saxon) allies on one side, and a coalition of EU with G77 and China on the other. As a result, US attempts to dismantle main UNCED principles were rejected and – against the explicit will of the USA – some additional targets were adopted, mainly in the development sector. The Johannesburg Plan of Implementation specified targets and called for immediate action regarding their implementation. In the 2012 preparation process, no such coalition emerged (except for the joint EU–Africa effort to upgrade UNEP to a full UN organisation). The USA did what they did in 2002, trying to repeal major sustainable development principles, but the EU and the G77 and China fought against this with different agendas.

The EU was the only actor promoting environmental issues, concrete measures and a timetable for delivering results, ideas that were rejected by the G77 and China and the USA alike. All three shared the support for free trade and growth politics, but the EU idea that not any growth, but green growth and the transition to a green economy was the next necessary step to be taken was rejected by the other two blocs. While most of

their government delegations saw this as a potential for free trade restrictions (a possibility ruled out in the final text), some progressive Latin American governments and most of the NGOs rejected the EU proposal (based on a UNEP initiative and supported by the OECD Green Growth strategy) not for its objectives, but for the instruments chosen. The proposal was exclusively based on neoclassical resource economics, asking for monetisation of biodiversity and ecosystem services such as water provision, their tradability as a means for market-based optimisation, implying, as a precondition, their privatisation. Rejecting green neoliberalism, they turned against the EU proposal for its ideological content, and turned against UNEP as a main promoter of this approach.

Regarding the USA, this was not really surprising – since Ronald Regan in the 1980s, all US governments preferred to leave shaping international relations to the markets, and there was no detectable difference between the Obama and the Bush junior administration in their attempt to undermine all past achievements.

For the G77 and China, the main focus was on economic growth as well. Consequently, the final document drafted by Brazil does not even speak of "sustainable growth" any more, but of "sustained growth" achieving some environmental objectives: environmental limitations were considered not as a matter of getting the growth pattern right and sustaining the national conditions of human livelihoods, but as externally imposed constraints on unlimited wealth creation. Unlike the USA, with their position shaped by the fear of Republican climate change deniers (it is election time), for the G77 and China the problem exists, but combating it is the sole responsibility of the North (China is the world's largest emitter of greenhouse gases, with Brazil and India striving to follow suit, but in particular China, with per capita GHG emissions twice as high as the globally permissible maximum, hides behind the poor members of G77 in the negotiations). It is nothing but a bad joke when the document mentions the target of 2°C maximum global warning, and even the call of small island states for a maximum of 1.5°C: the time for the latter is over, and the political will for the former is nowhere in sight. Against all warnings of the IPCC and other scientific bodies, environmental threats were neither taken serious nor recognised as immediate: small islands will drown, and global warming is firmly on a route to 4-6°C warming, together with widespread biodiversity loss, causing ecosystem service collapses, ruining the basis of all economies but first of all the livelihoods of the poor. But this was not seen as constituting an imminent need for action. Future disaster relief might take into account that countries like India just get what they ordered when exposed to environmental hazards, while small island states are mere victims.

Instead the "red line" G77 and China defined was in mentioning the Rio principle of "common but differentiated responsibilities" as often as possible, using it as an excuse for their own inaction and as the basis to call for transfers of technology and money (rightfully accusing industrialised countries of a series of broken promises in this respect). India and Brazil in particular demanded such transfers as a condition for environmental action, asking to be bribed to do what is in their own interest. They, but even much more so, China, do some things back home, but reject any internationally binding agreements on environmental issues (this attitude of China having already helped to torpedo the Copenhagen Climate Summit). They confronted

the USA with their newly won strength and got their point – but not much else. The principle is mentioned, but additional transfers are not agreed.

If there are any achievements, they are on the social side, which was considered the only relevant aspect of sustainable development by G77 and China; already §2 of the Preamble stresses that "Eradicating poverty is the greatest global challenge facing the world today". The final declaration refers to the ILO "social protection floor" concept (it includes active social politics), mentions the need for indicators "beyond GDP" and re-states the rights to development and food, but falls behind earlier UN decisions regarding reproductive health. Some Southern NGOs like the Third World Network see a success in that most principles could be preserved with only minor weakening, against massive US resistance – a weakening which could have been avoided if there had not been any conference at all. Their hope that, with reconfirming them in Rio, the Principles will be shaping future negotiations, in particular legally binding ones such as on climate issues, looks rather out of touch with international political reality.

In a nutshell, Rio+20 was a meeting of global consumer class representatives from North and South. The EU proposal included providing free access to Southern resources (including free access for Northern corporations). The South refused and demanded transfer of technology and money, at best free and unconditional. The North refused. The result was comedy, performed by the world's most expensive cabaret team, consisting of ministers, presidents and heads of state, meeting for three days to decide nothing (the draft adopted before their arrival was not discussed any further), proudly telling the world they had agreed on a document (agreeing, not the content, was the success: it tells us something about the state of mind of those praising it). Looking at the document itself, it is worth a cabaret performance. The leaders of the world "call upon", "encourage" or even "urge" the leaders of the world to finally implement steps the leaders of the world had agreed upon long time ago. How encouraged they must feel with such a support! Add the emphasising – about a dozen of times – that all steps will be taken in accordance with international law: how surprising! Considering who needs to mention this again and again, it sounds like the communiqué of an international meeting of leading gangsters agreeing that this time, yes indeed, we will make an exemption and keep to the law, promised!

The conclusion suggested by many that this should be the last major international conference is overblown, however: this is exactly what US conservatives would like to achieve. We still need international governance, but it can only be successfully negotiated when precedents have been set by coalitions of the willing. They have to show they are coalitions of the winning as well, with a green economy based on solidarity and protection of the commons instead of green neoliberalism. Civil society, including the professional societies of engineers, economists, biologists and climatologists, will have an uphill battle to fight instilling some ecological realism into policy discourses dominated by growth fetishism.

(iii) *'Addressing the Global Crises with Purpose and Resolve ....'*: Post-Rio Reflections (1)

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Addressing the global crises with purpose and resolve is a question of the cognitive framework we adopt, as individuals and governments.

- *Do we regard the environmental problems we face today as in the nature of other problems human society has faced before, and one we can solve with the right mix of national political will and technological ingenuity?*

or

- *Do we acknowledge that we face an unprecedented ecological crisis whose resolution requires, in a purposeful and resolute way, a transformation of governance at the global level?*

Rio+20 conclusively demonstrated what was becoming apparent for some time now. The international community of states is proving itself to be ill-equipped to solve the inter-related problems of global unsustainability (resource depletion, climate change, biodiversity loss). In fact, it is clear that a timely solution by this means, based on the principle of 'common and differentiated responsibilities' and the (largely disregarded) 'precautionary principle', is impossible.

UNCED 1992, which I also attended, was different. The Rio Declaration, Agenda 21, and the framework conventions on climate and biodiversity set the scene for action. But the action never followed.

It is apparent that we face two crises: a ***global ecological crisis*** and a ***global governance crisis***. Currently, the international community of states acknowledges neither. The 2012 Rio Declaration is a model of lowest-common-denominator platitudes, that falls below the threshold of effective remedial action.

These crises are related. The first is the consequence of human action. The second is the human inability to address it.

An increasing cohort of people, from the scientific community and civil society, less so from the business and political worlds, is of the view that we have perhaps one decade at most left to turn the direction of the global economy around – not simply to undertake to do so, but to actually do so. In that scenario, the international community of states needs to elide into a more effective form of global governance, one that nonetheless falls back on the international community itself for legitimacy – since that is all the legitimacy that has evolved to date.

[9] This is the first of a series of blogs by New Zealand Green Party MP, Dr Kennedy Graham, in which he reflects on the Rio+20 conference.

Here is a politically-feasible way of resolving the two global crises in this manner. Regard it as a thought experiment or a practical proposal, according to taste.

1. **Security Council declare a global emergency:** Have the UN Security Council acknowledge the Global Ecological Crisis and declare this to be a threat to international peace and security, enabling it to act under the Charter's Chapter VII binding powers. The resolution would declare a 'global civil emergency'. This is a major step. But the Council would be building upon preliminary steps already taken. Climate change has been on its agenda since April 2007. In July 2011, the Council declared climate change a 'risk multiplier' and a 'potential threat to international peace and security'. The Secretary-General, along with the UNEP Director-General, offered the view that climate change *already is* such a threat. It is but one step further for the Council to declare the broader ecological crisis to be a threat, and this could well rest on professional and scientific studies that it could request, as with the Brundtland Report of 1987. Is the Council a legitimate body? It retains mid-20th century flaws of composition and veto powers but, apart from the conflicted WTO, it is the only universal body with legitimate global power. And if India, Brazil and Japan are invited, it is *de facto* universally representative. Can it presume to act as a global legislature? It already has: in Resolutions 1373 (counter-terrorism) and 1540 (weapons of mass destruction), it has required member states to undertake national legislation. If the planet, or human society, is genuinely threatened, then the Council can undertake this role, and indeed must.

2. **Meet regularly at summit level:** Based on such a declaration, the Council would meet at ministerial level on a quarterly basis, head-of-government level annually. These meetings would monitor progress made in combating the Global Civil Emergency as declared under the original resolution, issuing new binding resolutions as is deemed necessary.

3. **Report regularly to General Assembly:** To underpin universal legitimacy, the Council should report to the General Assembly following each quarterly meeting. The Assembly might adopt resolutions reflecting the broader mood, but these are recommendatory and would not overturn the binding powers of the Council under chapter VII.

4. **Empower the Secretary-General:** The Council would support any initiative taken by the UN Secretary-General acting under his independent and interpretative powers in the Charter. Article 98 empowers him to perform any functions entrusted by the deliberative organs, including the Security Council. Article 99 authorises him to bring to the Council's attention any matter that, in his opinion, may threaten international peace and security. Acting under this, the SG could direct the IPCC, through UNEP and WMO, to report directly to a sub-committee of the Council established under the original resolution (the Ecological Emergency Sub-committee). This would bypass the behemoth that is the UNFCCC annual conference (COP-MOPs), although the same reports could go to those conferences as well. In this way, ecological issues (including climate change and biodiversity) would become subject to global executive action rather than international negotiation.

5. **Recognise the planetary boundaries:** In fact, it has recently become clear that the Ecological Crisis goes beyond the three framework conventions (Ozone 1985, Climate Change 1992, Biodiversity 1992). The Secretary-General could, under article 99 and in consultation with the Council's sub-committee, establish a broader panel of scientific advisers. Their work and recommendations may well reflect the latest insights that have identified nine planetary boundaries that act as the thresholds for ecological stability and sustainability. These boundaries, fed directly into the Security Council, might become the principal organising framework for global executive action in the 21st century.

Humanity faces a crisis, today. We have lost twenty critical years in which the international community of states has generally identified the global problem but proven unable to resolve it. In this, it has failed the global community of peoples.

Time is running out: we have perhaps one decade remaining to remedy the situation before dangerous anthropogenic resource depletion, climate change and biodiversity loss make human life intolerable and untenable.

We need an alternative approach to the failed model of UN-style international negotiations among 193 member states. We need executive action by the Security Council, acting on their behalf. We established the Council over half a century ago, to handle international crises. What was in mind in the 1940s was inter-state warfare. Yet the Council has evolved since Cold War days in managing various kinds of crises and the 2005 World Summit Outcome Document declared that the Charter was adequate to handle the multiplicity of complex threats of the 21st century.

Let's see if this is the case.

(iv) *The Future I Want*

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On Wednesday 20 June, 2012, 17-year-old Brittany Trilford, of Wellington, New Zealand, addressed 130 heads of state at the opening plenary of the Rio+20 UN Earth Summit in Rio de Janeiro, Brazil. Her speech is available on:
www.youtube.com/watch?v=karQQb-B8Uk

(v) *Stakeholder Forum: Post Rio+20*

The Stakeholder Forum provides its commentary on the Rio+20 process and steps for the future in the August issue of its newsletter – **Outreach**:

Rio+20 reflections and next steps

http://www.stakeholderforum.org/sf/outreach/index.php/post-rio/117-wrap-up

(vi) *The Role of Religion in Development: Reflections since the 1992 Earth Summit*

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In reflecting on the advances in development practice and discourse in the twenty years since the 1992 UNCED Convention, I am particularly interested in implications of the development/religion nexus, which had a substantial presence in the Conference, particularly at the Earth Summit. The World Council of Churches, the Vatican, and leaders of other world religions, notably Judaism, Islam, Buddhism, and Bahá'I, for example, were present at the 1992 Earth Summit.

Since 1992, there have been other bold initiatives to attempt to link religion more rigorously to the critique, theory and practice of development in the UN and in international development, most famously, the founding of the World Faith's Development Dialogue in 1998 by James D. Wolfensohn, then President of the World Bank and George C. Carey, Archbishop of Canterbury. And while, in all fairness, it is yet early days to make an authoritative comment on the role of religion in the 2012 Rio+20 summit, religion seems to have actually lost in some measure the little space that it had earned previously. Several religious institutions were represented at Rio+ 20 and issued statements affirming their commitment to social and ecological justice. *The Future We Want* report makes not one mention of religion whatsoever except to make a vague commitment to promote human equality and rights, regardless of religion, which is no specific affirmation of the important role that religion does play in development. It is reasonable to conclude that it remains the case that, by and large, religion is still, as Govert Buijs[10] calls it, a 'blind spot' in international development. In this context, I am interested in two questions: why is it important that religion be "allowed" or, more to the point, "enabled" to have a role in development discourse and practice? And secondly, what sorts of roles may religion play in development?

I refer specifically to organised religion in references to religion. However, this reference is not necessarily exclusionary of agnostics, atheists and even other spiritualities. Gerald Larson[11] (1995: 280) argues for an understanding of 'religion' as an anthropological construct, comparable with concepts such as 'culture', 'language' and 'society'. He clarifies that this does not mean one has to proclaim sympathy for a particular worldview; on the contrary, one may even express hostility.

The first question of 'permissibility' is a fraught one as the cases against religion's involvement in development are several. Starting with Lynn White's little essay in 1967, Christianity has borne the guilt for the ecological destruction of the planet for

[10] Buijs, G. 2004. Religion and Development, In, *The Development of Religion, The Religion of Development* (ed. by Giri, A.K., Harskamp van, A. & Salemink, O.). Delft: Eburon Delft.
[11] Larson, G. J. (1995). *India's Agony Over Religion*. Albany: State University of New York Press.

its sanction in the Genesis for man to "Be fruitful and multiply, and fill the earth, and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth", and for engendering the artificial separation of humans from nature. Christianity's unsympathetic views on birth control have been held significantly responsible for the HIV/AIDS pandemic and for limiting women's rights. Hinduism is often seen in India as complicit in sanctioning untrammelled consumption. For example, eminent writer Jug Suraiya[12] (2007) advises his middle-class readers to go on a "gilt trip", rather than a "guilt trip" in the weeks leading up to Diwali, the Hindu festival of lights. He insists that austerity is the core belief of Semitic religions; he writes (2007): "In the Indian tradition, on the contrary, far from being a sin, wealth is a goddess, Lakshmi, to be rejoiced in and not shunned." He reassures his readers that they are only doing their "bit for Lakshmi" by indulging in hedonistic behaviour. As for Islam, it is seen oftentimes, particularly in the popular imagination, as incompatible with development altogether because of the repression of women in many Islamic cultures. N.H. Ammar points, for instance, that most of the socio-legal discussion on Islam revolves around the 34th Koranic verse (Ayah) of the Al Nisa (Surah) chapter on the treatment of women, which apparently gives divine sanction to some of the worst forms of repression of women. These are all important, serious charges, and it is too easy to dismiss these concerns against religion by resorting to charges of essentialism, for religions clearly can and do have destructive impacts. The main issue then is not denying or countering these claims but exploring the possibilities for religion as an enabling and empowering force in people's lives, by refreshing some of the latent tenets of religion in a contemporaneous manner, such as what Gandhi's neo-Hinduism did for Hinduism.

And if the charges were all indeed true, then it would seem that the 'development crisis' is in many ways intimately interwoven with religion, and to decouple environmental and social problems from religion would be problematic. Religion is then a critical category of analysis in articulating and implementing development solutions, and with its massive grassroots presence, must in fact, be invited to assist in enabling sustainable development. Eric Kauffman[13] in his book, *Shall the Religious Inherit the Earth?* (2010), makes a strong case that the proportions of the religious populations worldwide will soon outstrip the secular citizens and that engagement with religion at all levels of international policy is thus imperative. Lynn White argued that if the cause of environmental problems lies in religious ideologies, then the solutions must rise from the same source. Furthermore, selective institutionalisation of religious messages can also cause the sustainability problem. Central to the worship of Lakshmi in Hinduism, for instance, is the emphasis on enlightened spending and experience of materialism, in a manner, assists self-realisation, which is consonant with sustainable consumption. The Christian Genesis also advances the notion of 'stewardship', which is a theological belief that humans are responsible for the world, and should take care of it. In a particular global context however, these messages become narrowly interpreted and discriminatively adopted, thus leading to problems, instead of solutions

[12] Suraiya, J. 2007. Why Diwali is Such a Gilt Trip. *The Times of India* Retrieved 4 November, 2011, from http://timesofindia.indiatimes.com/Opinion/Sunday_Specials/Why_Diwali_is_such_a_gilt_trip/articleshow/2515779.cms

[13] Kauffman, E. 2010. *Shall the Religious Inherit the Earth? Demography and Politics in the Twenty-first Century*. London: Profile Books.

What are the sorts of role that religion might play in development in the future? Broadly, it is possible to conceive of three possibilities for religion in development and development policy - one, that it plays no role and that this problematic Pandora's box is deliberatively closed in favour of a rigidly secularist understanding of development; two, it plays a highly influential and central role in defining development and progress, or three, it adopts a middle-path and plays some role in development (Lunn 2009)[14]. I offer that religion on its own can offer no comprehensive authority on ecologically and politically just and equitable sustainable development; it may play, however, a vital role in animating human lives and fulfilling human purpose, which might be ultimately critical in enabling an authentic sustainable development.

Three roles among others, provide ways for religion to play an influential role in development. Firstly, religion offers a wealth of universal values, which lends itself to interpretation and practice by individual seekers and practitioners, both religious and secular, to inform their sustainability practice. Govert Buijs identifies the Christian notion of *caritas* as one vital way for religion to fill development's 'blind spot' and calls for the restoration of the notion as a "non-utopian source of inspiration for the alleviation of human suffering". In a recent paper to the *Journal of Hindu Studies*, I, in a similar way, identify the understanding and practice of the Hindu *dharma* or notion of 'duty' or 'ethics' or the 'right means' as the potential for the most profitable connections between Hindu religion and sustainable development to be made. I propose the notion of *dharmic sustainability* that would be based on the complementary strengths of science and religion. The Islamic value of considering the charging of interest as sin was influential in inspiring the creation of the early microfinance institutions which do charge interest, albeit at low rates. Admittedly the noble intentions of the early microfinance institutions have moved far away into a highly commercialised system, which oftentimes charge interest rates now comparable with standard banks. This only emphasises to me the vital importance of keeping the religious inspiration for microfinance in sharp focus, in order to deliver the full promise and potential of the banks.

These values, then, are useful for religion's second role, in influencing ecological and social activism, which may be quasi-religious nature as seen in the famous Chipko Movement of the 1980s in India, the discourses around 'sacred groves in India', the Swadhyaya Shamamananda Movement in Sri Lanka, and so on.

The third important role that I see for religion and development is in the more personal realm of self-development. The human self, and the development of the self has become a source of preoccupation for many development theorists such as Fritjof Capra, Ben Okri, Vandana Shiva, including also economists such as Amartya Sen and Wolfgang Sachs. Anthropocentric sustainability emergencies as well as growing social inequities point centrally to the role of the individual human self in engendering these crises.

[14] Lunn, J. 2009. The Role of Religion, Spirituality and Faith in Development: a critical theory approach. *Third World Quarterly*, 30 (5), 937-951.

For a large proportion of the world's populations, metaphysical authority on the self would come from religion and, hence, there is need for religion, through civic communities and religious representatives, to be actively involved in interpreting the notions of 'being' and the 'self' in ways that promote social and ecological justice. Ananta Kumar Giri[15] argues that self-development is the sustained fruit of dialogical reflections between philosophy and religion; in other words, between Athens and Jerusalem. Can we then, he says, envisage conversations on a broader development, and methods for achieving good development, between Geneva and the Vatican, between Varanasi and Washington? As Govert J. Buijs says, "A new empirically inspired openness for the role of religion in development processes might both restore some of the moral integrity of the practice and have a sobering effect on the utopian expectations that continue to surround one wave of new managerial development methodologies after another."

(vii) *Is Rio+20 going to make a difference? Is privatising development the answer?*

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A lot has changed in the last twenty years. In 1992 it seemed that there was an appetite for further engaging in developing tools and frameworks for operationalising sustainable development. Yet, what we have actually achieved in each and every year since 1992 is to make the world even more unsustainable. We are now using resources faster than ever, we continue with an upwards trajectory of greenhouse gas emissions and the crisis associated with climate change has kicked in. This means that the Rio+20 Summit was more important than ever. And yet, its impact is going to be severely limited.

As government officials, environmental NGOs, development agencies, businesses and other onlookers boarded their flights to further increase greenhouse gas emissions, we had to wonder whether we were actually going about this all the wrong way. I have serious doubts that 2012 will bring about significant advances for a number of reasons.

The geo-political environment in which we now find ourselves has changed fundamentally. Countries such as India and China have increased their impact and their influence on the environment and sustainable development. Meanwhile, after eight years of climate change denial under the Bush regime, the USA has lost it credibility. Europeans might be putting forward new and radical agendas for dealing an emerging environmental crisis but others are either not listening or actively resisting change. Most developing countries (including China) are still looking at pretty traditional growth models.

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[15] Giri, A.K. 2004. Self-development, Inclusion of the Other and Planetary Realisations, In, *The Development of Religion, The Religion of Development* (ed. by Giri, A.K., Harskamp van, A. & Salemink, O.). Delft: Eburon Delft.

In any case, Europe has its own crisis to deal with and that will undoubtedly overshadow discussion about sustainable development. Dealing with the debt crisis, the potential collapse of banking systems and the eventual break-up of the Eurozone is demanding much more attention from Europe's politicians than Rio+20. I expect the ongoing Euro saga to continue to dwarf any other meaningful news as the Greeks decide who they want to govern them and Spain and Italy sink in the eyes of the ratings agencies. Unfortunately, the twenty year anniversary of UNCED has come at a difficult time.

But another major shift in the last twenty years has been the increasing power of the private sector and a dramatic increase in its interest in sustainability and corporate social responsibility. Indeed, many of the most innovative sustainable development projects over the last decade have come from the private sector and many multinationals have demonstrated a real interest in tackling development and protecting the environment. As the world's only truly global players, multinational enterprises have a lot to say and a lot to offer. And yet, the Rio+20 model guided by the "convening" role of the UN has not embraced the private sector adequately. Sure there will be multinational corporations and a smattering of Global Compact signatories at the event, but this is a lost opportunity to leverage of the power of business.

Unfortunately, whilst the importance of the private sector is on the rise, the legitimacy of the United Nations, tasked with pulling the event together, is in decline. The post-war UN model is beginning to look decidedly shaky given the geo-political changes that we see. Its organisational skills are under question following a series of failures to reach agreements at climate change talks. The initiatives that various different (and often overlapping and duplicating) agencies in the UN have launched round green growth, green jobs, sustainable production and climate change are looking rather tired and seem to me to be slow on producing meaningful results. Unfortunately relatively little time and effort has been spent on more critical issues, including sustainable populations and the inequalities in income driving a new thirst for conspicuous consumption amongst the "new rich", whilst leaving the poor in poverty. I personally see limited capacity within the UN to follow through on some of the necessary actions to deliver sustainable development.

I am wondering, therefore, whether we need to have a new debate on "privatising development". By this I mean taking the best of what we have (and despite my complaints, we do have some excellent work being done by parts of the UN, World Bank, development agencies and NGOs) and supplementing it with the resources and management discipline that the private sector has to offer. I am also wondering whether many of the people meeting in Rio are the best people to drive a new sustainable development agenda that is now more urgent than ever before and means taking on some disastrous growth trends in emerging markets. I worry that we are going to see more rhetoric, long-winded declarations that no one reads and very little action. I hope I am wrong, but I doubt that I am.

(viiia) ***Rio+20 - Peoples' Sustainability Treaties***

As at UNCED in 1992, when the Global Forum produced a set of *Alternative Treaties* that addressed serious silences in the formal discourse of UNCED, so at Rio+20 the concerns of civil society in the global north and south were represented in fourteen *'Peoples' Sustainability Treaties'*. These evolved through a consultative process with hundreds of civil society organisations whose representatives converged at Rio+20 to launch their Manifesto on the final day of the Summit. The Manifesto envisions a transition to sustainability based on equity, a new social order, a new ecological order and a new economic order.

The fourteen Sustainability Treaties include:

- Consumption and Production
- Equity
- Sustainable Economies
- Radical Ecological Democracy
- Sustainable Development Governance
- Rights of Mother
- Sustainable Development Goals
- Environmental Education for Sustainable Societies and Global
- Ethical and Spiritual Values for Sustainable Development
- Transitioning to a Zero Fossils
- Rights for Sustainability
- Corporate Social Responsibility and
- Higher Education Towards Sustainable Development
- A Charter of Universal Responsibility

More information on the Peoples' Treaties, the Manifesto and post-Rio+20 action can be found at: http://sustainabilitytreaties.org/

(viiib) Rio+20 – ***Peoples' Sustainability Treaty on Higher Education Towards Sustainable Development***

The ISDRS has become a signatory to the *People's Sustainability Treaty on Higher Education towards Sustainable Development.* The date for signing the Treaty has been extended to 31 August, 2012 for organisations interested to sign up to the Treaty. The details of the Treaty, with signatories, is available on:

http://insight.glos.ac.uk/SUSTAINABILITY/EDUCATION/Pages/People'sSustainabilityTreatyonHigherEducation.aspx

10 NEWS AND VIEWS

(i) *Teaching an Ethic of Just and Sustainable Development*

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Recently, the Center for the Study of Science and Religion (CSSR) at Columbia University was asked to design a graduate level course on the ethics of sustainable development. Having just completed an undergraduate course on the same topic we knew this was no easy task. The ethics of sustainable development are just beginning to be considered, with a great variety of opinions across disciplines and communities. Over the course of eight months I interviewed students, activists, scholars, community organizers and artists, all of whom were doing work I greatly admired. I asked them all the same question "How do you effectively teach an ethic of sustainable development?" I was so intrigued by their thoughtful answers that I invited them to New York City for two days of conversation. This paper is concerned with the Roundtable's conclusions about the "what, who and how" of teaching an ethic of sustainable development. What exactly are we teaching? Who are we teaching; and who is teaching us? How do we teach effectively in classroom and community? Not surprisingly the answers to all three questions call for an honest, inter-disciplinary, inter-community, and multi-cultural assessment of the present state of our planet; and a willingness to apply predictive wisdom and the lens of global justice to future plans for global development.

The eminent scientist, and, as of late, activist Dr. James Hansen opened our conference with a provocative lecture in which he elegantly wove his personal experience, with both the present misuses of U.S. climate change policies, and humanity's collective, global obligation to secure a just and sustainable future for coming generations. In recognizing the undeniable inter-relationships between past, present, and future; personal, national, and universal Dr Hansen demonstrated the type of integrated, creative thinking from which an ethic of sustainable development can emerge. He concluded that given what we know *for sure* about the state of our planet we can no longer tolerate heads hidden in the sand or arrogant theorizing – we must act; even if it means, as it did for him, getting arrested in front of the White House.

Cynthia Moe-Lobeda, Professor of Environmental Studies at Seattle University in Seattle, led our roundtable in a discussion on what exactly is this "ethic of sustainable development" we say we are teaching. Dr. Moe-Lobeda challenged everyone to consider seriously the "is" of our planet before prescribing the "ought". Our inclination, particularly within the academy, is to jump straight to teaching how the world "ought" to be ordered, without honestly considering the messy, complicated, uncomfortable "is" of our planet. Ignoring the tangled reality of the state of our planet and opting instead to focus on "should, would, could" fosters a complacency that is far from ethical.

The present state of sustainable development includes some very uncomfortable realities that stem from this complacency. Environmental and economic racism, classism, and sexism are the stuff of what "is". And yet, as many people attending our conference were quick to point out, all too often academics, politicians, and religious leaders would rather ponder Hume, Leopold, and Rawles than actively collaborate with The Green Belt Movement, Via Campesina, or West Harlem Environmental Action. We are loath to admit that "eco-apartheid" is alive and well throughout the world; and yet, to ignore it is to be complicit in gross injustices.

To honestly assess the needs of the Earth and its people those of us who teach need to talk less and listen more. We can never understand the realities of those people who are most marginalized by climate change, environmental degradation and distributive injustice until we listen attentively and respectfully to their concerns. Respectful listening means that we have to employ some humility and admit that perhaps our prescriptions for what "ought to be" might not be appropriate to someone else's reality.

So, too, we need to teach our students to be astute listeners. The undergraduate students attending the conference felt that learning in classrooms from models, projections, and cold data did not prepare them to be caring, engaged, global citizens. They wanted more inter-disciplinary, intra-community, experiential learning. We are teaching well when we teach our students to listen and learn from each other and from the Earth. The great theologian Nelle Morton once said that it is our moral obligation to "listen each other into being."

Finally, our group agreed that teaching what "is" need not be an exercise in sowing seeds of hopelessness and despair. Indeed, it would be unethical to teach only gloom and doom. Real and present change is afoot; grassroots efforts across the globe are facing down agents of environmental degradation, food insecurity, and public health hazards. Innovative and lasting solutions to soil erosion, deforestation, food insecurity, and water pollution are being put into effect on local, national, and global levels. Our students must listen to learn; hope and inspiration will follow.

We've already established that learning is not unidirectional, it doesn't emanate out from the podium alone. Real learning requires collaboration, humility, and creativity. We learn best from a robust combination of sights, sounds, and stories. It is impossible to teach an ethic of sustainable development without rolling up your sleeves and getting outside the hallowed halls.

I illustrated this point by showing a short clip from Marty Ostrow's wonderful documentary *Renewal.* We were honored to have Marty as a conference participant. In this particular clip, Fr John Rausch, an environmental activist in the Appalachian Mountains of Kentucky is taking a group of Evangelical Christians to witness the devastation caused by the mountain top removal method of coal mining. The visitors were helicoptered over Kentucky's desecrated mountains. One man, who until that moment was staunchly pro-industry, looked out on the maimed mountains and declared that mountain top removal was nothing less than rape.

The most profound scene in this film segment shows Fr Rausch and his guests standing on a beautiful mountain top; as they are singing praise for the Earth a

mountain top is blown off in the distance. It is a chilling scene, which, Marty assured us, was completely unscripted. The final scenes of the clip show the Evangelical men returning to their colleges and congregations sharing new lessons that they learned from listening, seeing, and feeling.

If – as we had all agreed earlier:

- We must teach what "is" before we can hazard "what ought to be"
- Racism, sexism, and classism are harsh realities that must be included in any discussion of the ethics of sustainable development. *But* – not to the point of sucking hope and resolve from students.
- The days of 55 minute uninterrupted lectures are over. Effective teaching must be inter-active, inter-disciplinary, and experiential.

Then **-** how do we teach most effectively?

It was agreed that teaching an ethic of sustainable development means including the voices of those most marginalized, as well as artists, service learners, community organizers, and faith leaders. Respectful and trusting collaboration centred on justice is the most effective teaching tool we have.

(ii) *Sustainable De-growth - Beyond "isms"*

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"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

1. *The concept of "needs",* in particular the essential needs of the world's poor, to which overriding priority should be given, and
2. *The idea of limitations* imposed by the state of technology and social organisation on the environment's ability to meet present and future needs." WCED(1987). '*Our Common Future*', p. 43.

Taking this full definition of the Brundtland Commission as starting point (often only the first sentence is referred to), both needs and limits need to be made operational. Regarding the first criterion, the concept of Max-Neef et al. (1989)[16] helps doing so. They distinguish human needs like subsistence, protection, affection, creation, identity and freedom from the means by which humans satisfy them, the satisfiers. Whereas human needs can be considered an anthropological constant, satisfier choice varies with factors like culture, wealth and the products on offer. Rather obviously,

[16] Max-Neef, M., Elizalde, A., Hopehayn, M. (1989). Human Scale Development. An Option for the Future. Development Dialogue 1989(1): 7-80.

many needs are best satisfied by non-commercial services, such as care in a family or amongst friends, and not by products. However, whenever products are involved, truly sustainable consumption is about choosing true satisfiers, not about neglecting needs. Consequently, since needs are not unlimited, while wants are, the two elements are not necessarily contradictory: needs can be satisfied without ignoring limits if only the right, true satisfiers are chosen. Consumer autonomy is a freedom within limits (as most freedoms are).

But there is a second, even more provoking message in this brief definition: *"the essential needs of the world's poor, to which overriding priority should be given"* are needs of people without any significant purchasing power, by definition of being poor. As (at least in theory) a functioning market is an efficient tool to allocate goods according to purchasing power, then it is not designed to serve the poor – to combat poverty, other allocation mechanisms are needed. So a decision must be taken about which goods are to be distributed according to this criterion, which goods are classified and allocated as merit goods according to past merits, which are entitlements of citizens and which are common goods accessible to every inhabitant. This is not an economic decision, but a political one. Take a meadow, higher education, a passport and a washing machine: it is plausible that washing machines should be distributed via the market, while usually a passport is a citizen's entitlement. In some countries, however, passports are not available to everybody, but only to those who have proven to be reliable citizens, making them merit goods (if they can be bought, they are market goods, but that is usually called corruption). But why should education be a market good and not a public one? Why should a meadow be private property and thus a market good, and not a common good under joint management and in possession of a community? This is the choice of each society, and the choice should be made consciously, after public debate and by democratic means.

Turning to the second criterion of accepting "the idea of limitations", it reflects just common sense. Kenneth E. Boulding, one of the founding fathers of Ecological Economics, highlighted this with his famous statement that "anyone who believes in indefinite growth in anything physical, on a physically finite planet, is either mad or an economist." Thus the current discussion on Green Economy or Green Growth has one major flaw: it is never clearly stated that economic growth in monetary terms can only be sustainable if it goes together with a slimming of the physical size of the economy**.** Formally speaking, if d(Y), the growth of the monetary size of the economy Y, is slower than the growth of the resource productivity Y/R, the physical economy is shrinking: $d(Y) < d(Y/R)$.

For most OECD countries, the risk of poverty is highest for the unemployed; thus the creation of good work (for instance no working-poor jobs) can be considered the key means to overcome poverty at least in these countries. If L is the size of the labour force, this is achieved if labour productivity Y/L grows slower than the economy: $d(Y/L) < d(Y)$. Combining both, inequality provides a minimum criterion for sustainable development, the "inequality of sustainability": $d(Y/L) < d(Y) < d(Y/R)$. Any policy violating it cannot be sustainable as either the first or the second criterion

is violated (for a detailed argumentation see Spangenberg 2007)[17]. Going beyond this minimum condition, the key environmental question is: how small must R be for an economy to be sustainable? The table summarises the answer to this question offered by Fischer-Kowalski and Haberl (1997)[18]:

	Hunters & Gatherers	Agri-culture	Industrial society	Sustainable society
Energy [GJ/cap *yr]	10 to 20	about 65	223	below 25
Material flows [t/cap * yr]	about 1	about 4	22	less than 2

After Fischer-Kowalski & Haberl (1997): Tons, Joules and Money: Modes of production and their sustainability problems. Society & Natural Resources 1997(1): 61-85, modified. Industrial society data from Austria 1990

Rather obviously, a strong absolute decoupling is required, which is hardly reconcilable with strategies of economic growth: to avoid disaster, we must shrink the economy: de-growth by design, not by disaster, as Peter Victor describes it.

11 COMMENTARIES ON RIO+20:

For opinions on what happened before, during and after Rio+20 and interpretations of the outcomes, the following websites provide a basis for discussion and useful classroom resources:

IISD:
http://www.iisd.ca/uncsd/rio20/enb/

http://www.iisd.org/pdf/2012/com_life_after_rio.pdf

http://www.iisd.ca/linkages-update/191/

Center for American Progress:
http://www.americanprogress.org/issues/2012/06/rio_text.html

Fred Pearce, Yale360:
http://e360.yale.edu/feature/beyond_rios_disappointment_finding_a_path_to_the_future/2547/

WRI
http://insights.wri.org/news/2012/06/rio20-rear-view-whats-road-ahead-sustainable-transportation

[17] Spangenberg, J.H. (2007). Defining Sustainable Growth: The Inequality of Sustainability and its Applications. Stephanie D. Antonello (Ed.), Frontiers in Ecology Research, New York, Nova Science Publishers: 97-140.

[18] Fischer-Kowalski, M., Haberl, H. (1997). Tons, Joules and Money. Modes of production and their sustainability problems. Society & Natural Resources 1997(1): 61-85.

IUCN
http://www.iucn.org/news_homepage/events/iucn___rio___20/on_the_road_to_rio__bonn_2011/?10227/20-years-on-civil-society-leads-in-Rio

WWF
http://wwf.panda.org/wwf_news/?205343/WWF-Rio20-closing-statement

Greenpeace
http://www.greenpeace.org/international/en/press/releases/Greenpeace-Press-Statement-Rio20-Earth-Summit-a-failure-of-epic-proportions/

http://www.greenpeace.org/international/en/news/Blogs/makingwaves/beyond-rio20-lets-mobilize-for-a-better-world/blog/41095/

Sanwal/SD List (developing country perspective)
http://www.indiaenvironmentportal.org.in/blogs/rio20-begining-global-transformation-and-new-multilateralism

Ashish Kothari/Tehelka
http://www.tehelka.com/story_main53.asp?filename=Op070712Ashish.asp

The Guardian (UK)
http://www.guardian.co.uk/environment/2012/jun/23/rio-20-earth-summit-document

Monbiot/The Guardian
http://www.guardian.co.uk/commentisfree/2012/jun/25/rio-governments-will-not-save-planet

New York Times
http://www.nytimes.com/2012/06/23/opinion/after-rio20-we-have-to-solve-the-earths-problems.html

Interpress Services
http://www.ipsnews.net/2012/06/rio20-promised-green-economy-was-a-fake-say-activists/

The Bureau of Investigative Journalism (TBIJ)
http://www.thebureauinvestigates.com/2012/06/22/analysis-rio-20-epic-fail/

CorpWatch
http://www.corpwatch.org/article.php?id=15746

EJOLT: Environmental Justice Organisations, Liabilities and Trade
http://www.ejolt.org/section/blog/

Norden/Nordic Region
http://www.norden.org/en/news-and-events/news/rio-20-big-step-forward-on-sustainable-consumption-and-production

Huffington Post
http://www.huffingtonpost.com/katherine-marshall/rio-20-point-of-no-return_b_1620596.html

RTTC/Responding to Climate Change
http://www.rtcc.org/rtcc/a-week-in-climate-change-five-things-we-learnt-4/

Inside the Greenhouse (Students of the University of Colorado)
http://www.insidethegreenhouse.net

[Websites collated and provided by Geoffrey Wandesforde-Smith, University of California Davis, and members of the Gep-Ed list-serve.]

11 FORTHCOMING CONFERENCES

Rethinking Climate Change, Conflict and Security.
18-19 October, 2012, University of Sussex
http://rethinkingclimateconflict.wordpress.com

2nd World Sustainability Forum
1-30 November, 2012
An electronic conference on sustainability: http://www.wsforum.org

International Conference on Climate Change, Hydro-conflict and Human Security.
Nicosia, Cyprus, 10-12 December 2012
http://ewacc2012.cyi.ac.cy/

Governance and Sustainable Development: Building Commerce and Communities
10-13 December, 2012, Amrita and Deakin Universities
http://www.amrita.edu/sdg/about.html

IECA and SLU Conference on Communication and Environment
June 6-10, 2013, Uppsala, Sweden.
http://environmentalcomm.org/sites/default/files/COCE_2013_Flyer.pdf

IASC 2013: Global Conference of the International Association for Study of the Commons.
Deadline for submission of abstracts: end of August, 2012.
http://www.iasc2013.org/en/proposals.html
Or contact the Chair: Meg McKean, Duke University (mamckean@duke.edu)

12 RECOMMENDED READING: JOURNALS AND BOOKS

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The INES *Global Responsibility* Newsletter reports and comments from a global responsibility perspective on political, technical and societal developments and comprises regular internal news sections (from the membership, the Council, the Executive Committee, and from other organisations).

The editors hope to have, in each issue, original papers from both peace and sustainability research, including from young researchers, with quality guaranteed to members by a peer review process. *Global Responsibility* is more than a journal, it is the voice of the INES network, and one of its main internal communication tools. Thus the new editors encourage YOU to come forward with reports, inspiring examples, and background analyses: *Global Responsibility* is YOUR journal - use it as YOUR exchange platform!

Issue 64 was distributed at the UNCSD and other major forums in Rio de Janeiro. The issue can be accessed on:

http://www.inesglobal.com/nl64.html
[It may be necessary to paste the link into your browser in order to open it.]

See the latest news from INES on: www.**inesglobal.com/**

❖ ***Global Ecology and Biogeography, Special Issue.***

http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1466-8238

Editors: Josef Settele, Ingolf Kühn and Joachim Spangenberg, Helmholtz Centre for Environmental Research – UFZ/Germany; Tim Carter, Finnish Environment Institute SYKE/Finland, and Martin Sykes, University of Lund/Sweden.

As European leaders struggle to avert a second recession, a new study finds that future economic growth and the sustenance of the continent's ecosystem services may be incompatible unless political priority setting focuses on sustainable development with a special emphasis on biodiversity conservation. The research published in this special issue combines socio-economic, land use, climate and biodiversity models with other approaches to consider three possible routes for the future of Europe's economy. The scientists explore the multiple impacts on biodiversity within the next century.

Free Access at the Journal URL:
http://onlinelibrary.wiley.com/doi/10.1111/geb.2012.21.issue-1/issuetoc

❖ ***Globalization & the Environment: Capitalism, Ecology & Power***
Peter Newell. John Wiley and Sons. July, 2012.

❖ ***Only One Earth: The Long Road via Rio to Sustainable Development***
Felix Dodds and Michael Strauss with Maurice F. Strong.
Routledge Publishing, June 2012.
http://t.ymlp315.net/jjsjavajmsjanaeesalaubqyq/click.php

❖ ***'Rio+20 and the global environment: reflections on theory and practice'.***
Robert Falkner and Bernice Lee (eds.)
Special issue of International Affairs, vol. 88, no. 3, May 2012. Chatham House.
Chatham House online: http://www.chathamhouse.org/publications/ia
Wiley online: http://onlinelibrary.wiley.com/doi/10.1111/inta.2012.88.issue-3/issuetoc

❖ ***The National Politics of Nuclear Power: Economics, security, and governance***
Benjamin Sovacool & Scott Victor Valentine. Routledge, May, 2012, 312 p., ISBN-10: 0415688701 (Routledge Global Security Studies)
http://www.routledge.com/books/details/9780415688703/

❖ ***Global Environmental Governance Reconsidered***
Eds. Frank Biermann and Philipp Pattberg, MIT Press 2012. 320 pages. Paperback 25 USD.

Direct link: http://mitpress.mit.edu <http://mitpress.mit.edu/> /9780262017664

The notion of global governance is widely studied in academia and increasingly relevant to politics and policy making. Yet many of its fundamental elements remain unclear in both theory and practice. This book - which could be used also as a textbook - offers a fresh perspective by analyzing global governance in terms of three major trends, as exemplified by developments in global sustainability governance: the emergence of non-state actors; new mechanisms of transnational cooperation; and increasingly segmented and overlapping layers of authority.

The book, which is the synthesis of a ten-year "Global Governance Project" carried out by thirteen research institutions, first examines new nonstate actors, focusing on international bureaucracies, global corporations, and transnational networks of scientists; then investigates novel mechanisms of global governance, particularly transnational environmental regimes, public-private partnerships, and market-based arrangements; and, finally, looks at fragmentation of authority, both vertically among supranational, international, national, and sub-national layers, and horizontally among different parallel rule-making systems.

❖ ***Climate Governance at the Crossroads: Experimenting with a Global Response after Kyoto.***
Matthew Hoffman. OUP, 2011. Now in paperback

14 ISDRS NEWSLETTER, ISSUE 3, 2012.

Articles for Issue 3, 2012, are welcome. Please access the Newsletter page on the ISDRS website for information: www.isdrs.org

Author Guidelines are also available on the website.

Kia ora, tatou.

Dr Delyse Springett
Retiring Editor – ISDRS Newsletter.