



ISDRC19 CONFERENCE

Programme and Abstracts
1-3 JULY 2013



Spier Estate | Stellenbosch | Cape Town | South Africa



MAKE
THINGS
HAPPEN



NEDBANK

Nedbank: South Africa's green and caring bank

Nedbank is proud to be a sponsor of the 19th Annual ISDRC Conference as research into sustainable development is a critical component to ensuring a successful transition to a more sustainable future.

Nedbank is one of the four largest banking groups in SA measured by assets, with a strong deposit franchise, over six million clients and 28 000 staff. It had a market capitalisation of R95,4bn at 31 December 2012. Old Mutual plc is the majority shareholder, owning 52% of the group. The products and services provided include wholesale and retail banking services, insurance; asset management and wealth management.

Widely regarded as SA's 'green' bank, Nedbank Group is recognised for its sustainability leadership. This is the result of the group's integrated approach that combines the four pillars of environmental, social, economic and cultural sustainability to ensure that it delivers sustainable benefits for all its stakeholders, the environment, and the communities in which it operates.

Significantly, Nedbank is the first financial services organisation in Africa to achieve carbon-neutral status.

nedbank.co.za
nedbankgroup.co.za
nedbankgreen.co.za

This achievement is based on an environmental sustainability journey of more than 20 years, characterised by a number of notable achievements that include:

- The first African financial services signatory to the Equator Principles
- One of only three companies with JSE primary listings to be included on the Dow Jones Sustainability Index
- Emerging Markets Sustainable Bank of the Year for Middle East and Africa in the *Financial Times* Sustainability Awards 2012
- Third-highest-ranked SA company on the Global 1000 Sustainable Performance Leaders Index

'Changing business practices both locally and internationally lead us to believe that the age of accountability has dawned as business starts to face its responsibilities to society and the environment,'
Reuel Khoza, Nedbank Group Chairman.

In considering its role in the future of SA, Nedbank has realised the need to get more involved in protecting the society, which provides the basis for its performance, and that it needs to get involved through doing what it does best and most efficiently, which is lending capital to drive economic activity. Aligned to this it has adopted a board-approved long-term vision that takes a position on SA's attaining good economic, social and environmental outcomes. This is expressed in terms of eight goals relating to job creation, access to energy services, water and sanitation, savings and investment levels, education and health as well as managing our carbon and water risk exposure. Nedbank contributes to these goals through four levers: core business, own operations, corporate social investment and advocacy. The goals are externally referenced, informed by science and by widely accepted societal aspirations as reflected in the SA government's National Development Plan 2030.

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FOREWORD - CHAIR OF ISDRC♣19 – PROF ALAN BRENT



The International Sustainable Development Research Society (ISDRS) aims to promote collaboration and dialogue of a high quality, building bridges between different research communities, and between research and its applications in society. ISDRS also promotes the engagement between communities in developed and developing countries. To this end the 19th annual International Sustainable Development Research Conference (ISDRC♣19) is being held, for the first time, in the global south, in the picturesque Lynedoch valley of the capital of the South African wine lands – Stellenbosch – just outside the Cape Town metropolitan area.

South Africa has experienced a difficult transition, and still does, in the face of the many challenges that are characteristic of a developing society. Here the extreme poor live, ironically, in one of the most carbon-intensive economies; one that is based on a "mineral-energy complex". Thus, one finds the fundamental economic problems of inequality and resource exploitation that remain intact in a democratic space that has made possible countless innovations and changes across multiple other spectrums.

It is then appropriate for ISDRC♣19 to be hosted where these challenges are actively being researched, at the Sustainability Institute, in collaboration with Stellenbosch University, and specifically the postgraduate programme in Sustainable Development and the transdisciplinary PhD programme – 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.

The central focus of ISDRC♣19 is that of **Just Transitions**, with perspectives from both the global north and south, with the central themes of:

- Crisis, complexity, global change and transitions, with a critical analysis of the science of sustainability, academia, ethics and leadership.
- Rethinking development in terms of greening the developmental state, new forms of urbanism in the context of ecology, social development and food security.
- Better Governance, institutions and economic structures, to support sustainable development and design.
- Achieving rapid transitions for sustainable living, decoupling production and consumption from resource limits and ecological constraints, and pioneering innovative, liveable and sustainable contexts.

Mark Swilling and Eve Annecké – in their recent book **Just Transitions** – have stated that: *"there should be little doubt that imagining and implementing more sustainable futures is the greatest challenge that our generation faces. To do this we not only need new ways of thinking, but we need to understand the history of patterns of thinking that fail to appreciate the evolutionary significance of our incontrovertible dependence on other living species and nature in general."*

This underpins the lively debates that will unfold at ISDRC♣19 as we edge closer to realising just transitions for all of mankind, and nature on which we depend.

We welcome you to our place of living and learning, as part of our collective journey towards this realisation.

OVERVIEW – CONFERENCE PROCEEDINGS

The Conference Proceedings consists of two components:

1. This document, in hard copy, with the programme and the abstracts – that were received by 28 May 2013; and
2. Electronic documentation, on the flash disk, comprising of a revision of this document – with additional abstracts received after 28 May 2013 – as well as the full academic papers.

REVIEWING PROCEDURE OF ABSTRACTS AND FULL ACADEMIC PAPERS

The Call for Abstracts required the submission of extended abstracts by early December 2012. The International Organising Committee reviewed the extended abstracts and successful authors were notified by 21 December 2012. Full academic papers were requested by mid-February 2013. These papers were subjected to a double-blind peer review process, which was arranged through the International Scientific Committee. Revised abstracts and full academic papers, following the reviewing process, were required by the end of April 2013, with extensions given until 28 May 2013, for inclusion in the Conference Proceedings. Where the registration of the presenting author only occurred after 28 May, these abstracts are only provided in electronic format, as described above.

COPYRIGHT

The copyright of the full papers vests with the authors and not with the conference proceedings. The ISDRC¹⁹ scientific committee then encourages authors to submit the papers to accredited journals in their respective fields.

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| Mr Pieter van Heyningen | Stellenbosch University |
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CONFERENCE SECRETARIAT

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FACULTY

Faculty of the School of Public Leadership, and specifically from the postgraduate Sustainable Development programme and the transdisciplinary PhD programme – TsamaHUB - of Stellenbosch University, and the Sustainability Institute, are responsible for the academic aspects of ISDRC 19.

SCHOOL OF PUBLIC LEADERSHIP (www.spl.sun.ac.za)

The structured, trans-disciplinary postgraduate programme in Sustainable Development has been jointly designed and developed by the School of Public Leadership (SPL) and the Sustainability Institute. Four streams, or specialisations, are available: Sustainable Development, Sustainable Development Planning, Managing Sustainable Agriculture for Development, and Renewable and Sustainable Energy. The latter is offered in collaboration with the Centre for Renewable and Sustainable Energy Studies (www.crses.sun.ac.za) in the Faculty of Engineering.



The main aim of the programme is to provide participants with an understanding and practical experience of the wide ranging contextual, conceptual and thematic issues involved in the planning, management and practice of sustainable development throughout the world. As the various global social and environmental crises deepen, a new generation is rising up into leadership positions in the public, private and non-profit sectors that are required to possess a broad transdisciplinary understanding of the various dimensions of these crises and related solutions. This integrated Masters and transdisciplinary PhD programme (www.tsama.org.za), aims to equip these people with the knowledge, experience and skills they will need if they are to grow and develop within this new field of career development.

SUSTAINABILITY INSTITUTE (www.sustainabilityinstitute.net)

The Sustainability Institute is an international living and learning centre located outside Stellenbosch. Surrounded by the breath taking beauty of the Cape's towering mountains and rooted in an agricultural community needing to break free from its racial past, the Sustainability Institute provides a space for people to explore an approach to creating a more equitable society that lives in a way that sustains rather than destroys the eco-system within which all society is embedded.



The Sustainability Institute forms part of the wider Lynedoch Eco-Village. This is an emerging ecologically designed, socially-mixed community built around a learning precinct, the heart of which is the Lynedoch pre- and primary school attended by 450 children who come mainly from the families of farmworkers. This emerging community offers a unique African setting where creative work and learning can be inspired by the joys and challenges of sustainability in practice.

Founded in 1999, the Sustainability Institute provides residential accommodation for visiting writers, artists, activists, volunteers and scholars, and a learning space for participants in the Institute's various educational programmes.

ISDRC 19 CHAIR

Alan Brent holds bachelor degrees in engineering (chemical) and philosophy (sustainable development); master degrees in science (environmental engineering), engineering (technology management), and philosophy (sustainable development); and a PhD in engineering management. Since 1995 he has been consulting to a variety of industry and public sectors in South Africa and other developing countries in the fields of environmental engineering and management. His research focus now revolves around sustainable technology management. Currently he is appointed as a professor at Stellenbosch University in the Sustainable Development programme of the School of Public Leadership (SPL) in the Faculty of Economic and Management Sciences, and he is also the associate director of the Centre for Renewable and Sustainable Energy Studies (CRSES), which is based in the Faculty of Engineering.

JUST TRANSITIONS THOUGHT LEADERS AT STELLENBOSCH UNIVERSITY AND THE SUSTAINABILITY INSTITUTE

Mark Swilling and Eve Annecke are the co-authors of *Just Transitions: Explorations of Sustainability in an Unfair World*. (2012. Cape Town: UCT Press & Tokyo: United Nations University Press).

Rooted in the twin values of generosity and restoration, where all life is considered precious, we attempt in this book to consider a just transition, reconciling the sustainable use of natural resources with a commitment to sufficiency – where over-consumers are satisfied with less so that under-consumers can secure enough.

Current economic growth strategies around the world are rapidly depleting natural resources and eco-systems. This book provides an overview of these challenges from a global South perspective. The wider themes address questions such as how developing countries eradicate poverty via economic development, while encountering the consequences of global warming and dwindling supplies of clean water, productive soils, cheap oil, minerals and other resources; how they address widening inequalities, as well as the need to rebuild eco-systems services and natural resources.



A wide range of literature is brought together to rethink development with special reference to the greening of the developmental state, exploring the key role that cities could play in the transition to a more sustainably urbanised world, highlighting the neglect of soils and examining the potential of sustainable agriculture to feed the world.

Case studies from Africa are used to detail the challenges, set in the context of global trends.

It is our own experience of building the first mixed-income ecological village in South Africa that informs our explorations, along with the pioneering and setting up of our master's level degree and transdisciplinary PhD in Sustainable Development. This year the master's degree is 11 years old - based at the Sustainability Institute, in the Lynedoch Eco-Village. We have worked combining practice, academics and activism throughout the transition of our country and the birth of its new democracy – and our work has always had a special focus on just development.

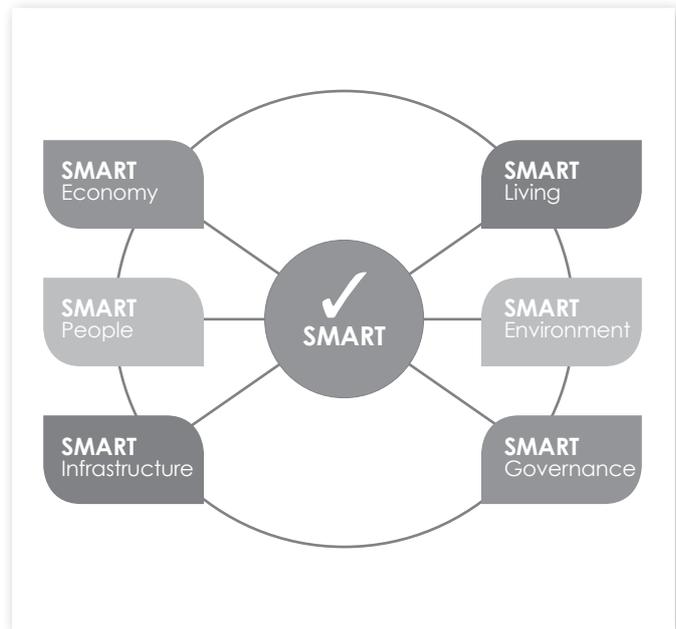


THE STELLENBOSCH INNOVATION DISTRICT (SID)

www.innovationdistricts.org/stellenbosch

The Stellenbosch Innovation District (SID) is a programme aimed at enabling and engaging local and international innovation resources to build capacity for transitioning Stellenbosch into a SMART and sustainable town.

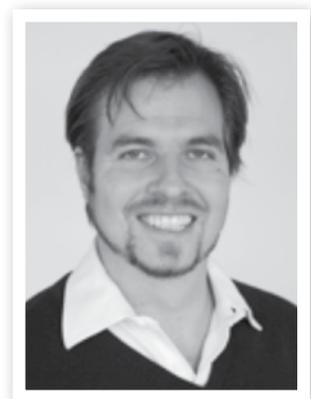
This programme essentially seeks to provide a system and platform to turn the town's local challenges into opportunities for urban transition towards sustainability. The various challenges are categorized and presented as potential projects that require partnerships and coalitions to solve. These may be in the form of innovative new and sustainable technologies, or a specialized mix of talents and resources to solve the more complex social problems. The innovation itself may be found in the process of marrying the public and private sectors into working together on sustainability challenges, for example issues in waste, mobility, communications, housing and so forth.



Additionally, the SID provides an excellent location for talented individuals or companies to grow their businesses through innovation within the Stellenbosch eco-system. The success factor for ensuring progress towards a vision for SID as a SMART and sustainable town will be a continuous stimulation and co-ordination of challenges to be solved by researchers, entrepreneurs, businesses, society and government, in synchronicity. The SID provides the space and online platform to do just that – as a living example of a just urban transitions project. For this reason it was regarded as apt to launch the project at ISDRC♣19 as a side event.

ISDRC♣19 CHAIR DEPUTY CHAIR AND SID PROGRAMME MANAGER

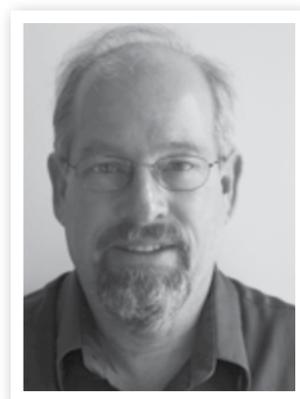
Pieter van Heyningen is working towards a PhD in Innovation Systems for Transitions, with completion by the end of the 2014 academic year. He is one of the first transdisciplinary PhD students of the TsamaHUB, and spent one year at Karl Franzens University in Graz, Austria, as part of his research. Specifically, he conducted an additional case study in collaboration with the Institute for Systems Science and Sustainability (ISIS) on the growth of the local clean-tech cluster in Styria province of Austria. The SID is a product of his PhD work, through a local, comparative case study of Technopark, based in Stellenbosch, and the institutional reform that is required to ensure its future success. This evolved into a whole town initiative – as opposed to only one science park. He has also completed a master's programme at Malardalen University, Sweden, on Ecological Economics whilst working for Green Peace. Before this he spent several years in Taiwan, learning Chinese and teaching there. He also has an Honours degree in Philosophy, and a Bachelor degree in Politics, Philosophy and Economics from Stellenbosch University. He plans to continue his work as programme manager of the SID, and to focus his research on this transition of Stellenbosch town.



THE GLOBAL RESEARCH FORUM ON SUSTAINABLE CONSUMPTION AND PRODUCTION

www.grfscp.wordpress.com

GRF-SPaC was created by and for the global community of researchers and practitioners engaged in research on the worldwide transition to sustainable production and consumption systems. GRF-SPaC strives to develop and strengthen methods of fundamental and applied research to achieve a deeper understanding of the possibilities and barriers to systemic change. *Its ultimate goal is to enhance development and adoption of production and consumption policies, practices and systems that meet basic needs – especially of the poor and vulnerable – and provide prosperity, while conserving natural resources and protecting the environment* (2013 GRF-SPaC Vision Statement).



Prof Philip Vergragt will be driving a roundtable to discuss the following questions:

- How to imagine and facilitate a transition to sustainable production and consumption in the (South) African context?
- What are the roles of stakeholders: business, government, civil society, faith based groups, and research?
- How to stimulate and enhance research on SPaC in (South) Africa? How to enhance the research-practice interface?
- What is the scope for a regional hub of GRF-SPaC? What is the added value for researchers and others? Could the ARCP and/or SID possibly take up the coordination?

GUEST SPEAKER FROM THE NATIONAL CLEANER PRODUCTION CENTRE (NCPC)

Ndivhuho Raphulu, Director: NCPC-SA

Ndivhuho Raphulu heads up the National Cleaner Production Centre of South Africa (NCPC-SA), the resource efficiency and cleaner production programme of the Department of Trade and Industry (the dti), hosted by the CSIR, with offices in Pretoria, Cape Town and Durban. He oversees the NCPC-SA's efforts to promote the implementation of Resource Efficient and Cleaner Production (RECP) methodologies to assist industry to lower costs through reduced energy, water and materials usage, and waste management.



Ndivhuho holds degrees in Environmental Science, Environmental Management and Developmental Studies. He plays a leading role in various national forums as well as on the continent and internationally, inter alia as President of the African Roundtable on Sustainable Consumption and Production (ARSCP), and Chairman of the EU and African Union Partnership on Sustainable Consumption and Production. He also co-chairs the Steering Committee of the African Regional Eco-labelling Project, and serves on the Executive Committee of RECPnet, the worldwide UNIDO and UNEP resource efficiency and cleaner production forum.

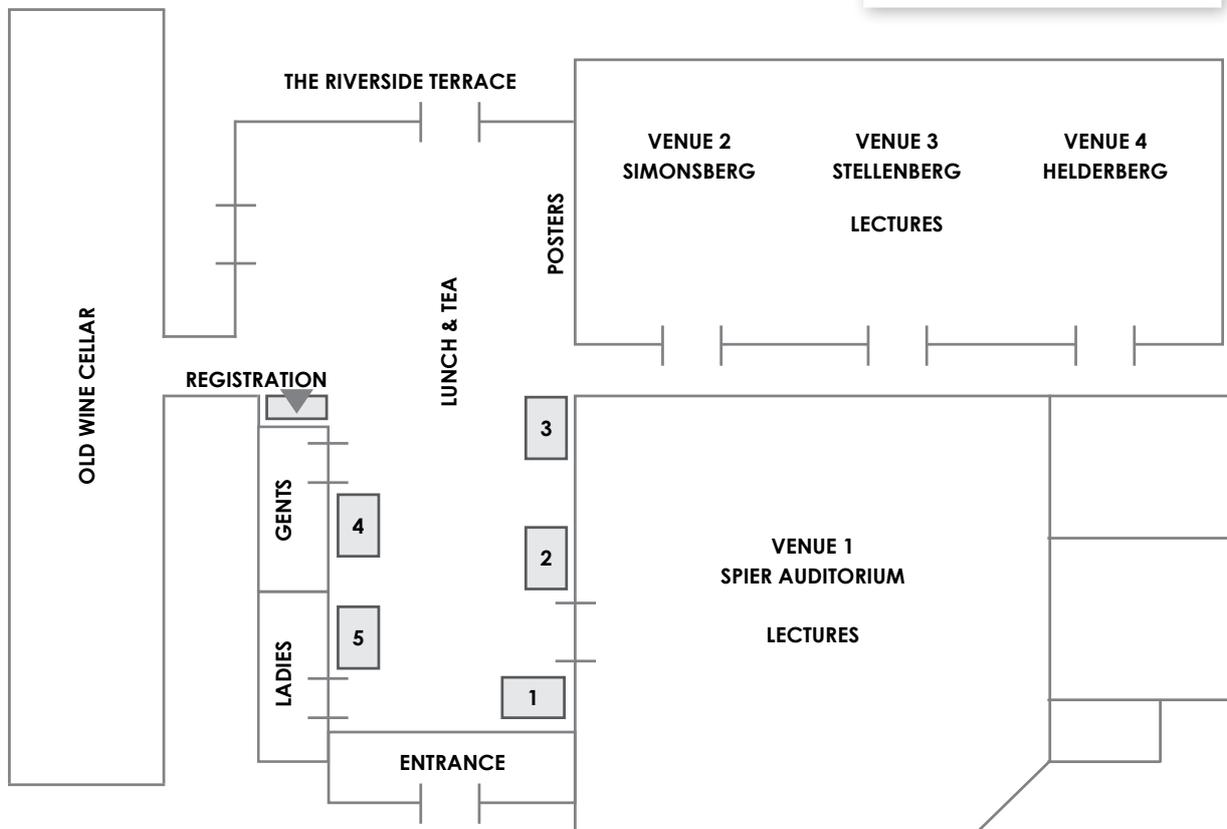
He is non-executive director of various social and sporting organisations as well as founder and member of the board of trustees of the Proclaiming Life church.

CONFERENCE VENUE

ISDRC 2019 is held on the Spier wine estate. Since the political transformation of the country in 1994, sustainability has been core to Spier's approach to business. It began with a sense of custodianship of a cultural heritage - by restoring the historic buildings on Spier - and this ethos soon extended to the environment and communities around the estate. It is now captured in the values of Spier, namely: Confront, Protect, Aspire, Unite, Pride – the Spier Way: www.spier.co.za/spier_sustainability



FLOOR PLAN



STAND ALLOCATIONS

- | | | |
|-----------------------------|---|-------------|
| 1. Preview area | 2. Renewable & Sustainable Energy Studies | 3. Kwazinto |
| 4. Sustainability Institute | 5. Nedbank | |

PLEASE NOTE: ALL STANDS 3M X 2M

PROGRAMME OVERVIEW

SUNDAY – 30 JUNE 2013: WELCOME RECEPTION AT SPIER

| TIME SLOTS | MONDAY – 1 JULY 2013 | TUESDAY – 2 JULY 2013 | WEDNESDAY – 3 JULY 2013 |
|---------------|--|--|--|
| 9:00 – 10:30 | Opening Vice-Rector Western Cape Government National Government UNEP | Plenary Prof Edgar Pieterse Prof Shobhana Madhavan Dr Arne Geschke | Session 6 Sub-theme C5: Venue 1 Sub-theme C6: Venue 2 Sub-theme D7: Venue 3 Sub-theme D8: Venue 4 |
| 10:30 – 11:00 | COFFEE BREAK | COFFEE BREAK | COFFEE BREAK |
| 11:00 – 12:30 | Opening Plenary Prof Walter Vermeulen Prof Frank Geels Prof Gerald Steiner | Session 3 Sub-theme A1: Venue 2 Sub-theme B3: Venue 1 Sub-theme C5: Venue 3 Sub-theme D8: Venue 4 | Closing Plenary Prof Gunter Pauli Prof Alan Brent |
| 12:30 – 13:30 | LUNCH | LUNCH | LUNCH SNACK |
| 13:30 – 15:00 | Session 1 Sub-theme A1: Venue 2 Sub-theme B3: Venue 4 Sub-theme C5: Venue 3 Sub-theme D8: Venue 1 | Session 4 Sub-theme B4: Venue 1 Sub-theme C5: Venue 3 Sub-theme C6: Venue 2 Sub-theme D8: Venue 4 | OPTIONAL TOURS |
| 15:00 – 15:30 | TEA BREAK | TEA BREAK | |
| 15:30 – 17:00 | Session 2 SID Conference: Venue 1 Sub-theme A1: Venue 2 Sub-theme A2: Venue 3 Sub-theme D7: Venue 4 | Session 5 SCP Roundtable: Venue 4 Sub-theme A1: Venue 2 Sub-theme B3: Venue 1 Sub-theme C5: Venue 3 | |
| 17:00 – 18:00 | SID EVENT | INFORMAL NETWORKING | |
| 18:00 Onwards | Poster Session/Cocktail Function | Dinner Function (Ends 22:00) | |



DETAILED PROGRAMME

KEYNOTES' BIOGRAPHIC PROFILES AND ABSTRACTS – PAGE 16

- Note:**
- Titles marked with (*) indicate full papers on the flash disk.
 - Papers are in order of track titles and thus grouped according to relevance.
 - Track chairs (in the second column) respond to the speakers in their sessions, and assist the sub-theme managers in managing the respective sessions.
 - The two columns on the right reflect the page numbers in this book of the abstract (first), and of the full paper on the flash disk (second).

THEME A. CRISIS, COMPLEXITY, GLOBAL CHANGE & TRANSITIONS WITH CRITICAL ANALYSIS OF SCIENCE OF SUSTAINABILITY, ACADEMIA, ETHICS AND LEADERSHIP

Sub-theme A1. Academia, Education & Sustainability Science

Sub-theme Manager: Walter Vermeulen

| SESSION 1 (Venue 2) – Monday 1 July 13h30 to 15h00 | | | PAGE | |
|---|---------------------|--|------|-------|
| | | | Book | Flash |
| 1.1 Academia, Education and Learning for Sustainability | Margien Bootsma | Landman, A* . The application of Global Environmental Change (GEC) research findings in Southern African policies and programmes and the association of its application with long-term resilience planning. | 29 | 1 |
| | Walter Vermeulen | Lozano, R* . Developing a more holistic university sustainability report: Experiences from the University of Leeds. | 30 | 26 |
| | | Ma, K* . Environmental education in Hong Kong: The role of field-based environmental education programmes: A case study. | 31 | 47 |
| | | Tumilba, V* . Review and assessment of academic activities, student competencies, research themes and practice of sustainability principles in higher education program: A case of the Graduate Programme in Sustainability Science of the University of Tokyo. | 39 | 65 |
| | | Nshemereirwe, C* . Socio-economic status and access to higher education in Uganda. | 34 | 79 |
| SESSION 2 (Venue 2) – Monday 1 July 15h30 to 17h00 | | | | |
| 1.2 Sustainability Science, Modeling and Complexity | Camaren Peter | Musango, J* . Tutorial on the application of systems approach to technology sustainability assessment (SATSA): The case of biodiesel production development. | 33 | 94 |
| | Josephine Musango | Atkinson-Palombo, C. Theorizing land grabs: What kind of development. | 44 | |
| | | Baur, I. Modeling and assessing scenarios of common property pastures management. | 45 | |
| | | Spangenberg, J. How market influences undermine traditional modes of regulation: Observations from Kenya, Mongolia, Vietnam and the Philippines. | 56 | |
| SESSION 3 (Venue 2) – Tuesday 2 July 11h00 to 12h30 | | | | |
| 1.2 Sustainability Science, Modeling and Complexity | Joachim Spangenberg | West, S* . Learning, power and participation in adaptive co-management: Integrating the adaptive dance and the dance of agency. | 42 | 99 |
| | Michelle Audouin | Dassen, T. Integrated sustainability assessment: Modernising the design of the assessment of the human environment. | 46 | |
| | | Vermeulen, W. Sustainable Development: In search for a comprehensive measurement tool. | 58 | |
| | | Kharrazi, A. Exploring Potentials of a Data-Intensive Approach for Sustainability Quantification. | 50 | |
| SESSION 5 (Venue 2) – Tuesday 2 July 15h30 to 17h00 | | | | |
| 1.1 Academia, Education and Learning for Sustainability | Margien Bootsma | Swart, R* . The state of sustainability education in MBA curricula in Africa. | 38 | 114 |
| | Sandra Caeiro | Werr, F* (presented by Köttner, M). S(p)eedkits – Rapid deployable kits as seeds for self-recovery. | 42 | 123 |
| | | Disterheft, A (presented by Azeitairo, U). Assessing participation in sustainability initiatives at higher education institutions: Critical success factors. | 47 | |
| | | Robertson, D. Global sustainability, graduate education and professional development projects. | 55 | |
| | | Vermeulen, W. Sustainable Development: Views on prerequisites for academic teaching based on a worldwide survey. | 58 | |



Sub-theme A2. Justice, Ethics, Deep Ecology & Spirituality

Sub-theme Manager: Yamini Narayanan

| SESSION 2 (Venue 3) – Monday 1 July 15h30 to 17h00 | | | PAGE | |
|--|-----------------|--|------|-------|
| | | | Book | Flash |
| 2.1 Justice, Ethics, Deep Ecology and Spirituality | Cynthia Peabody | Skjerven, A.* . "The White Man's Burden" and the creation of sustainability in the non-Western world: The case of Design without Borders. | 36 | 137 |
| | | Freeth, R.* . Just facilitation: Talking about race privilege... | 25 | 149 |
| | | Mitchell, C. Discussion paper: Moving beyond contemporary spirituality and duality, non-duality and sustainability. | 53 | |
| | | Narayanan, Y. Gender religious heritage and planning in Jaipur. | 53 | |
| | | Nyambati, A.R. Women as drivers of Economic Development in Sub-Saharan Africa. | 53 | |

THEME B. RETHINKING DEVELOPMENT IN TERMS OF GREENING THE DEVELOPMENTAL STATE, NEW FORMS OF URBANISM IN THE CONTEXT OF ECOLOGY, SOCIAL DEVELOPMENT AND FOOD SECURITY

Sub-theme B3. Social Dynamics, Behaviour, Psychology & Sustainability

Sub-theme Manager: Thandi van Heyningen

| SESSION 1 (Venue 4) – Monday 1 July 13h30 to 15h00 | | | | |
|---|---|--|----|-----|
| 3.1 Population Dynamics | Scott Moreland Chukwuedozie K. Ajaero | Barker, K.* . Diffusing the population bomb in Africa: Access is only part of the equation. | 22 | 163 |
| | | Fleming, A.* . Activating social housing as a catalyst for sustainable urbanisation. | 25 | 183 |
| | | Hosgelen, M.* . Population growth, poverty and environmental sustainability in Timor-Leste: Opportunities and challenges for sustainable development. | 27 | 199 |
| | | Jongo, J.S.* . Urbanizing landscapes: (Alter)native landscape strategy in (re)habitating the urban flood plain landscapes in Dar Es Salaam, Tanzania. | 27 | 220 |
| | | Shah, N.G.* . Enabling decision making of a development practitioner based on empirical evidences: A case study of nutrition delivery in malnourished kids. | 36 | 238 |
| SESSION 3 (Venue 1) – Tuesday 2 July 11h00 to 12h30 | | | | |
| 3.2 Social Sustainability, Health, Environment and Psychology | Thandi van Heyningen Gisela Prasad Jacqueline Borel-Saladin | Goldberg, K.* . Taming dragons: Facing socio-ecological issues head-on in a way that does not debilitate us in the process. | 26 | 244 |
| | | Mall, S* (Presented by Van Heyningen, T) . Human capabilities, mental health and housing. | 31 | 256 |
| | | Westoby, P.* . Re-thinking sustainable community economic development practice within Vanuatu. | 42 | 267 |
| | | Ng'ambi, S.* . Farmer input support programme and impact of HIV and AIDS on maize production. | 33 | 281 |
| | | Tolonen, A.* . Natural resources and women's employment. | 39 | 287 |
| SESSION 5 (Venue 1) – Tuesday 2 July 15h30 to 17h00 | | | | |
| 3.2 Social Sustainability, Health, Environment and Psychology | Thandi van Heyningen Gisela Prasad Jacqueline Borel-Saladin | Tsegaye, W.* . Analyzing the welfare effect of controlling indoor air pollution. | 39 | 335 |
| | | Swilling, S* (presented by Tavener-Smith, L) . Rethinking incremental urbanism: Co-production of incremental informal settlement upgrading strategies. | 38 | 353 |
| | | Viégas, O. "Non-material" indicators for local and regional sustainability assessment: The Brazilian case of Maceis and Alagoas. | 58 | |
| | | Akiyama, T. Rethinking development: An integral approach to sustainability assessment of pastoral livelihood system in Mongolia. | 44 | |
| | | Li, J. Pricing irrigation water: A study of social acceptability in China based on a household survey. | 51 | |

DETAILED PROGRAMME (CONT.)

Sub-theme B4. Conservation, Preservation, Ecology & Restoration

Sub-theme Manager: Anne Wallis

| SESSION 4 (Venue 1) – Tuesday 2 July 13h30 to 15h00 | | | PAGE | |
|--|--------------------|---|------|-------|
| | | | Book | Flash |
| 4.1 Conservation, Preservation Ecology and Restoration | Kristi Maciejewski | Weber de Moraes, G* . Marine protected areas and the challenge of overcoming barriers rooted in the past. | 41 | 368 |
| | Anne Wallis | Zafra Calvo, N* . Developing a framework to define cost-effective conservation strategies in human-dominated landscapes. | 43 | 380 |
| | | Olayide, O* . Moving from survival to sustainability: Case of the Wechiau Community Hippo Sanctuary in the upper west region of Ghana, West Africa. | 34 | 394 |
| | | Kobayashi, M. Breaking a chain of deforestation, ecosystem degradation and impoverishment in Madagascar. | 50 | |
| | | Maciejewski, K. Converging social-ecological systems in the sustainable management of protected areas: Reconciling elephants numbers and ecotourism demands. | 51 | |

THEME C. BETTER GOVERNANCE, INSTITUTIONS AND ECONOMIC STRUCTURES TO SUPPORT SUSTAINABLE DEVELOPMENT & DESIGN

Sub-theme C5. Economics, Business, Design & Innovation for Sustainability

Sub-theme Manager: Fernando Diaz Lopez & Pauline Deutz

| SESSION 1 (Venue 3) – Monday 1 July 13h30 to 15h00 | | | | |
|---|---------------------|---|----|-----|
| 5.1 Innovation, Value Chains and Sustainable Production and Consumption | Harro Von Blottnitz | Borrella, I* . Boosting the development of impoverished communities through sustainable supply chains. | 23 | 407 |
| | Rupert Baumgartner | Lambooy, T* . Social entrepreneurship as a new economic structure that supports sustainable development: Does the law provide for a special legal structure to support innovative and sustainable non-profit entrepreneurial activities? | 28 | 427 |
| | | Rosenberg, L* (presented by Brent, AC) . Innovators in disrupted cities: An exploration of the creative class theory in urban(ising) Africa. | 35 | 454 |
| | | Lozano, R* (presented by Carpenter, A) . Critical reflections on the chemical leasing concept. | 31 | 477 |
| | | Piaget, S* (presented by Von Blottnitz, H) . Allocation of South Africa's greenhouse gas emission to different income groups and its evolution under different economic growth and income distribution scenarios. | 35 | 498 |
| SESSION 3 (Venue 3) – Tuesday 2 July 11h00 to 12h30 | | | | |
| 5.1 Innovation, Value Chains and Sustainable Production and Consumption | Manoj Joshi | Black, I* . Understanding the gap between sustainable intentions and sustainable behaviour: The role of identity conflicts. | 22 | 515 |
| | Shobhana Madhavan | Emas, R* . Driving the purchase of alternative fuel vehicles in the United States. | 24 | 524 |
| | | Soler, C* . The dialectic of stress in affluent consumption of novelty. | 37 | 537 |
| | | Jansson, J. Climate change and consumption: Analyzing perceptions of morally loaded behaviours among young consumers. | 49 | |
| | Alice Chan | Thomas, C. How retail organisations can succeed in a resource-limited and carbon constrained world. A case study in the airport retail industry. | 57 | |
| | | Abraham, Y* (POSTER) Technology transfer of hand pumps in rural communities of Swaziland: Towards sustainable project lifecycle management. | 22 | 549 |
| SESSION 4 (Venue 3) – Tuesday 2 July 13h30 to 15h00 | | | | |
| 5.1 Innovation, Value Chains and Sustainable Production and Consumption | Fernando Diaz Lopez | Kua, H* . Analyzing lifecycle emissions and energy consumption of a commercial building using extended system boundary perspective. | 28 | 561 |
| | Ralph Hamann | Gurfinkel Marques de Godoy, S* . New institutional economics and Clean Development Mechanism: Do transaction costs affect efficiency and implementation of GHG emission reduction projects? | 27 | 584 |
| | Johan Jansson | Steinhilper, R. Remanufacturing: Technology trends, business opportunities and ecological benefits: A global overview. | 56 | |
| | Don Lyons | Lyons, D. The evolving role of industrial wastes and by-products in contemporary production processes: A case study of Pennsylvania. | 51 | |
| | | Vergragt, P. Sustainable production, consumption and livelihoods - The Global Research Forum on SPC as a case of institutionalizing transdisciplinary research | 58 | |



| SESSION 5 (Venue 3) – Tuesday 2 July 15h30 to 17h00 | | | | PAGE | |
|---|----------------|---|----|------|-------|
| | | | | Book | Flash |
| 5.2 Corporate Sustainability Strategies and Measurement | Tomas Ramos | Barrass, R. Sustainable Development: The quest for consensus. | 45 | | |
| | | Fet, A. Pushing CSR for system innovation. | 48 | | |
| | Rodrigo Lozano | Mitchell, C. Beyond traditional Corporate Social and Environmental Reporting: A proposed supplementary report to convey the full extent of environmental impact. | 52 | | |
| | | Ramos, T. A framework for sustainability performance evaluation of the public sector. | 54 | | |
| SESSION 6 (Venue 1) – Wednesday 3 July 09h00 to 10h30 | | | | | |
| 5.2 Corporate Sustainability Strategies and Measurement | Ralph Hamann | Fritz, M*. Sustainability assessment in supply chains: A literature review of sustainability aspects and the development of indicators. | 26 | 596 | |
| | Johan Jansson | Engert, S*. Corporate sustainability strategies in the automotive industry: A literature review and research options. | 24 | 620 | |
| | | Lancaster, C*. Findings and recommendations of a study on sustainable development in an agricultural South African-European supply chain. | 29 | 633 | |
| | | Law, M*. Environmental education and training for greening people and corporate cultures. | 29 | 644 | |
| | | Lozano, R*. Sustainability inter-linkages in reporting vindicated: A study of European companies. | 30 | 662 | |
| | | | | | |

Sub-theme C6. Globalization, Policy, Institutions & Governance

Sub-theme Manager: Karl Bonnedahl

| SESSION 4 (Venue 2) – Tuesday 2 July 13h30 to 15h00 | | | | | |
|---|----------------|--|----|-----|--|
| 6.1 Globalization, Policy, Institutions and Governance for Sustainability | Pauline Deutz | Cichos, K*. Good local government for better governance and sustainable human development. | 23 | 677 | |
| | Gerald Steiner | Verbitsky, J*. Just Transitions and a contested space: Antarctica and the Global South. | 40 | 691 | |
| | | Laws, N*. Germany's sustainability politics: The integration into the political process on the level of the federal state. | 30 | 705 | |
| | | O'Toole, K. Participatory logic governance and sustainable development. | 54 | | |
| | | Keitumetse, S.O. Cultural resources as sustainability enablers: Towards a Community Based Cultural Heritage Resources Management (COBACHREM) model. | 50 | | |
| | | | | | |
| SESSION 6 (Venue 2) – Wednesday 3 July 09h00 to 10h30 | | | | | |
| 6.1 Globalization, Policy, Institutions and Governance for Sustainability | Jane Verbitsky | Mauerhofer, V*. Distributional dimensions of payment for ecosystem services (PES): General Issues and critical aspects. | 32 | 719 | |
| | Karl Bonnedahl | Mihashi, R*. Human capital, institutional quality, natural capital and trade openness for human development. | 33 | 732 | |
| | | Steiner, G*. Large-scale collaborative problem solving using the example of phosphorus as a global case (GlobalTraPs): A transdisciplinary approach. | 37 | 762 | |
| | | Stål, H. Translating GHG reduction: Case studies from the Swedish agricultural sector. | 56 | | |
| | | Diaz de Marino, E*. (POSTER) Diagnosis for the construction of a community co-management system for adaptation to climate change in the Pao River basin, Venezuela. | 24 | 770 | |
| | | | | | |

DETAILED PROGRAMME (CONT.)

THEME D. ACHIEVING RAPID TRANSITIONS FOR SUSTAINABLE LIVING, DECOUPLING PRODUCTION AND CONSUMPTION FROM RESOURCE LIMITS, ECOLOGICAL CONSTRAINTS AND PIONEERING INNOVATIVE, LIVEABLE AND SUSTAINABLE CONTEXTS

Sub-theme D7. Resources, Land Use & Decoupling

Sub-theme Manager: Raymond Auerbach

| SESSION 2 (Venue 4) – Monday 1 July 15h30 to 17h00 | | | PAGE | |
|---|------------------|--|----------|-------|
| | | | Book | Flash |
| 7.1 Resources, Land Use and Decoupling | Jeremy Wakeford | Nordman, E* . Energy transitions in Kenya's tea sector. | 33 | 781 |
| | | Ferrari de Morais, F* . Implications of the new Brazilian Forest Code. | 25 | 800 |
| | Raymond Auerbach | Mamonova, N* . Large-scale land acquisitions in Russia: A study of land conflicts and rural mobilization. | 32 | 805 |
| | | Olivier, D* . What have we learned from 30 years of urban agriculture research? | 34 | 819 |
| | Peter de Ruiter | Hull, B. Transition in ecological modernization: A case of Brazil China soy trade. Auerbach, R. (POSTER) Nutrient cycling with urine and compost. | 49 45 | |
| SESSION 6 (Venue 3) – Wednesday 3 July 09h00 to 10h30 | | | | |
| 7.1 Resources, Land Use and Decoupling | Jeremy Wakeford | Wakeford, J* . Peak Oil and the transition to a sustainable economy in South Africa. | 40 | 832 |
| | | Shumba, D* . Understanding the gender dimensions of environmental change: A gateway to achieving sustainability. A Zimbabwe based study. | 36 | 848 |
| | Raymond Auerbach | Sousa, MJF* (presented by Joanaz de Melo, J) . Multi-regional environmentally extended input-output analysis: A case study of Portuguese agriculture. | 37 | 866 |
| | | Auerbach, R. Transforming African agriculture: Organics and AGRA. | 44 | |
| | | Black, I. Community based watershed management in rural Ethiopia: A case of rapid transition on a troublesome path. | 45 | |

Sub-theme D8. Transitions to Sustainability

Sub-theme Manager: Lars Coenen

| SESSION 1 (Venue 1) – Monday 1 July 13h30 to 15h00 | | | | |
|--|----------------------|--|----|-----|
| 8.1 Innovation Systems, Institutions and Capacity Building for Transitions | Leanne Seeliger | Grobbelaar, S* . Towards higher impact for universities in a regional system of innovation: The case of the University of Cape Town. | 26 | 899 |
| | | Tan, AR* (presented by Diaz Lopez, F) . Can European sustainability and innovation policies accelerate the uptake of Product-Service Systems? | 38 | 902 |
| | Shobhana Madhavan | Van Heyningen, P. Building capacity for sustainability transitions. | 57 | |
| | | Turner, B. In pursuit of rapid transitions. Are transition pathways the weakest link? | 57 | |
| | | Coenen, L. Scaling-up local niche experiments for transitions to low carbon transport systems. | 46 | |
| SESSION 3 (Venue 4) – Tuesday 2 July 11h00 to 12h30 | | | | |
| 8.1 Innovation Systems, Institutions and Capacity Building for Transitions | Pieter van Heyningen | Seeliger, L* . Averting a downward spiral: Building resilience in informal urban settlements. | 35 | 928 |
| | | Deutz, P. Change as routine: Lessons for capacity building for sustainability transitions from the waste sector in England. | 47 | |
| | Lars Coenen | Meylan, M. Identifying stakeholder views on sustainable transitions of municipal solid waste management system. | 52 | |
| | | Pasquini, L. The role of social networks on climate governance in municipalities. | 54 | |
| | | Raphaely, T. Flexitarianism as social innovation and individual empowerment for sustainability. | 55 | |
| SESSION 4 (Venue 4) – Tuesday 2 July 13h30 to 15h00 | | | | |
| 8.2 Transitions to Urban Sustainability | Nuno Martins | Laidlaw, J* . Towards urban food sovereignty: The trials and tribulations of community-based aquaponics enterprises in Milwaukee and Melbourne. | 28 | 941 |
| | | Welter, K* . Sustainable restaurants: A Cape Town study. | 41 | 956 |
| | Peter Dobers | Keitsch, M. Sustainable housing - Two systems perspectives. | 49 | |
| | | Borel-Saladin, J. Identifying simplified indicators of sustainable resilient cities. | 46 | |
| | | Veldpaus, L* (presented by Swart, J) . Amsterdam as World Heritage city: A sustainable historic urban landscape. | 40 | 974 |



| SESSION 6 (Venue 4) – Wednesday 3 July 09h00 to 10h30 | | | PAGE | |
|--|-----------------|--|-------------|--------------|
| | | | Book | Flash |
| 8.2 Transitions to Urban Sustainability | Martina Keitsch | Wallis, A* . Urban consolidation for sustainable land use In Warrnambool, Australia. | 41 | 985 |
| | Peter Dobers | Martins, AN . Vernacular and social innovation architecture supporting green architecture – updating old lessons to upgrade a new responsible design: The case of the humanitarian association Building4Humanity. | 52 | |
| | | Guedes, MC (presented by Martins, AN) . Bioclimatic architecture in hot regions: The SURE-Africa project. | 48 | |
| | | Roux, S . Sustainable urban energy transitions and regulation: The City of Cape Town as a case study. | 55 | |
| | | Gotz, G . Governing resource flows in the Gauteng City-Region. | 48 | |

SPECIAL SESSIONS AND SIDE EVENTS

1st Stellenbosch Innovation District (SID) Conference 2013 SESSION 2 (Venue 1)

| | |
|---------------|--|
| 15:30 – 16:00 | TED-X Type Talk on Innovation (Guest speaker – Prof. Gerald Steiner, Harvard University) Respondents: Local academics / Government persons / Business persons |
| 16:00 – 16:30 | Facilitated session on Hot Topic Challenges for Discussions together with Business, Industry, Government and Academia Main Themes: Competitiveness / Innovation / Sustainability / Transitions in your government, university, business, city, town or farm |
| 16:30 – 16:55 | Summary report back of Hot Topics and key challenges for facilitated panel debate with experts and audience |

17:00 – 17:05 REFRESHER BREAK

Launch of the SID System (SID Event Venue 1)

| | |
|---------------|---|
| 17:05 – 17:10 | Welcome & Official Launch of the 1st SID Conference (Invited Dignitary) |
| 17:10 – 17:30 | The Stellenbosch Innovation District (SID Programme Manager – Pieter van Heyningen) |
| 17:30 – 17:55 | Announcement and Awards to Top Innovations, Solutions or Enterprises |
| 17:55 – 18:00 | Closing remarks & thanks (Invited Dignitary) |
| 18:00 Onwards | ISDRC19/SID networking function / poster sessions / book launch |

Roundtable discussion on the Global Research Forum on Sustainable Consumption and Production (GRF-SPaC) SESSION 5 (Venue 4)

| | |
|---------------|---|
| 15:30 – 15:50 | Welcome & quick introduction to the GRF-SCP (Prof Philip Vergragt) |
| 15:50 – 16:05 | (South) African (Academic & Industry) Perspectives on Sustainable Consumption and Production (National Centre for Cleaner Production) |
| 16:05 – 16:30 | Global topical discussions on Sustainable Consumption & Production (Facilitated) |
| 16:30 – 17:00 | Discussion: Setting up a GRF-SPaC Hub within South Africa |

KEYNOTES' BIOGRAPHIC PROFILES AND ABSTRACTS

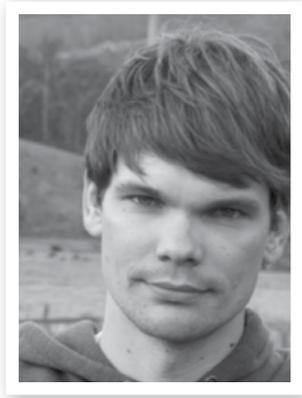


PROF FRANK GEELS

Frank Geels is professor of System Innovation and Sustainability at the Sustainable Consumption Institute, at the University of Manchester. He is chairman of the international Sustainability Transitions Research Network (www.transitionsnetwork.org), and one of the world-leading scholars on socio-technical transitions, which entail co-evolutionary interactions between technology, consumer practices, firms, markets, policy, cultural meaning, and infrastructure. Shifts to new transport/energy/agri-food systems are necessary to achieve large sustainability gains in the coming decades; for example, factor-10 reductions in environmental burden. Prof Geels has published six books on socio-technical transitions and more than forty peer-reviewed articles. He is particularly well-known for this conceptual and empirical work on the Multi-Level Perspective (MLP) and Strategic Niche Management (SNM).

Sustainable development through socio-technical transitions and system innovation

In a recent high-level policy paper ('Sustainable Development and Planetary Boundaries'), Johan Rockström and Jeffrey Sachs (2013) distinguish three planetary scenarios: 1) kicking away the ladder (the developing world is denied the 'right to develop'), 2) contract and converge (rich countries contract their economies to allow growth in developing countries), and 3) business-as-usual (rich countries refuse to change, leading to resource wars and conflict). The first and third scenarios would enhance injustice and inequalities in the world, whereas the second scenario is deemed politically infeasible. They also propose a fourth scenario (Sustainable Development Trajectory), which consists of six transitions: a) The Energy Transformation (including transition), b) The Food (Security) Transformation, c) Urban Sustainability Transformation (waste, water, energy, housing, transport systems), d) Population Transformation (fertility), e) Biodiversity Management Transformation, and f) Private and Public Governance Transformation. The Rockström/Sachs paper remains rather fuzzy, however, about the dynamics and specific challenges of this Sustainable Development Trajectory. This keynote therefore aims to unpack the dynamics and governance challenges of socio-technical transitions and system innovation. The keynote builds on ten years of research in the Sustainability Transitions Research Network (an international network of 600+ researchers), presents the Multi-Level Perspective on transitions (in which green niche-innovations struggle against existing regimes that are stabilized by powerful incumbent interests), and highlights the core struggles on economic, political, cultural and technical dimensions. Examples are drawn from the transport, energy and agro-food domains. The keynote aims to discuss the state-of-the-art of this new debate on socio-technical transitions, which holds the promise of grounding the Sustainable Development Trajectory proposed by Rockström/Sachs.



DR ARNE GESCHKE

Arne Geschke is a post-doctoral researcher at the Integrated Sustainability Analysis (ISA) group at the University of Sydney. Born in Hamburg, Germany, in 1980, he grew up in Hamburg and studied Industrial Mathematics at the University of Hamburg, the University of Technology in Hamburg and at the University of Bath in the UK. Following his degree, he worked for BMW and General Motors developing models for mathematical engine simulations. He moved to Australia and joined the ISA group in 2008. From July 2009 until July 2012 he was a PhD student supervised by Prof Manfred Lenzen and was part of the team that developed the currently largest global socio-economic accounting system. He was appointed a post-doctoral researcher at ISA in August 2012. His current research includes the construction of a high-detail socio-economic reporting system for Australia on a sub-state level. This research project involves eight Australian universities and two other organisations. Arne Geschke is supervising and coordinating the project.

Direct vs. Embodied Energy – the need for urban lifestyle transition

Generally the cities are the places where money is made, and which become the home of the wealthy, while the countryside is the place where resources are taken. Urban centres thus become sinks of rural resources and energy. In these affluent, urbanized societies, sustainable development can only be achieved if technology transitions are complemented by far-reaching lifestyle transitions. It is possible that such lifestyle transitions are doomed to failure. Cities seem to have escaped, for the time being at least, the physical dependence on their immediate hinterland, which may have led to a feeling of invincibility where people's aspirations have transgressed natural limits and are now driven only by human ingenuity. To consider transforming the escalator of aspirations, from one that is forever outrunning unhappiness, to one that allows fulfilment, begs an understanding as to what drives a modern city resident in a time-poor and globally connected world. It is understandable why policy has more readily embraced supporting technological change rather than promoting lifestyle change. After all, what can be achieved by new technology is easy to sell to the consumer; no one has to give up their habits, and governments do not need to risk losing votes, because they do not need to initiate a potentially painful and difficult public discourse, let alone intervention into consumers' choices. Decades of unabated and unrestrained economic growth, nurtured by advertising affluent, material lifestyles to an ever-growing portion of the world population makes one wonder whether some sort of lifestyle change is indeed unavoidable. One would hope for such changes to be brought about by conscious and collective decisions rather than by involuntary and unilateral force, or perhaps worse, by natural and socio-economic circumstances.

KEYNOTES' BIOGRAPHIC PROFILES AND ABSTRACTS (CONT.)



PROF SHOBHANA MADHAVAN

Shobhana Madhavan is professor emeritus of Business and Environment at the University of Westminster, London. She is an economist with substantial experience of teaching and research in the areas of development, technology, transportation and the environment. Her research includes a pioneering study, using original survey data, of rural travel and transport in Karnataka, India. She is co-author of a book on European Economic Integration and Sustainable Development, and she was specialist advisor to the House of Lords, UK, advising on promotion of small and medium enterprises in Europe.

Food for thought: Agriculture and rural development

The development of countries has always implied transitions: economic, political and social. The development process has created dualistic economic systems (the urban rural dichotomy) and policies have emphasised industrial and infrastructure development with rural development as a secondary aim. Although attempts in some areas to increase agricultural productivity through intensive cultivation have been successful, in itself increased productivity has not led to overall development of rural areas. The dualistic economic system persists leading to net migration to urban areas and disruption in the economic and social life of rural areas. These are repositories of traditional life and values and include both oppressive social (and tenurial) systems and social and cultural frameworks, which provide support networks. Given the limits to the rural sector's growth through increased agricultural productivity, it could be argued that the development of the non-farm sector in the rural areas is better placed to promote rural growth and employment. Small scale enterprises with support from micro-finance institutions, and the creation of markets for goods and services, supported by complementary infrastructural development, will enable productive employment of labour, and in the process help to redress gender and other inequalities. So the development of the rural sector whose mainstay has been agriculture, traditionally, must now emphasise non-agricultural activities. This is happening against a background of economic liberalisation and globalisation in which economic activity is increasingly subject to the law of comparative advantage. So we must ask where this is leading, and how rural societies fit into the wider picture.



PROF GUNTER PAULI

Gunter Pauli has been a visiting lecturer and professor at universities on all continents, and Member of the Board of NGOs and private companies in Asia, USA and Latin America. He is a Fellow of the World Academy of Arts and Sciences (San Francisco, USA), a creative Member of the Club of Budapest (Hungary), Member of the Club of Rome, moderated the Roundtable of Nobel Science Laureates hosted by HM King of Jordan State, and obtained a Doctorate from the Italian Government in systems design. He has been awarded an Honorary Doctorate by the University of Pécs, Hungary. He has published 19 books (written 15 - edited 4), which have been printed in over 30 languages and 36 fables bringing science and emotions to children. Over 17 million copies have been distributed worldwide.

How to re-industrialize the local economy by reconnecting with the primary sectors

The drive towards globalization has led to a deindustrialization. Worse, the commoditization of the primary sectors (agriculture, forestry, fisheries and mining) has put tremendous pressure on communities. Just about any government that wishes to pursue a social and sustainable strategy while improving competitiveness is bound to fail in at least two out of three counts. The power of the Blue Economy is that it not only shows concrete pathways, it actually is implementing multiple projects around the world demonstrating that this strategy is not only viable, it seems even the only way forward for many nations around the world.



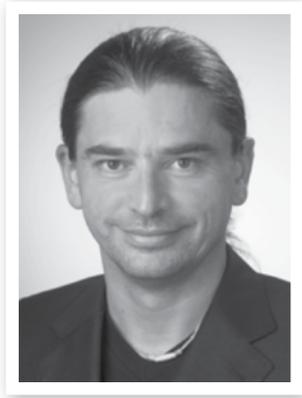
PROF EDGAR PIETERSE

Edgar Pieterse is holder of the South African Research Chair in Urban Policy. He directs the African Centre for Cities and is professor in the School of Architecture, Planning and Geomatics, both at the University of Cape Town. He is a globally recognised urbanist with a growing reputation in both academic and policy circles based on his extensive publications record and advisory roles. Notable recent books include: *Rogue Urbanism: Emergent African Cities* (2013); *Africa's Urban Revolution* (forthcoming 2013); *City Futures: Confronting the Crisis of Urban Development* (2008); *African Cities Reader I & II* (2010, 2011); and *Counter-Currents: Experiments in Sustainability in the Cape Town region* (2010). He further serves on the Research Advisory Boards of various international research centres: the Indian Institute for Human Settlements (Bangalore), LSE Cities (London), the Low Carbon Mobility Stakeholder Board at the University of Oxford (Oxford), and the Gauteng City-Region Observatory (Johannesburg). He is also a Senior Fellow with the University of Cambridge Programme for Sustainability Leadership.

Africa's urban futures and knowledge imperatives

Africa will only cross the 50% urban tipping point in the early 2030s. However, this belies the fact that the continent is already caught up in the complex dynamics of negotiating a rapid urban transition. At the moment 400 000 Africans live in an urban area (40%), but by 2032 that rate would have doubled to just under 800 000. The scope of this doubling of the urban population in two decades is unprecedented and represents a profound challenge for policy makers and scholars alike. At the moment, urbanism in Africa is dominated by the fact that the majority, namely 62%, live in slum conditions and an even higher proportion of the population rely on informal, irregular and, mostly, very low incomes. The modern edifices of cities considered a norm in most places is consequently the minority condition in most African cities outside of South Africa and swathes of Northern Africa. This condition raises profound questions about what African cities will be like if they will absorb all this growth especially when most national and local governments seem ineffective in both acknowledging, let alone addressing this momentous transition. This keynote explores competing interpretations about how best to understand and characterise the urban transition in various traditions of scholarly work on African cities. Apart from scholarly frameworks, there is an ever-growing corpus of private sector analysis and policy prescription that is becoming increasingly influential. An argument is made that the various established traditions or genres of scholarship and business intelligence reports are partial and therefore not that helpful to both offer a full account of emergent dynamics of urbanism, or suitable to inform the kind of policy questions demanded by the pressures manifested in African cities. This argument will serve as a bridgehead for a perspective on what kind of research and scholarly enterprise is required to decipher and address the future imperatives of Africa's cities.

KEYNOTES' BIOGRAPHIC PROFILES AND ABSTRACTS (CONT.)



PROF GERALD STEINER

Gerald Steiner is a current Visiting Scholar and former Schumpeter Professor at Harvard's Weatherhead Center for International Affairs (WCFA). He is also Associate Professor of Systemic and Sustainability Management at the Institute for Systems Science, Innovation & Sustainability Research at the University of Graz, and teaches applied innovation processes at the School of Industrial Design in Graz. As a scholar in sustainable innovation and entrepreneurship, his research is centred around innovation systems and innovation processes, with a particular emphasis on competence development, methodology, the role of entrepreneurs in innovation, and policies for sustainable development. Primary projects at the University of Graz relate to organisational and regional innovation systems, whereas at Harvard, he focuses on international affairs and crises-related innovation and problem solving processes within this context. In his freelance consulting business, he also provides expert advice to SMEs, large international companies, and regions in the fields of innovation development (particularly the design of collaborative problem solving processes), strategic management, and competence development. He received an MBA and PhD in Business Administration (Organizational and Innovation Management) from the University of Graz, and a Bachelor of Science in Mechanical Engineering, all Austria. His training in Business Administration and Civil Engineering was partly conducted at UC Berkeley and UCLA (California), and the University of Oklahoma, Norman.

Innovation systems as facilitators of Just Transitions - A global perspective

What role do innovation and innovation systems assume in Just Transitions, and does innovation represent the solution to all problems and challenges faced by today's society? Yes, innovation can be a potential remedy for society's problems, but if driven by narrow-minded perspectives, it can also quickly turn into a potential source of problems. This keynote discusses how joint action on both the policy and operational level could encourage the exploitation of innovation systems as drivers for Just Transition. It further examines how innovation systems can help avoid potential traps related to Just Transition. Examples of such actions could include: (1.) Use Innovation systems as multilevel constructs ("innovation onion"), which bridge the organizational and global level; (2.) Acknowledge that access to technology is supportive but not sufficient in leveraging Just Transition; (3.) Apply a multi-stakeholder perspective, which recognizes stakeholders from every level of the multilevel innovation system, e.g., smallholder farmers and large industries alike, as potential drivers of change and contributors to collaborative innovation; (4.) View crises as potential instigators of sustainable innovation; and (5.) Joint research- and society-driven innovation depends on multiple competences; hence, encourage training of appropriate competences rather than focusing almost exclusively on tertiary education. To master the challenges posed by sustainable development and Just Transitions, and ultimately to ensure geopolitical security, collaborative efforts on all levels of the innovation system will be required.



PROF WALTER VERMEULEN

Walter Vermeulen is an associate professor of sustainable production and consumption at Utrecht University, Netherlands. He is the programme leader of the International Masters Degree on Sustainable Development, which is linked to the International Joint Degree Programme on Sustainable Development (see www.jointdegree.eu). He is president of the International Sustainable Development Research Society (see www.isdrs.org). He is also an extraordinary associate professor at Stellenbosch University, South Africa, and visiting professor at TERI University, New Delhi, India. His research currently focuses on governance systems for sustainability in global supply chains and corporate sustainability strategies.

Transitions in global supply chains – Cases on value-driven strategies

Business strategy is linked to organisational values and culture, which is determined to some extent by national culture. This can provide a challenge in a global supply chain where culture and values at one end of the chain do not correspond with culture at the other end. This paper contends that shared values contribute to effective sustainability transitions in supply chains. Two case studies from the South African – British fresh fruit export chain present two contrasting business strategies for achieving socially sustainable practices: (i) a unilateral, prescriptive approach (pushing), mirroring a paternalistic value system, in which a company prescribes norms of socially responsible behaviour at the ground level (the Tesco case) and; (ii) a bilateral, collaborative approach (sharing) in which business and non-governmental organisations work together to improve working conditions (the Waitrose case). Outcomes of these approaches are observed over a three-year period. It is concluded that within this specific supply chain a shared value approach is a more successful initiative than paternalistic pushing initiatives.



FULL ACADEMIC PAPER ABSTRACTS

Technology transfer of hand pumps in rural communities of Swaziland: Towards sustainable project lifecycle management

Abraham Y; Brent AC

IRD; yabraham@irdglobal.org, yemane0012003@yahoo.com

This research explores the reasons behind the high failure rates of hand pumps in the context of technology transfer, by examining the existing hand pump technology transfer practices and procedures in Swaziland where over 3,000 hand pumps were installed and about 60% are not working. The research determined that there is a lack of proper, structured and sustainable knowledge sharing practices among the main stakeholders, suppliers, providers, users and the government. It was observed that operations and maintenance, knowledge management, and the integration of a project lifecycle approach were crucial elements for the sustainability of hand pump-based rural water supply projects. Users do not know where and how to access parts, the majority of the areas do not have trained technicians, and government does not have stock for parts. It is therefore necessary to have a balanced focus on resource allocation for a hard and soft technology transfer process.

Diffusing the population bomb in Africa: Access is only part of the equation

Barker K; Ryerson W

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Data from demographic surveys worldwide make it clear that non-use of family planning is not primarily the result of lack of access to contraceptive services. Rather, the leading reasons people cite for not using family planning are the desire for more children, fear of side effects from contraceptives, perceived or actual spousal opposition, religious opposition, and the belief that one does not have the moral right to determine the number or spacing of children. Massive investments in infrastructure and improvements in service delivery mean that most of those who want to use family planning now are able to access it. Thus, the biggest challenge now facing family planning providers who want to convert non-users into users of contraception is to get them to adopt small family norms, which may be a much bigger challenge than increasing access. Numerous surveys demonstrate that most non-users of contraception are aware of family planning methods and know /where they can be obtained, but choose not to use them. Mass media serial dramas have been proven to have significant effects on changing attitudes regarding such issues as the role of women, family size decisions, and the use of family planning. Several case studies are presented to demonstrate the power of mass media serial drama in changing norms regarding desired family size, in increasing contraceptive use, and in reducing total fertility rates. The paper will show that sustainable population numbers can be achieved through a combination of service delivery and effective behaviour change interventions.

Understanding the gap between sustainable intentions and sustainable behaviour: The role of identity conflicts

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This research examines the widely observed phenomenon that stated intentions to act often fail to translate into actual behaviour. This gap is of significant concern to those interested in sustainable development as statements by governments, NGO's, businesses and consumers are often not followed with the required action on, for example, climate change, food security, exploitative labour practices and recycling. To help address this issue, this research explores the influence of self-identity, in particular self-identity conflicts, on sustainable consumption. Depth interviews were held with 17 mothers who, with the goal of consuming in a more sustainable fashion, had recently made changes to their consumption practices. The discussions explored these decisions and why specific behaviours were adopted or rejected. The findings show that as a result of society's growing awareness of environmental issues, conflict is created between two identities; the respondents "mother" identity and the previously rejected identity of "radical conservationist." As a consequence, behaviours and values once part of the rejected identity need to be considered for inclusion as part of the core. An assimilation strategy was used to manage this conflict so that the values and behaviours were accepted, modified or rejected according to whether they could be adopted without changing their notions of themselves as mothers. This conceptualisation is able to explain the adoption of previously radical green practices and why behaviours were rejected, despite positive beliefs being held or similar actions having been embraced.

The influence of social institutions on environmental regulation

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Studies on environmental regulation explain to some extent the drivers for environmental regulation but do not thoroughly describe the deeper motivations within society for stringent design of environmental regulation. One question which is addressed in this research work is the relation between social structures and values and the formation of environmental regulations. It is being examined which social structures and values influence capacity in environmental policy and thus environmental regulation. Further it has been assessed how social structures and values are related with people's attitudes towards the environment in nations. The findings provide further insights into the social structures and values influencing environmental awareness and regulation and thereby show the underlying drivers for environmental protection at country level.

Boosting the development of impoverished communities through sustainable supply chains

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Increased globalization and outsourcing to developing countries is fostering the interest in supply chain sustainability. The research on this field has a long path behind, nonetheless, most studies to date are focused on the environmental dimension of sustainability, while the social perspective in supply chain research still shows a potential for pioneering contributions. Moreover, from the international development standpoint we have observed a paradigm shift advancing from a narrow concept of development, centred on purely economic dimensions, towards more refined issues highly related to supply chain activities. A new field of research is emerging at the interface between these two areas to propose innovative poverty alleviation strategies based on the incorporation of the poor to the markets through sustainable supply chains. The objective of this study is to explore the hypothesis that impoverished communities from developing countries who work as primary producers can be effectively incorporated into sustainable supply chains in fair trading conditions. This paper makes two contributions. First, from a comprehensive literature review of social sustainability of supply chains, a pattern of analytical constructs is identified. These constructs are: measurement of social impacts, supply chain governance and innovative business approaches. Second, three case studies (Senegal, Ethiopia, Tanzania) are employed to further understanding the main supply chain issues that are significant to the inclusion of impoverished communities into the market. These cases illustrate the constructs and give response to the demand for more research addressing developing countries challenges from the sustainable supply chain field.

Good local government for better governance and sustainable human development

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The purpose of the article is to raise the question of how important decentralisation and local governments are for the successful transition and eventually for sustainable development of a state. The paper focuses on the gap between development or transition and decentralisation within academic and international policy discourse. The author will try to find an answer to such questions as: What is good governance and how does it influence sustainable human development? How can local government contribute to SHD and good governance? And how should the international community contribute to and support the transition and development process? Local self-government can be a school of democracy and responsibility for the wealth of the state and citizens. By sharing the Polish decentralisation experience, the author shows how important decentralisation might be for successful transition, democratization and sustainable development. The paper also includes a short introduction to the European Charter, recent African efforts like AMCOD or UCLGA and European Union development assistance policy. The purpose of this is to show how little attention is paid to local governments and decentralisation within international policy and how huge the gap is between Europe's (developed) states and Africa's (developing) states related to their decentralisation policy, law and practice.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Diagnosis for the construction of a community co-management system for adaptation to climate change in the Pao River Basin, Venezuela

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Climate change is a global problem with local events that impacts on the sustainable development of communities. It is necessary to design management systems in different local conditions and establish community participation strategies before scenarios caused by climate change. Objective of this research was to determine the preconditions for development of an adaptive system in Pira Pira, Palmarote and Palmar de Paya communities, located in Pao River Basin, Carabobo State, Venezuela. Application of DPSIR framework: Driving Forces, Pressure, State, Impact and Response, established that there is a political organization of communities, through community councils. Currently pressure on natural resources is low, however there is a high risk if human activities persist, coupled with climate change, which will affect the sustainability of Basin. Impact is executed through agricultural and livestock activities by logging and burning. We conclude that communities are vulnerable and unknown of strategies in the face of climate change. It is necessary to initiate a planned adaptation that considers: a) Ecosystem and Biodiversity, b) Agriculture, Food Security, Land Use and Forestry, c) Human health, d) Water supply and sanitation, e) Population and infrastructure f) Economics, insurance, tourism, industry and transport. Development and release of a Co-management Community System to adaptation to climate change will be a valuable contribution to integrated co-management plan of the Basin.

Driving the purchase of alternative fuel vehicles in the United States

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Alternative fuel and fuel economy legislation in the United States dates back to the Clean Air Act of 1970, which formed initiatives to reduce mobile sources of pollutants including vehicles. The Energy Policy Act (EPAct) of 1992 established regulations requiring certain federal, state, and alternative fuel provider fleets to build an inventory of alternative fuel vehicles (AFVs). Amending this legislation, the Energy Policy Act of 2005 emphasized alternative fuel use and infrastructure development to drive the diffusion of AFV technology. In this Act, the federal government provided financial incentives to consumers for the purchase of these cleaner vehicles. Since 2005, many state governments have also offered various incentives to residents to encourage the purchase of AFVs. This paper utilizes pairwise correlation and multiple regression analysis to determine whether these state incentives are driving AFV sales in the United States, while controlling for fuel prices, alternative fuel infrastructure, age, and income. The results of this study indicate that personal characteristics and fuel prices are better predictors of the proportion of AFVs in use than incentives. This analysis specifies that state-level incentives do not provide a significant influence on the purchase of alternative fuel vehicles in the United States.

Corporate sustainability strategies in the automotive industry: A literature review and research options

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Due to the increasing discussions within the automotive industry relating to environmental aspects, environmental performance and legislative processes, the importance of research about corporate behaviour, action and the environmental and social contribution to the company performance is rising. This can be seen by the number of publications in this area. To establish this research further this literature review takes 69 publications published from 1979 to 2012 into account. This represents a relevant factor in fostering sustainability orientation regarding strategic management. Therefore the integration of sustainability management into the strategic enterprise level gains importance. In doing so the fit between conventional corporate strategies and corporate sustainability strategies is significant. Consequently companies should no longer discriminate environmental and social commitment from corporate financial performance because this commitment predicts higher financial performance within an integrative perspective.

Implications of the new Brazilian Forest Code

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The Brazilian familiar agriculture is a relevant food supplier and plays a relevant role on nature's preservation, so Brazilian preservation policies must focus on it. The new Brazilian Forest Code has many important guidelines for the use of land, especially on small farms. The recent change of legislation opened a serious possibility of national deforestation with a loss of native vegetation higher than 40 million hectares. This situation can promote a reversion on Brazilian vanguard on nature's conservation and protection allied to food production to a legal system that concerns just about economical pillar of sustainability than a social-environmental-economical view of sustainability.

Activating social housing as a catalyst for sustainable urbanisation

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Discussions on integrated housing options are all too often omitted from larger dialogues on urban sustainability. Low-income housing holds great potential to transform cities in South Africa into more environmentally, economically, and socially sustainable places. However, there are several structural challenges that continue to preclude a stronger and more inclusive housing market. These challenges continue to reinforce the peripheral and separate location of low-income housing in South Africa's cities. By looking at two examples in Cape Town's central city, this paper highlights the ways that land and housing markets could be readjusted to better enable partnerships and strategies towards a more sustainable urban built environment. Achieving this vision of sustainability will take greater cooperation between government sectors and a stronger vision towards integrated communities by all stakeholders.

Just facilitation: Talking about race privilege ...

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This paper draws attention to the precariousness of social and socio-ecological sustainability in contexts of injustice. Unexamined dynamics of injustice and inequality in our relationships across race, class and gender can erode trust and therefore undermine our ability to act collaboratively and decisively on issues of a shared and sustainable future. Sustainability practitioners and activists who blindly carry social and material privilege relative to others risk inadvertently recreating injustice. In the South African context, efforts by white South Africans to anticipate and address looming sustainability challenges are diluted when they unconsciously perform white privilege. This is applicable to performances of unconscious privilege by virtue of race, gender or class across the globe. The author proposes that a more reconciled and just society – in South Africa and beyond - can more effectively tackle fast approaching political, social and ecological threats to sustainability. Dialogue is a powerful modality for engaging across power and privilege differentials. Drawing on theory, empirical research and personal experience, this paper explores how dialogue can help navigate change towards greater self-awareness amongst sustainability practitioners and activists and towards greater justice in their sustainability work. It concludes with a discussion of the skilful use of facilitator presence and the creation of uncomfortable, safe spaces for dialogue as a catalyst for meaningful collaboration. This paper is written with the intention of evoking and provoking dialogue on the question of the relationship between justice, privilege and sustainability.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Sustainability assessment in supply chains - A literature review of sustainability aspects and the development of indicators

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Sustainable Supply Chain Management (SSCM) is of growing interest nowadays as the complexity of global supply chains and the shift of competition from inter-firm to inter-supply chain level are increasing, and companies are motivated by cost-reduction possibilities and consumers' pressure. Original Equipment Manufacturers (OEMs) already internalized to some extent the sustainability trend but the management of sustainability in the whole supply chain remains challenging. In order to fill the research gap we identified - sustainability performance measurement of supply chains in the automotive and electronic industry-, we conducted a literature analysis and interviews with experts from industries, interest groups and NGOs. Our purpose is to review the existing literature on sustainable supply chain management and sustainability assessment and measurement on business and SC level. We aim at highlighting relevant sustainability aspects to gather and develop corresponding indicators for industries. Our literature review and further work is meant to gather the most precise and complete information to make it available to all stakeholders concerned, particularly companies from the automotive and electronics sectors.

Taming dragons: Facing socio-ecological issues head-on in a way that does not debilitate us in the process

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This paper explores how those of us who are actively working to resolve the world's big urgent problems such as climate change, might face the magnitude of the issues without becoming emotionally overwhelmed or paralysed in the process. The research is based on the principles and tools of action research and focuses on a first-person inquiry. Drawing from themes emerging from interviews with thought-leaders of the Transition Movement as well as personal reflections, this paper proposes that emotional lows are both inevitable and important when engaging in big issues such as climate change and are a natural part of an inner cycle of experience that oscillates between times of comfort, clarity and certainty, and times of deep discomfort, confusion and uncertainty. It further suggests that in order to be able to face the enormity of the issues head-on without being incapacitated in the process, we need to learn how to address and embrace the emotional discomfort and distress when it surfaces and to learn how to move fluidly between the emotional ups and downs.

Towards higher impact for universities in a regional system of innovation – The case of the University of Cape Town

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Key debates in South Africa on Higher Education currently are centred on improving equity and expanding the system to better serve the needs of society. Policy suggestions are being made on increasing access to tertiary education, support for poor or struggling students financially and academically as well as the contentious issue of specialisation and differentiation of universities. The question of how best to achieve such goals should carefully consider a wide range of factors that condition and constrain the role a university could play in a national and regional system of innovation. The objectives of this paper is to examine the factors that impact on the contribution a university could make to a region paying special attention to how regional government can leverage the role of universities. The intention for the analysis is to inform the debate on how to better support universities in achieving its goals and to provide strategic direction on maximising impact on society and the national and regional economy.

New Institutional Economics and Clean Development Mechanism: Do transaction costs affect efficiency and implementation of GHG emission reduction projects?

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Kyoto Protocol introduces economic tools, such as Clean Development Mechanism (CDM), through which industrialized countries can fulfill their targets by investing in greenhouse gases emission reduction projects in developing countries. Kyoto Protocol adoption involves a new institutional framework with different organizations and rules to support the Treaty implementation. Based on New Institutional Economics, the focus of this research is to identify transaction costs in CDMs projects, and to investigate if they can affect project efficiency (relation between reductions really obtained and estimated emission reduction in projects). In order to fulfill these goals, this research includes secondary and primary data survey related to CDM projects. Concluding, transaction costs may arise in every step of Clean Development Mechanism project process, and may create barriers to develop a project. Besides costs related to fee payments, it is possible to identify transaction costs that emerge as consequence of uncertainty, asymmetric information, and bureaucracy excess. This research also concludes that transaction costs affect the success of CDM emission reductions, and most relevant are ex-ante costs, mainly resulting from information problem gaps, measurement and monitoring problems.

Population growth, poverty and environmental sustainability in Timor-Leste: Opportunities and challenges for sustainable development

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Timor-Leste has one of the poorest and fastest growing populations of the world. As a fragile state, Timor-Leste faces many development challenges including rapid population growth, poverty, high unemployment and increasing environmental degradation. A failure to address these challenges poses great risks to peace and stability and sustainable development of this newest nation in Asia. However being at a very early stage of nation building process achieving poverty reduction, improving food security and ensuring environmental sustainability in Timor-Leste depend heavily on the government's strategy and approach on how to manage its fragile natural resources and integrate environmental sustainability into the development planning and policies. This paper argues that in the context of Timor-Leste environmental sustainability, poverty reduction, improved food security and increased employment opportunities for the country's growing youth population can be achieved if government policies encourage transition to a green economy and integrating the same to its unique population dynamics. This paper suggests that developing a strong forestry sector holds great potentials for creating jobs for the youths, improving livelihoods of the people and restoring a healthy environment for the future.

Urbanizing landscapes: [Alter]native landscape strategy in (re)habitating the urban flood plain landscapes in Dar Es Salaam, Tanzania

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[Alter]native Landscape is a strategy for urbanists to intervene (alter) the natural landscapes through local and natural (native) ways taking into consideration the site specificity as a major guidance towards transformations. The strategy thinks beyond leisure and recreation provisions of the urban landscapes. This will be achieved through integrating man-made and/or artificial landscapes features within the natural landscapes. This strategy will integrate urbanization within the landscapes so as to harmoniously (re)habitate while extending the urban economic activities. This will be done inline with the climate change and environmental pollution considerations as the current and future major threats facing urbanizations of the cities throughout the world particularly the coastline cities in developing world. Alternative landscape is aimed at reversing the opposing forces existing between urbanization and nature. This will be achieved through careful integration of the urbanization within the natural landscapes, particularly the flood plain landscapes in Dar Es Salaam city. It will address various ways to transform the flood plain landscapes along Msimbazi river valley that includes Jangwani basin through demonstration of various strategies. The transformation will also utilize the flooding potentials available within the site.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Analyzing lifecycle emissions and energy consumption of a commercial building using extended system boundary perspective

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Building life cycles contribute substantially to the emission of greenhouse gases and energy consumption; this is especially true for the operation or use stage of the building. This work on a commercial building in Singapore extends the traditional system boundary drawn for a whole-building life cycle assessment to include the management of wastes produced during building operations. It was found that waste management produces much more emissions than the operation stage. This reinforced the notion that waste recycling should be further promoted in buildings, possibly through building level technological innovations and design modifications. An integrated policy framework was proposed to explore ways by which building level strategies can work with other strategies to holistically address the issues of waste reduction, sorting, collection and recycling.

Towards urban food sovereignty: The trials and tribulations of community-based aquaponics enterprises in Milwaukee and Melbourne

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Aquaponics is an environmentally sustainable food producing technology that is very adaptable and amenable to both urban contexts and community-led development and capacity building. Community-based urban aquaponics enterprises represent a new model for how local agency can be blended with scientific innovation to deliver food sovereignty in cities, re-engaging and giving urban communities more control over their food production and distribution. As recently emergent examples of "living laboratories", though, little is known about the factors and outcomes – social, economic and environmental – that determine the success or failure of these enterprises. Addressing that gap, this paper explores stakeholder experiences of building community-based urban aquaponics enterprises to understand the internal and external factors that impact on their success or failure. We first draw upon existing food sovereignty, social enterprise and aquaponics literature, to identify factors in the related area of community-based urban agriculture. We use a comparative case study methodology, to test for the presence of these factors - and to draw out other unknown factors - in two cases in Milwaukee and Melbourne. In each case study we conduct in-depth interviews with key stakeholders, exploring their relative contexts, objectives, and structure. Based on these findings, we highlight the challenges and suggest relevant indicators for establishing an urban aquaponics enterprise.

Social entrepreneurship as a new economic structure that supports sustainable development: Does the law provide for a special legal structure to support innovative and sustainable non-profit entrepreneurial activities?

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Recently, 'social entrepreneurship' has been growing rapidly. Social entrepreneurship lies in the wider spectrum of social economy (job creation) with a reference to sustainability (social and environmental innovation). Social enterprises devote their activities to achieving social objectives to benefit the community, to improve human well-being and preserve the environment. Yet, there is no universally accepted definition of what social entrepreneurship is neither a clear understanding of the available legal corporate forms and supportive tax structures. The paper aims to clarify which legal non-profit corporate structures can best support and encourage new social entrepreneurship initiatives. Legal structures include: non-profit associations, not-for-profit companies, cooperatives, mutual societies, and foundations. In order to stimulate, a structure should be able to support the common characteristics of social entrepreneurs, e.g. their mission-driven activity by delivering social value, entrepreneurial orientation (usually small scale), financial self-sufficiency, and participatory nature (apart from being structured either for profit or non-profit). The comparative analysis identifies corporate non-profit legal structures, legal criteria and tax notions and determines which factors can be considered critical to successfully stimulate the start-up of innovative social entrepreneurial activities. Variations are non-profit associations, not-for-profit companies, foundations, cooperatives, mutual societies, and social enterprises as such. The paper concludes with recommendations on how to adjust national and regional regulation towards a more sustainable social entrepreneurial regime which supports job creation and creative innovation.

Findings and recommendations of a study on sustainable development in an agricultural South African-European supply chain

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Even though sustainable development is a term currently broadly used, empirical studies lack in describing challenges and opportunities in achieving sustainability in global supply chains. The phenomenon of sustainable supply chains has become even more relevant in terms of global agricultural supply chains, taking into account the current debates on food security, poverty and advancement of developing countries. Capacities need to be identified and enhanced to address sustainability needs of supply chains and developing countries active in such chains. Capacity in its broadest sense implies an ability or capability to efficiently use different resources in order to create change. This paper divides capacity development into three facets, namely (1) actor, (2) process and interaction, and (3) social, economic and political context. It aims to provide an understanding of capacities evident in an agricultural global supply chain and highlight some challenges and opportunities addressed in various capacity modes, to improve sustainability while providing some recommendations.

The application of Global Environmental Change (GEC) research findings in Southern African policies and programmes and the association of its application with long-term resilience planning

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It is indisputable that Global Environmental Change (GEC) exists and threatens systems supporting human survival. A growing body of scientific evidence supports this claim. Despite the availability of this evidence and recommendations on what to do about it, short-term, reactive and intermittent interventions are often implemented to handle pressing challenges, sometimes resulting in increased vulnerability to GEC. To understand and address these complex issues, a systems thinking approach is used as theoretical framework with resilience as an organising concept. This paper explores the application of GEC research findings in policies, strategies and programmes in Southern Africa and evaluates whether its application is associated with long-term resilience planning. A better understanding hereof would help inform processes that promote greater wanted biophysical and socio-economic resilience. The findings in this paper draw from a document review of publically available policy, strategy and programme documents of the Southern African Development Community's (SADC's) Regional Vulnerability Assessment Committee (RVAC) and National Vulnerability Assessment Committees (NVACs). The main findings include that RVAC and NVAC documents make reference to regional GEC evidence. These references motivate calls for long-term resilience planning, yet clear long-term resilience planning efforts in the same documents are left wanted. In these documents, institutionalisation, capacity building, training and technical backstopping are prioritised over linking produced vulnerability assessment (VA) information to policy, strategy and programming. This has negative implications for long-term resilience planning. Future research should assess whether the RVAC and NVACs have incorporated such evidence in publically unavailable documents and/or acted on it.

Environmental education and training for greening people and corporate cultures

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Education and training are recognized as the crux of developing green organizational cultures in the achievement of corporate sustainability. Should ecology training be linked with the practical work of corporate members? Should they "learn by doing" or "do by learning"? The present study covers the links between environmental education and training and its success in greening the employees and corporate cultures. It investigates the effectiveness of environmental training and models a suitable training approach in developing environmentally aware corporate cultures. A series of environmental education and awareness training programmes of The Hongkong and Shanghai Banking Corporation Limited (HSBC) were used as a case study. Evaluation of the training outcomes, in terms of changes in participants' environmental knowledge, attitudes and behaviour, was surveyed by using self-completion questionnaires. Results showed that employees who joined these programmes gained knowledge and changed their values and behaviour towards the environment significantly. The acquisition of knowledge and attitude change leads to the development of green behaviour both in the workplace and at home. The study concludes that environmental training is important as the employees have direct contact with nature for affective-based attitudes while a proportion of indirect experience training is responsible for intellectual development. A combination of direct- and indirect- experiences in the training is proved to have greatest impact on the training outcomes. Training should be available for employees from each stratum in the company rather than only focusing on pin-pointed management staff since it can promote a workable interface between employees and the corporation.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Germany's sustainability politics – The integration into the political process on the level of the federal state

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The term "sustainable development" (SD) has become more prominent during the last decades. Problems that have been emerging and mounting in all the dimensions considered to compose SD – the social sphere, the economical dimension and the ecological realm – result in raising public awareness of the topic. While most studies deal with sustainability from the perspective of performance of a given country or region, a new analysis of the Leuphana University Lüneburg and the WWF Germany tries to approach this field from the perspective of daily routines, institutionalization, cooperation and coordination practices of the legislative and executive branch of the federal state in Germany. The results of the analysis of SD politics and its integration in the political process – based on interviews conducted in every federal ministry and the political parties in the German parliament – are mixed. While high-level coordination bodies do exist, sustainability as a political-strategic topic is not often significant for legislative and executive institutions. Applying a strategic and relational point of view, it can be argued that different legislative branches represent different fractions within an existing baseline or general mode of accumulation. With this, the development towards a progressive and comprehensive environmental shaping state still remains incomplete. The study not only reviews existing flaws, but highlights also possibilities to overcome them - thereby making a contribution to the discussion about the design that may be most suitable for addressing the topic of sustainability effectively.

Developing a more holistic university sustainability report: Experiences from the University of Leeds

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During the last decade an increasing number of higher education institutions have engaged in incorporating and institutionalizing sustainability into the university system (including curricula, research, operations, outreach, and assessment and reporting). This paper focuses on assessment and reporting, where a number of tools and guidelines have been developed; of these, the Global Reporting Initiative (GRI) Sustainability Guidelines offers one of the best options available. However, the GRI guidelines were not developed for universities. Thus, the Graphical Assessment for Sustainability in Universities (GASU) has been developed to address this drawback, as well as helping to provide a more holistic report. This paper presents the process undertaken to develop the first draft of the University of Leeds sustainability report. The purpose of that report was to: (1) compile the required information, (2) create the first draft of the sustainability report, and (3) analyse the performance values from the information collected. The data was analysed with an updated version of the GASU tool. The results show that the University of Leeds has a better performance than other universities that have published sustainability reports. The report exercise revealed that when preparing a sustainability report it is important to have a holistic perspective, addressing the different inter-relations between indicators, categories, and dimensions, as well as throughout the university system. The results can then be used to tackle those areas where the university could improve, with respect to sustainability, throughout its entire system.

Sustainability interlinkages in reporting vindicated: A study of European companies

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The rapid growth in company sustainability reporting and an improvement in their quality is to be welcomed. A number of guidelines have been instrumental in this process; however, they still do not consider the importance of the inter-linkages and synergies among the different indicators and dimensions. For this study, the reports from fifty-three European companies covering thirteen industries at A+ Global Reporting Initiative level and third party certified, were selected. These reports were analysed following a two prong, quasi-quantitative approach - firstly by checking which of the reports covered any of the inter-linking issues, and secondly by checking how well these were covered (i.e. the performance). The results showed that, although not explicitly demanded by the guidelines, the coverage of the interlinking issues ranged from medium to high, whilst performance ranged from low to high. As companies are, perhaps unwittingly, reporting on interlinking issues and dimensions, it is time for sustainability guidelines to take a more explicit holistic approach and actively consider the inter-connectedness among the issues within and between the four sustainability dimensions.

Critical reflections on the chemical leasing concept

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Chemistry has been recognised as an important discipline for contributing to the design and implementation of sustainable development strategies. Green chemistry and sustainable chemistry have appeared as concepts to frame such strategies. They involve a reduction and eventual elimination of hazardous substances. Within this context chemical leasing has been recently developed as an alternative business model to help use chemicals more efficiently and reduce waste and closing feedback loop more effectively. The chemical leasing model is based on chemicals not purely being sold for profit by high volume of sales, instead it offers financial incentives for both the supplier and the user of the chemicals to improve efficiency and reduce the volumes of chemicals required in a process and reduce their environmental impact. Nonetheless, current studies on the topic have been mainly empirical and descriptive, with limited theoretical work on the topic. This paper provides a critical discussion on the chemical leasing model/concept terminology by focusing on green and sustainable chemistry, business models, collaboration, and the chemical leasing cases available. The discussions show that chemical leasing can be a more efficient business model alternative to traditional industry practice, bringing economic and environmental benefits to suppliers and users, but its use is restricted to some specific types of chemicals (such as solvents and catalysts). The paper proposes a clearer definition of chemical leasing. It also argues that chemical leasing needs to be complemented with other approaches to better address the social and time dimensions.

Environmental education in Hong Kong: The role of field-based environmental education programmes – A case study

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The roles, situations and opportunities of field-based environmental education programmes in Hong Kong secondary education are still largely unknown. This study explores the importance of field-based programme in formal education curriculum teaching and learning and environmental education. Through a case study approach, a tailored field-based environmental education programme was designed with the concept of enquiry-based learning and theory of learning and awareness, implemented and evaluated. It aimed to address the questions including what are the teachers' views on field-based programmes in helping teaching and learning in formal Geography curriculum and environmental education? And what are the challenges to school teachers and the ways forward in providing field-based environmental education programmes for students? Altogether 69 Geography teachers and 91 Geography students participated in the programme. Both quantitative and qualitative methodologies were used to evaluate the effectiveness of the programme. Results showed that this programme was an effective teaching and learning tool for Geography and at the same time, its function for environmental education was demonstrated as students' environmental knowledge was significantly increased and their environmental attitudes were significantly raised to a more pro-environmental level after they joined the programme. Teachers agreed that field-based programmes are important for teaching in formal curriculum and environmental education. However there were many obstacles for them to conduct field-based environmental education programmes such as limited resources and time. More support for teachers should be given and the whole structure of formal environmental education in Hong Kong should be reviewed to understand and solve the root problem.

Human capabilities mental health and housing

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Conditions of poverty are known to increase risk for a number of illnesses such as tuberculosis (TB), HIV/AIDS and mental disorders - which result in deprivation of capabilities. Both TB and HIV/AIDS are linked to negative mental health outcomes. It is important that interventions target the social as well as biological determinants of these illnesses. Objectives: This study aims to qualitatively explore the perceptions of an environmentally sustainable housing intervention in a high TB prevalence area. Methods: Approximately 36 adult participants residing in households that received the intervention were recruited to four focus groups discussions (FGD). Ten individuals were then recruited to individual, semi-structured interviews (SSIs). FGDs and SSIs explore participants' perceptions of the intervention, and the effect on their general health status including their mental health. Results: Results, analysed according to Sen's capability approach, show that prior to the intervention, symptoms of

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common mental disorder, such as depression and anxiety were widely reported, and formed a key feature of participants' experience of poverty and illness. Subsequent to the intervention, the majority of participants described a positive impact of the intervention on their capabilities including better TB prognosis, eradication of other respiratory illnesses and improvement of mental health status. Conclusion: Most interventions that seek to address or mitigate the effects of deprivation, such as housing interventions, don't consider the importance of mental health, either as a cause or consequence of reduced capability. Sen's capability approach provides a useful framework for understanding and integrating these phenomena and designing appropriate interventions.

Large-scale land acquisitions in Russia: A study of land conflicts and rural mobilization

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This paper explores a black box in the 'land grab' debate: the concealed but accelerating process of large-scale land acquisitions by foreign and domestic investors in Russia. It provides a case distinct from other regions, which is likely to raise new insights on global land grabbing. Several features make Russia different: (i) the existence abandoned farmlands, (ii) the low level of presence of autonomous civil society, and (iii) the legacy of large-scale industrial agriculture. This research establishes a new field of 'post-socialist land grabbing and rural social mobilisation' studies. It answers the question: how has global land grabbing occurred in Russia, with which implications to the rural population, and what mechanisms do rural social movements use to ensure that large-scale land acquisitions are producing meaningful benefits for local communities, and contribute to sustainable development of rural areas? Worldwide, guaranteed land rights are often seen as a solution to the 'land grab' problem. However, this research shows that privatisation of land in Russia created an enabling environment for large-scale land acquisitions, and made the shift from post-soviet collective enterprises to modern agrohholdings accepted by local population. Furthermore, fragmented and non-functioning markets, and riskiness of rural entrepreneurship, define the wage-work preferences and absence of sovereignty claims from rural dwellers. Due to these factors, the 'anti-land-grab' mobilisation in Russia has a resource-based rather than an ideological origin. The contentious politics of social movements are represented by semi-institutionalized collective political struggles from below, while institutionalized rural organisations fall into state embedding or are disbanded.

Distributional dimensions of Payment for Ecosystem Services (PES): General issues and critical aspects

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The current paper aims to provide a differentiated view on the distributional dimension of payments for environmental/ ecosystem services. Based on an in-depth literature review we structure the distributional dimension of PES. The distinction is made between general issues which restrict the conceptual basis of PES distribution on the one hand as well as aspects of first, second and third order which occur in a timeline when applying PES. General issues regarding distribution are for example such of intrinsic motivation or differences between the geographic scale of the service to be provided and of the activity set. Aspects of first order are circumstances which hinder the introduction of PES already from the beginning, for example based on bad governance and unequal ownership rights. Aspects of second order are issues that occur through the introduction of PES; such as social imparities between recipients and none-recipients of PES or a 'monetarisation of minds', latter leading to a decrease of intrinsic motivation. Aspects of third order can hinder the effectiveness of PES even if the aspects of first or second order do not occur at all or related problems have been already solved. This concerns in particular a lack of evaluation and/ or monitoring. We argue that distributional aspects of first order are more regularly occurring in developing countries and that distributional aspects of second order occur regularly in developing as well as in developed countries. While developing countries typically face regarding PES distributional aspects of third order.

Human capital, institutional quality, natural capital and trade openness for human development

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Previous empirical studies have shown that human and natural capital, institution, and trade are the determinants of economic growth. They have measured welfare mostly by the growth in GDP per capita. A measure explored here is the consumption of goods and services a man enjoys, particularly the consumption that meets the basic needs of humans. Non-declining levels of the satisfaction of basic needs may be the path of human development that ultimately contributes to achieving sustainability. The previous literatures, despite the consensus, may present biased views on human welfare, and not allow us to understand the conditions in which the above four determinants affect the human welfare. The aim of this paper is to find: how these four factors affect the levels of human development; how they interact; and how they contribute to sustainability. Main outcomes are the following: the effects of human capital, income, natural capital (abundance and dependence), and trade openness interact; the resource curse holds in the context of human development; and high initial income, abundant natural capital, low total natural resource dependence, high diffuse resource dependence, and open trade improve the levels of human development. To achieve sustainability, what matters is that countries have vast capital assets that form the production base of economy and ultimately influence the level of human development.

Tutorial on the application of systems approach to technology sustainability assessment (SATSA): The case of biodiesel production development

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It has been observed that there are no formal technology assessment practices in African countries and many decision-makers face the challenge of selecting the appropriate or suitable renewable energy technologies to develop. This paper and tutorial provides a step-by-step procedure for assessing technology development for sustainability utilising a systems approach to technology sustainability assessment (SATSA). SATSA is a conceptual framework that provides a guiding framework for assessing renewable energy technology development for sustainability, particularly in the African context. The tutorial utilises an example of biodiesel production development in South Africa. However, SATSA can be applied to other energy technologies.

Farmer input support programme and impact of HIV and AIDS on maize production

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The purpose of the paper is to ascertain whether the farmer input support programme is contributing to the welfare of the HIV and AIDS affected farmers and identify the key factors hindering them from accessing inputs from the programme. The HIV and AIDS affected farmers are not considered by the farmer input support programme. The affected farmers are hindered from accessing inputs because of the impacts of HIV and AIDS.

Energy transitions in Kenya's tea sector

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Kenya's tea sector provides livelihoods for more than 500,000 farmers but energy access in the region remains limited. Clean, affordable distributed energy systems could transform the tea-growing regions by lowering tea production costs and increasing farmer profits. On-site generation could power tea factories and enhance grid stability by reducing electricity draw from the grid and, in some cases, even exporting surplus electricity. Wind power's potential in Kenya's tea regions is unknown. A pre-feasibility study using the Solar and Wind Energy Resource Assessment (SWERA) dataset revealed that 29% of Kenya's tea farms have wind resources that could be suitable for development. There were more "moderate"-rated tea farms west of the Rift Valley, but tea farms east of the Rift Valley had greater wind resources. Economic analysis using RETScreen found that wind power in the eastern region had a positive net present value (NPV) under a wide range of assumptions. In the base case, a 750 kW wind turbine with a capital cost of US\$1.5 million (US\$1,984/kW) at the most suitable tea farm had an NPV of US\$515,779. Tea farms west of the Rift Valley had negative NPVs in the base case but turned positive under more optimistic assumptions. SWERA data are conservative and may underestimate the wind resource at some locations. End use demand in the tea sector is driving the transition to distributed, renewable energy in Kenya's tea growing regions. Whether this development can catalyze a positive feedback loop with spillover benefits to energy-poor rural communities remains to be seen.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Socio-economic status and access to higher education in Uganda

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In the African context, just transitions to a more sustainable world cannot occur while the poorest and most marginalised are left behind. African governments such as Uganda's have taken the steps to better the lot of these sections of society by widening access to basic education through programmes like Universal Primary Education; however, access to higher levels of education is still low, and as earlier studies have shown, Universities in particular have played a part by maintaining selection procedures that favour students from higher socioeconomic status (SES). In the last few years, some measures have been taken to address this issue, such as introducing a quota system for admission to public universities, but there are concerns that not enough has been done. This paper reports on a study carried out at four universities investigating how just access to higher education in Uganda is, given existing admission procedures. It was found that the main admission criterion, A'Level examination results, was not a significant predictor of success at university, and that it was therefore not a justifiable entry mechanism, especially given its established tendency to disadvantage students of lower SES.

Moving from survival to sustainability: Case of Wechiau Community Hippo Sanctuary in the upper west region of Ghana, West Africa

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This study assessed the emerging transition from survival to sustainability in the management of community-based biodiversity management of the Wechiau Community Hippo Sanctuary (WCHS) in Ghana. The WCHS was established in 1998. It was chosen for in-depth analysis and assessment. The ecosystem assessment framework of interaction between biodiversity, ecosystem services, human well-being, and drivers of change was adopted for the study. The assessment was based on "before" and "now" scenarios to draw inferences for impact of community-based biodiversity management and sustainability. The WCHS provides economic alternatives to converting community-based ecosystems into sustainable economic venture, including ecotourism. The number of tourists to WCHS that stood at less than 500 persons in 2002 increased to 2,390 persons in 2011. The implication of the significant ($p < 0.001$; $\rho = 0.926$) influx of tourists to WCHS is evident by increased revenue generated and patronage of local enterprises. It also generated peaceful cohesion and aesthetics of the environment and development of property rights. The WCHS has led to the reduction in poverty and hunger through the generation of incomes, improvement in health through infrastructural provision, and biodiversity sustainability of focal species. The case of WCHS demonstrates that biodiversity management founded on good communal relationships cannot only improved livelihoods of the rural poor but also increase their resilience to continuing challenges as the people become more economically and socially resilient, and empowered to handle future treats to ecological imbalances.

What have we learned from 30 years of urban agriculture research?

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The body of Anglophone social science literature on urban agriculture (UA) in Africa is almost exactly thirty years old. Over these years, the volume of empirical research has grown considerably, to the point that UA has been described in 31 African countries in addition to countless case studies from African cities and towns. Over time, these data formed the foundation for various schools of thought, theoretical approaches and assumptions. Authors in favour of UA have however tended to refrain from engaging with critics, repeating rather generalised benefits of UA. This tendency has factionalised UA literature, producing very little constructive debate and ultimately hindering the practical application of knowledge to empower marginalised urban cultivators. Thus, this study attempts to arrange the major findings of thirty years worth of literature into six 'statements' of what we know about UA research. The statements are that: UA requires external support if it is to benefit low-income cultivators; UA is a long-term investment; UA is a uniquely urban food production method; the majority of cultivators are women, but women cultivators are the most marginalised; the benefits and risks of UA are not generalisable and; there are still major gaps in the literature. These statements will guide the future empirical work for my PhD thesis, and will hopefully be of use to researchers and practitioners.

Allocation of South Africa's greenhouse gas emission to different income groups and its evolution under different economic growth and income distribution scenarios

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One of the major trends in international affairs currently is the strong economic growth in developing countries, with the hope that this will lead people out of poverty. A key related question however is what does this increasing affluence mean for the environment? Here we investigate the relationship between income and Greenhouse gas (GHG) emissions in the case of South Africa as a country with one of the highest income disparities. The relationship between income and environmental impact has been extensively studied for industrialised countries but only few examples of studies of this kind have been carried out for developing countries. Based on an environmentally extended input output analysis (EEIO) South Africa's direct and indirect GHG emissions were allocated to 104 industry sectors and their goods. Merging this information with the detailed consumption pattern of South Africa's population, the direct and indirect GHG emissions were allocated to fourteen income groups. We found that the average GHG emission per Rand spent decreases with income by 32% from the lowest to the highest income decile. This is due to additional income above a certain level being mainly spent for less carbon intense goods. However, since the richest ten per cent account for 44% of the direct consumption, they are still responsible for 23% of South Africa's total GHG emissions. A simulation of economic growth and different income distribution scenarios indicates that a lower Gini-coefficient might in the medium term result in higher GHG emissions from consumption.

Innovators in disrupted cities: An exploration of the creative class theory in urban(ising) Africa

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This paper explores Richard Florida's Creative Class theory in the context of second wave urbanisation in Africa. The economic value of the Creative Class is that their work revolves around innovation, a quality seen as essential to 'new economy' urban growth. Quality of place (that which makes 'New York, New York') is said to attract the Creative Class to certain cities. Overall, the Western city is the reference point for the Creative Class literature and quality of place is embedded within a framework of urbanisation through industrialisation - a period known as the first urbanisation wave. The fastest growing cities on the African continent are part of the second urbanisation wave, an urbanisation process spurred by a set of vastly different dynamics in which industrialisation is virtually inconsequential. Urbanisation through industrialisation induced concomitant investments into infrastructure and thus it is unsurprising that the Creative Class literature assumes that urban infrastructure is 'always on' - available at all times as an inherent attribute of place. Until more recently, African cities did not feature in the Creative Class literature; the predominantly rural focus of ICT diffusion in the literature is a contributing factor to the lack of information on the Creative Class in African cities. The point of the paper was not to draw modernist comparisons, but rather to emphasise that notions of quality of place are incomplete given the rise of technological innovation in urban Africa, where cities often suffer from disruption of basic infrastructure.

Averting a downward spiral: Building resilience in informal urban settlements

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The growth of informal urban settlements is a source of vulnerability - to their resident households, the local community and the wider city or town. The rapid expansion and unplanned character of these settlements contribute to these vulnerabilities. The policy stance of the public sector can either enlarge these risks (through neglect) or help to build resilience (through positive actions). This case study of Enkanini in Stellenbosch, South Africa, illustrates how a resilience perspective can illuminate the systemic issues surrounding the growth and management of informal settlements. It emphasises the need for a holistic economic, social and environmental perspective; for understanding the interactions between individual settlements and their wider urban context; for recognising the negative feedback loops that can exacerbate poverty and exclusion; and for promoting the co-existence of continuity and change. Above all, a compelling vision of a better future is needed that goes beyond 'just managing' informal settlements to capture the benefits of urban integration in more productive, cohesive and sustainable cities and towns.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Enabling decision making of a development practitioner based on empirical evidences: A case study of nutrition delivery in malnourished kids

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Often a development practitioner faces the question of decision making based on empirical evidences in situations where a theoretical pathway is not explained. This article describes a case of "nutrition-delivery" to malnourished kids using a 'therapeutic-product' that helped enhance weight/height of children through 8 weeks of treatment and the evidence indicates that the child after the prescribed treatment did not relapse into malnutrition. The science of human nutrition indicates that malnutrition can be a result of deficiency of calories, proteins or micronutrients. An energy rich food formulation discovered and used elsewhere that addresses all three deficiencies has been tested for Indian children as well. The data available suggests that India represents 48 % of malnourished children worldwide. Given its impact on health, education and productivity, persistent undernutrition is a major obstacle to human development and economic growth in the country, especially among the poor and the vulnerable, where the prevalence of malnutrition is highest. Authors present an argument that life of millions of malnourished kids can be improved if the 'evidence based' decisions enable the development practitioner to take appropriate actions to address urgent human issues till more theoretical research data becomes available.

Understanding the gender dimensions of environmental change: A gateway to achieving sustainability: A Zimbabwe based study

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This paper is part of a larger study on environmental change and its gendered impacts on rural men and women in Zimbabwe. However, the concrete study is still in its preliminary stages and hence this paper is based mainly on a literary analysis of the subject matter. The focus of this paper is that of the differential effects of environmental change on rural men and women in accordance with their gendered differences. Though often overlooked, the differential susceptibility to stresses and perturbations is a critical indicator which displays a cross-sectional analysis of social dissonance. Based on this study, gendered differences are used to perpetuate social conflict through inequitable distribution of power and resources, resulting in there being differential vulnerabilities between men and women. An analysis of differential vulnerabilities will thereby expose the underlying social conditions which cause vulnerability as it is believed that in most cases the principal causes of vulnerability are more often than not remote from the initiating environmental stresses. Additionally, an analysis of differential vulnerabilities will showcase the different types and numbers of response strategies undertaken by men and women to counter risk, as well as the structural constraints which shape their response strategies. Central to this paper is the notion that, continued vulnerabilities antagonise the processes of sustainability; hence addressing vulnerabilities is a guaranteed way of ensuring safe transitions towards sustainability.

"The White Man's Burden" and the creation of sustainability in the non-Western world: The case of Design Without Borders

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The concept of sustainability is a Western invention. The actions taken to create this are mostly of Western origin, even those taking place in non-Western parts of the world. Such enterprises are often executed as development aid. The idea of development aid derives from the conception of "The White Man's Burden" (WMB), of the Western world being superior to the non-Western, but also has a responsibility to take care of it. The creation of physical sustainability thereby comprises an inherent threat to the traditions and the cultural sustainability in these areas. The Norwegian non-commercial enterprise Design Without Borders (DWB) constitutes an example of the above described schism. Its aim is to create better living conditions built on sustainability in communities which are victims of crisis or extreme poverty. The projects have been fairly successful, seen both from a Western and a local view. Provided that local habits, skills and creativity are incorporated in the projects, Western initiatives can function as a creative force and a rejuvenation of local traditions, and thereby an overall sustainable development.

The dialectic of stress in affluent consumption of novelty

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Ever-increasing consumption of novelty among affluent consumers in the West is one consequence of a strong income-consumption correlation in consumer culture dominated societies. The present paper suggests including stress from a socio-material perspective when studying ever-increasing consumption of novelty. The dialectic of affluent consumer-related stress is presented in terms of structural socio-material conditions having specific behavioural lock-in properties in terms of ever-increasing consumption of novelty and negative correlations between income and subjective wellbeing. This dialectic is discussed in terms of stress and normativity, materialism and stress, and the income-wellbeing interface. The paper raises research questions relevant to sustainable consumption practices. This stress dialectic contributes to our understanding of the connection between elements of subjective well-being and income. The arguments made here can be used to further investigate some issues of particular interest from a sustainable consumption perspective. At what level of consumption (of novelty) is SWB high and stress levels low? What self-defining competencies would translate into less consumption of novelty among affluent consumers?

Multi-regional environmentally extended input-output analysis: A case study for Portuguese agriculture

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In this paper, an environmentally extended multi-regional input-output analysis is performed, using the results from the World Input Output Database project, considering 41 regions and 35 economic sectors. The aim of this work was to perform an environmental assessment of Portuguese agriculture, answering the following questions: - What are the main environmental pressures caused by Portuguese agriculture? - What are the main pressures associated with international trade and how important are they? - How important is agriculture when compared to the total Portuguese economy? - Where does Portuguese agriculture stand in the international picture? The agricultural sector is one of the main contributors for greenhouse gas and other air pollutant emissions. Also, agriculture is responsible for the largest consumption of water throughout the economy. This work demonstrates the usefulness of this kind of analysis in characterizing the activity of economic sectors. It is possible to evaluate the environmental effects of different production and consumption scenarios, distinguish between imported and domestic pressures, and perform comparisons at international level. However, the results proved to be highly dependent on the quality and availability of base data. The normalization procedures needed to standardize national data from different sources also influence the results. Another shortcoming identified is the high level of aggregation of the economic sectors in this model, which can be a limiting factor when performing some specific analysis. Combining IO and LCA as a way to disaggregate results in a product specific basis would be a major improvement.

Large-Scale Collaborative Problem Solving using the Example of Phosphorus as a Global Case (GlobalTraPs): A Transdisciplinary Approach

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Despite growing interest in the development of innovation systems and collaborative approaches for organizational, local, national, and regional transitions, a general framework for large-scale collaborative problem solving based on comprehensive stakeholder involvement has remained elusive. We identify sustainable development of the multilevel innovation system as the primary component of interest and consider stakeholder-based collaboration processes as strategically key. With this perspective in mind, we analyse a number of established innovation and/or sustainability approaches with regards to their underlying collaboration patterns and discuss how a transdisciplinary approach can provide the basis for stakeholder-driven sustainability policies. To illustrate how multilevel innovation systems and collaborative problem solving processes are interrelated, we use the example of sustainable phosphorus (P) management along the global P-supply-demand chain, the ongoing "Global Transdisciplinary Processes for Sustainable Phosphorus Management (Global TraPs)" project. Because of the high impact of phosphorus fertilizers on food security, this case equally concerns decision-makers, policy-makers, researchers, and the society at large.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

The state of sustainability education in MBA curricula in Africa

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Business schools are responsible for the education of future business leaders. It has also been emphasised that business schools should respond to the sustainability crisis plaguing our planet. It is evident that Africa specifically, is in desperate need of leaders that will address sustainability issues. This paper does not seek to evaluate MBA curricula or rank MBA's in Africa. Instead it aims to document how sustainability issues are currently covered in MBA curricula in the 27 member schools of the Association of African Business Schools (AABS). Similar studies have been done in Spain and South Africa, but their focus was mainly on how Corporate Citizenship, Corporate Social Responsibility and related fields were covered in MBA curricula. This explorative study provides a descriptive web-content review of the MBA curricula of the members of the AABS, seeking to explore the extent to which sustainability issues and sustainable development are included in these business schools in Africa. It explores whether these issues are taught in stand-alone courses or if they are embedded into other courses. It also looks at whether the relevant courses are compulsory courses or elective courses. It is suggested that it should first be established how the issue of sustainability and sustainable development is currently covered in MBA curricula in Africa, before recommendations on how curricula should be adapted can be proposed.

Rethinking incremental urbanism: Co-production of incremental informal settlement upgrading strategies

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In Enkanini today, approximately 10% of the population of this informal settlement of Stellenbosch is organised around three infrastructure interventions for waste, sanitation and energy services. Even though the settlement is still without a representative leadership structure and illegal due to its location that is also impenetrable for conventional infrastructure services, some residents have now access to services while they "trust and wait" for the realisation of the UISP. Albeit micro in scale, these interventions have set the stage for macro level interventions that can rest on institutional arrangements that have been co-produced by academic researchers and residents. In parallel to the co-production process, an attitude of learning by doing have increased capacities within the participants to evolve from being actors as volunteers to actors as co-researchers, and even project operators whom themselves are capable of facilitating the scaling up of the three projects to include the wider community.

Can European sustainability and innovation policies accelerate the uptake of Product-Service Systems?

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In the context of global warming and an increasing depletion of natural resources the promotion of new forms of sustainable innovation has come to the forefront of theoretical and empirical research and of policymaking. It is over a decade now that the opportunities for sustainable solutions through product-service systems (PSS) caught the attention of businesses and policy makers. Despite the apparent potential of PSS as more profitable, resource efficient and socially responsible, there has seemingly been limited uptake of this type of business model. This paper reviews the field of policy intervention for PSS and suggests a policy framework for the promotion of PSS in European innovation and environmental policies. The literature review unveiled that most of the literature on PSS has focussed on design strategies, environmental potentials and uptake in industry, but few have explored the role and importance of public policy and policy intervention. Given the lack of focus of PSS literature on the effects of policy intervention, it was important to obtain empirical evidence on the role that different policies could have in fostering the uptake of PSS in Europe. Based on narrative analysis of a series of studies funded by the European Commission in the period 2009-2011, the paper further identifies important policy areas linked to different types of PSS. A mapping exercise and further analysis of a number of European policies that are potentially linked to PSS was subsequently performed. This qualitative exercise allowed the identification of specific policy areas relevant to PSS. The general effect of policy intervention was further investigated by means of an expert enquiry among policy makers and key stakeholders. The analysis of European policy (and its potential) was then used to suggest a policy action framework for PSS to support policy makers in their efforts to achieve sustainable development and to promote eco-innovation uptake in Europe and other World regions.

Natural resources and women's employment

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We analyze the effects of mining on women's employment. We construct a unique data set consisting of more than two decades of panel data on the production of industrial mines in sub-Saharan Africa. The mining data is linked to individual level DHS data for more than half a million women from 28 countries in Sub Saharan Africa over 30 years. The spatial and temporal variations in our data allow us to investigate local spillover effects on employment using a difference in differences approach. We find that female employment increases once a mine opens and that women become more likely to work in services. The effects wear off with the distance to the mine and opposite effects occur once a mine closes. We also show significant heterogeneity across women in the effects of a mine depending on their marital status.

Analyzing the welfare effect of controlling indoor air pollution

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One of the main reasons for failure of policy measures in developing countries is due to the reason that interaction of different social as well as economic activities are not taken in to consideration during designing and implementing policies. This study attempts to show the possible welfare effect of a policy measure to control indoor air pollution. The study uses marginal tax reform approach. The urban household socio-economic data collected by the Addis Ababa University is used. No study has been done regarding this issue - showing one way of analyzing welfare effect while implementing pollution controlling policy instruments. Thus, the study found that introducing or increasing tax on commodities which are the main sources of indoor air pollution (such as kerosene, charcoal, etc) would affect the welfare of the urban households as the consumption of these commodities are more concentrated on poor than rich households. On the other hand, a tax increase or introduction on commodities such as cigarettes and fuel wood may not have a significant welfare effect on the urban households. Further, the study indicated that while exempting medical services from tax, distinction between modern and traditional medical services need to be made as a tax increase on modern medical service do not have any major effect on welfare as poor households prefer the traditional ones. Therefore, this study suggests that any environmental policy measures need to take in to consideration the possible effects of the measure on household welfare.

Review and assessment of academic activities, student competencies, research themes and practice of sustainability principles in higher education program: A case of the graduate program in Sustainability Science of the University of Tokyo

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One of the roles of academia in sustainability science is capacitating scholars in navigating systems towards more sustainable future states amidst complex crises and uncertainties in today's world. However, efforts are thwarted by the lack of integration of sustainability perspectives in assessment methods to determine the progress of the developing field with regards to competency building activities and the type of research projects being conducted. There is a need to determine current states of sustainability science as an academic practice in order to undergo institutional transitions to serve better the given purpose. This paper aims to operationalize an assessment process based on competencies that is recommended in sustainability project implementation and the categorization of sustainability science paradigms. The contextual application is on the Graduate Program in Sustainability Science (GPSS) of the University of Tokyo. The result of the competency assessment shows that research thesis contributes mostly to the key competencies proposed for sustainability research as opposed to curricular courses, internal seminars and other competency building activities in GPSS. The second component of this paper characterizes the types of research conducted that contribute to competency for the students in the program in terms of select principles and concepts of the given field. The findings serve as a benchmark for the program and other academic institutions for further development of sustainability science as a research field. The study also opens an avenue for discourse on how to help move forward sustainability science into research paradigms that could better improve competency building.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

Amsterdam as World Heritage city: a sustainable historic urban landscape?

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This paper is part of a series of papers to design and test a framework to reveal the way local governments can further improve local policy to manage their (historic) cities more sustainably. This is done by evaluating their management practices by means of an assessment framework, to assess their compatibility with the UNESCO recommendation on Historic Urban Landscapes (HUL). To gain deeper understanding of the contribution of the Historic Urban Landscapes approach to current theory, this paper first reveals the patterns of change on international cultural policy related to this 2011 HUL recommendation. This evolution is then used to design the framework used to assess local policies. The paper series will address the four categories in the framework: definition (of heritage); the general principles; threats; and tools and strategies, of cultural heritage and its management. This paper address the first category in the framework, definition (of heritage), embedded on its evolution. The Amsterdam policy and management system is used as a case study to apply and reflect upon the application of this first step of the framework. Analysis of the policy vision using the framework reveal that Amsterdam policy in many cases is close to HUL when it comes to determining why something is heritage. Analysis of the tools to actually implement, manage and maintain such vision shows the concept of heritage here is still a bit farther away from HUL, and as such from the stated vision.

Just Transitions and a contested space: Antarctica and the Global South

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This paper suggests that Global South states should prioritize Antarctica as a core trans-national issue because of the potential rewards it offers in terms of opportunities for advancing their common political and development agendas. Global South states are significantly underrepresented in Antarctic Treaty System (ATS) governance. Consequently, they have minimal input into the shaping and direction of ATS decision-making on issues such as Antarctic bio-prospecting, fishing and tourism or, critically, into debates about the role and status of Antarctica in the international system. Nevertheless, Antarctica represents opportunities for Global South (GS) states to realize shared cosmopolitan democracy and environmental justice goals. While contemporary media coverage of the southernmost continent has focussed on its vital role in global climate change, Antarctica is also important for GS states because it is a contested, non-sovereign area without a clearly defined status or future (international or global commons, Common Heritage of Mankind, global wilderness?) that could be integral to their future development. The paper advocates the benefits for developing states of participating in Antarctic governance, drawing on theories of cosmopolitan democracy and environmental justice to demonstrate that these can be utilised by GS states to reinvigorate and move forward international debates about the role, status and future of Antarctica and provide a central place for GS states in that future. Additionally, these theories can be practically applied to GS development goals in respect to issues such as the management of Antarctica, access to sustainable resources, and benefit sharing from Antarctic resource extraction.

Peak Oil and the transition to a sustainable economy in South Africa

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Oil is the quintessential resource in the modern industrial economy, accounting for a third of world primary energy and 95 per cent of global transport fuels. Yet a peak and decline in world oil production is inevitable and may be imminent, which has profound implications for the long-term sustainability of industrial societies. This paper addresses a dearth of attention given to this vital subject within South African energy, economic and policy discourses. Employing a multidisciplinary approach, it aims to understand the main economic implications of global oil depletion for South Africa and to propose viable strategies and policies for mitigating potential negative impacts. It finds that the South African economy has a high degree of reliance on imported petroleum fuels, and evidence suggests that oil price and supply shocks will have debilitating socioeconomic impacts under business-as-usual policies and behaviours. Two broad mitigation strategies are proposed. The first considers the prospects for developing indigenous sources of liquid fuels, including coal-to-liquids, gas-to-liquids and biofuels. The second strategy involves short-term measures to reduce demand for liquid transport fuels together with a long-term shift toward electrified mass transport. Together these measures can build resilience to oil shocks and gradually decouple economic activity from petroleum consumption. A successful societal transition from a fossil fuel based industrial regime to a sustainable socioeconomic regime requires purposive government intervention, the promotion of sustainability-oriented innovations in technology and institutions, and the political will to surmount obstacles such as powerful vested interests and socio-technical lock-in.

Urban consolidation for sustainable land use In Warrnambool Australia

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Urban consolidation has been used as a sustainable land use planning strategy in big cities for decades. Among other things its use has risen out of a desirability to reduce environmental impacts of development, sprawl, commute times, and to increase public accessibility to services. This study investigates the possibility of increasing the use of urban consolidation in the planning policies of an expanding rural city in Australia. Using a land suitability assessment technique, carried out in GIS, two future land use scenarios are developed: Scenario 1 with no change to current land use patterns and Scenario 2 with greater urban consolidation. A survey of Warrnambool's residents was then conducted to determine their preference for land use development within the shire over the next 25 years. Results show that population growth could be retained within the city limits by increasing the current density by approximately 3 people per hectare. Although the majority of survey participants prefer the current planning regime almost one third indicated a preference for a consolidated city as suggested by Scenario 2. The research demonstrates that sustainable land use management will not only require land use planning strategies that commit to urban consolidation but also investment in participatory planning in a way that engages with residents in discussions on the issues surrounding urban sprawl and involving them in designing a consolidated urban centre that maintains its liveability.

Marine protected areas and the challenge of overcoming barriers rooted in the past

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Marine Protected Areas (MPAs) are thought to be one of the main available tools for marine conservation. The experience with MPAs is quite new in comparison to inland protected areas. They cover 1.17% of the total marine areas and only recently their governance and socioeconomic aspects began to be discussed. This situation is likely to change with the Convention on Biological Diversity's (CBD) goals of having 10% of coastal and marine areas effectively protected by 2020. Bearing this in mind, we reviewed literature on MPAs and related policies with focus on developing countries published in the last five years. We used institutional analysis to highlight path dependence processes (decisions taken in the past limiting current and future choices) that might be preventing MPAs progress. In spite of countries' different historical backgrounds, some challenges seem to be common to many of them. For instance: how to further refine a conservation model based on terrestrial areas for the specific needs of coastal and marine ecosystems; how to avoid that programs end after donors leave; how different governmental bodies can coordinate work together so that there is less policy misfit; and finally how to deal with foreign ideologies' influence on domestic policies and move from a top-down approach to a bottom-up one, where appropriate. We hope that by shedding light on the formal and informal constraints related to these barriers, their possible roots, and how countries are dealing with them, we provide new insights to policy makers working to achieve the CBD targets.

Sustainable restaurants: A Cape Town study

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The main aims of this research were to focus on the restaurant system in Cape Town with a view to creating a support mechanism for a move to more sustainable practices. A review of the literature found that despite a growing global population, the pressure on resources and consumption has been driven by the global middle class. Resource flows and consumption have degraded ecosystems, created waste and emissions. Similarly, the industrialised food system uses energy, produces waste, depletes the soil and thwarts biodiversity. The city Cape Town reflects the inequalities and unsustainability of the global system. Restaurants can control flows of energy, food and waste, support people and the environment, as well as communicate and educate consumers. Research into the restaurant system in Cape Town shows evidence of restaurants making efforts towards sustainable endeavours. Within Cape Town there is the opportunity to use sustainable energy, local and seasonal menus, support local food economies, and control of wastage. Staff can also be treated fairly and given growth opportunities and endeavours can be communicated. The conclusions suggest a space for a support mechanism for the restaurant industry where individual restaurants can be helped to move to sustainability and collaborate with other stakeholders. The recommendations are to create an organisation that will bring restaurants together and map out the changes they make. They need to be supported with expertise and audits of their current practice so that they can set goals for the future with regard to their environmental and social actions.

FULL ACADEMIC PAPER ABSTRACTS (CONT.)

S(p)eedkits – Rapid deployable kits as seeds for self-recovery

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Help organisations such as the Red Cross or MSF have sleeping Emergency Response Units (ERU). These units start acting immediately after disaster occurs. The function of each unit is specific, e.g. to provide sanitation, medical care, water supply, or energy. These units have been in operation for nearly 20 years. But there is still one major issue in these disaster areas. A lot of these natural catastrophes have caused epidemics like cholera or typhus. After any rapid-onset disaster, the most immediate health issues concern access to food, water and shelter, and adequate sanitation to avoid spread of disease. A solution to prevent contamination problems could be a mobile biogas plant to treat collected human excreta. With this plant one should be able to remove most of the harmful pathogens to guarantee a sufficient level of sanitation in the camps and their surroundings. Several types of prefabricated mobile biogas plants were analysed and compared to serve a population cluster of 200 people (chosen value for initial modular calculation). A 2-step thermophilic biogas plant was the first choice. A model with two fermentation tanks working at 55 - 60°C during few days hydraulic retention time. The alternative process considered for the implementation for a mobile fecal sludge biogas plant would be a 2-step system. The collected and screened fecal sludge will be passing a batch wise alternating pre-pasteurization (1h at 70°C) as 1st step to kill the germs before going to the digester tank and to a digestate storage tank.

Learning power and participation in adaptive co-management: Integrating the adaptive dance and the dance of agency

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Adaptive co-management (ACM) represents an emerging framework for designing an adaptive, collaborative and learning-based approach to ecosystem management. A learning-based approach is deemed essential in the context of the 'adaptive dance' between systems of people and nature outlined in research on coupled social-ecological systems (SES). However, scholars have struggled to define the what, where, when, how and why of social learning processes in the field. In particular, attention has been drawn to the effect of 'intangible' and context-specific properties such as power and leadership on learning. This paper proposes that these difficulties may be eased by complementing the institutional analysis conducted thus far with a performative account of the goal-oriented practice of ACM. A performative approach emphasizes that ACM is not dropped onto a pre-existing society, but that ACM in practice is enacted through the day-to-day activities of its practitioners through a 'dialectic of resistance and accommodation,' in response to infinitely varying local pressures, incentives, material structures and histories. Effects of power emerge from this 'dance of agency,' producing different learning processes according to context. This paper outlines the achievements of ACM research to date, before tracing its primary critiques. A prospective methodology for studying social learning in context is outlined, incorporating comparative mental models analysis (CMMA), social network analysis (SNA) and participant observation. It is claimed that integrating the adaptive dance with the dance of agency may help articulate an integrative theory of ACM.

Re-thinking sustainable community economic development practice within Vanuatu

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During the past six years the author of this paper has been part of a development initiative called the 'kastom governance partnership', consisting of the Vanuatu Malvatumauri National Council of Chiefs, the Australian Centre for Peace and Conflict Studies (ACPACS), and AusAID. This partnership has attempted to do things differently – focused on the creation of platforms for dialogue around issues of governance, sustainable development and conflict. This paper presents two things: findings on the tensions embedded within a sustainable community economic development approach relevant to Ni-Vanuatu lives; and secondly, a reflection on practice, understood as 'skilled means'. This paper contributes to debates about how community development practice contributes to a generative dialogue about sustainability within Vanuatu. The findings of this paper focus on several identified tensions distilled from work within the development partnership and key informant consultations. For the purposes of this paper the following five tensions have been distilled: 1. Individual vs. collective 2. Cash-oriented vs. customary-oriented 3. 'Subsistence plus' vs. 'not enough' 4. Wealth as land-focused vs. educational-focused 5. Urban vs. Rural. The conclusions of the paper focus on 'sustainable development practitioners' need for a compass enabling them to navigate through the kind of tensions discussed in the findings. The complex forces at work within a society such as Vanuatu, undergoing rapid change within all spheres of life, ensure the requirement of a sophisticated reflexive approach to 'development practice' that incorporates a sustainability perspective, but also a dialogical practice.

Developing a framework to define cost-effective conservation strategies in human-dominated landscapes

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We present a conceptual framework based on property rights regimes and negotiation situations about compensation payments to analyse the cost-effectiveness of strategies for off-reserve conservation actions in human-dominated landscapes. We explore the costs of implementation, monitoring and enforcement, and decision making of conservation actions based on the bundles of rights over natural resources of different stakeholders and the distribution of rights in negotiation situations relating to compensation. We demonstrate the theoretical utility of the framework by applying it on a sample of 275 papers from the academic literature dealing with property rights. We found that our framework is able to explain the negotiation situation and to define rights of compensation for existing situations about conservation and natural resource management worldwide. We also practically test it in two wildlife corridors in African countries: Mozambique and Tanzania. Our results for applying the conceptual framework to those countries suggest that the framework is also practical applicable. It was useful to identify bundles of property rights for different stakeholders and it helped to designate compensation right holders in negotiation situations. The new framework contributes to better delineate cost-effectiveness strategies for conservation in human-dominated areas in those African countries.



ABSTRACTS ONLY

Rethinking development: An integral approach to sustainability assessment of pastoral livelihood systems in Mongolia

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Nomadic pastoralism is one of the livestock production systems based on extensive land use and herd mobility. The system has adapted to climate variability for centuries, especially in dryland. Worldwide, pastoralism currently supports about 200 million households and nearly a billion heads of animals including camels, cattle, and smaller livestock that account for about 10% of the world's meat production. However, many regional development and environmental protection programs aiming at improving living standard of nomadic households and grassland ecosystem are transforming traditional pastoral livelihoods around the world. One of the main assumptions of those government policies is that the provision of social services is best provided in settled urban environment. However, the results of this study demonstrated that regional development and environmental policies induced the weakening of pastoralism in Mongolia. The sedentarization resulted in the sudden changes in the lifestyle of nomadic pastoralists. The changes in their lifestyle also led to the loss of indigenous culture closely related to the nomadic herding on grassland. Thus, the technological innovation and economic growth in the 20th century may have led to significant welfare improvement of nomadic society; however, they also caused negative consequences in the case of Mongolia.

Theorizing land grabs: What kind of development?

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Many of the world's least developed countries have recently either sold or leased land to foreign stakeholders, in a process labelled as "land grabs". Vast tracts of land in lower income countries are being acquired by agribusiness, investment funds and government agencies leaving what has been described as structural holes in the territorial fabric of nations. This paper summarizes some of the emerging literature on land grabs, examines the discourse surrounding a prominent example in the Gambella region of Ethiopia, and discusses how to situate this process within development thinking. The paper provides an opportunity to understand how thinking is emerging about this process, and to consider some of the long-term implications, using a case study to illustrate some of the complexities and challenges. Many scholars have identified stark contrasts in the idea of sustainable development or sustainability, and the extent to which those goals can be reached in a neoliberal market framework. The conclusions of the paper are that we need to think very carefully about the long-term repercussions of less-developed countries selling or leasing land to countries with more resources not only because of the potential impact on the political ecology of regions, but because of the fundamental essence of the resource being impacted (land and usually water rights) and because of the vast scale at which this process is taking place.

Transforming African agriculture: Organics and AGRA

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The paper compares high input and low external input approaches to agricultural development in Africa and analyses cost-effectiveness and sustainability. It presents three case studies on agro-ecology showing the critical learnings from each, and compares the costs and benefits of high external input approaches driven by technology with low external input systems approaches, which link producers to markets. Hi-tech approaches think big are strong in infrastructure development, but they are very expensive to scale up, and require highly qualified people in each village cluster. Low external input approaches such as organic farming rely on connecting farmers to the market, building local institutional capacity and training farmers. They tend to think small, and need to expand their vision and provide infrastructure. The larger programmes should learn the market, capacity building and cost-effectiveness strategies from grass-roots approaches. Just transitions in agriculture require four elements, all of which are addressed in the paper: smallholders need help in increasing production; smallholders need help in adapting to climate change; good quality healthy food should be available for nourishing young Africans and finally, successful modest investments in sustainable agricultural development should inform small and large scale projects, so that money is spent effectively.

Nutrient cycling with urine and compost

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Sustainable food production requires efficient use of nutrients; recycling nutrients reduces the need for unsustainable chemical inputs, and reduces the production of effluent waste streams. Simple recycling methods can allow this waste to become a useful resource for organic food production. The paper shows how urine diversion toilet systems can provide enough nitrogen and phosphate to produce significant amounts of food through an efficient composting system. It proposes a simple system of combining grass cuttings from a university or other institution with urine, producing high quality compost to be used as part of an experiential learning programme based on a demonstration student organic garden project. The process is feasible, poses no health risk and is cost-effective. The process can be replicated easily at many institutions, factories and office blocks, and can begin to involve ordinary people in the production of their own healthy food.

Sustainable development: The quest for consensus

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Sustainable development is a collective concern. Much of the debate surrounding sustainability is in terms of what we need to do to safeguard the quality of life or to avert catastrophes. This implies consensus, both on objectives, with reference to the potential costs and benefits of alternative courses of action, and on the means to achieve these objectives. However, we live in a world of diversity, which calls for effective consensus building. The paper considers the practical application of consensus building, at global, regional and local levels, with reference to economic and social structures and the reconciliation of differing priorities.

Modeling and assessing scenarios of common property pastures management

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The common property pastures in the Swiss Alps provide significant services to the mountainous regions, such as income sources for farmers and tourism industry, protection from soil erosion, water-run-off and landslides, and high biodiversity. These services are highly dependent on continuous management of the alpine pastures and meadows. In Switzerland, most alpine summer pastures are common property and have been managed by local governance systems since the middle Ages avoiding an over-use of the scarce resources. Societal changes, like industrialization, rapid economic growth, and new agricultural policies, induced major transitions of the pasture management system, leading to abandonment of land or intensification and ensuing reduction of biodiversity on the long-term. The aim of this paper is to present a system dynamics model that allows understanding of the on-going non-linear interactions and feedback processes affecting the use of the common property pastures in Grindelwald, Switzerland. The study shows how modelling and scenario techniques can be combined for the analysis of social-ecological systems and their possible future states. The scenarios developed with the formative scenario analysis impact on the variables affecting appropriation and provision. The paper identifies the key external conditions that might lead to increasing or decreasing sustainability of the social-ecological system. The assessment of the scenarios was performed with stakeholders and shows the difference in preferences for future states between different stakeholder groups. The following two issues were of relevance. First, changes within the governance system, such as that the common property regime starts opening the stock of resources to external users that are key for keeping upright the social-ecological system. Second, the demand for recreational space creates conflicts regarding the harvest. However, the income generated through tourism is essential for maintaining the land cover intact.

Community based watershed management in rural Ethiopia: A case of rapid transition on a troublesome path

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The water and soil management activities of Abrha-We-Atsebeha, a rural village in Tigray, Ethiopia, have led to it receiving the 2012 Equator prize in dryland management presented by the United Nations Development Programme. This paper examines the initial qualitative stages of a case study examining this case to understand how a community based participatory

ABSTRACTS ONLY (CONT.)

watershed approach can significantly improve the security and sustainability of its population. Over the last decade, tree planting supported by water storage and irrigation management (small dams, catchment ponds and wells) has significantly improved soil stability, agricultural output, food security and income levels. Agriculture has moved beyond subsistence rain-fed cropping (maize and tef) to income generation via fruit, vegetables and apiculture. This success has been driven by a community based participatory watershed approach where multiple layers of government supported the local community in the project's design, funding and management. Beyond partnership, consultation and community leadership, two additional main success factors were found. Firstly, significant amounts of the project's labour were provided as part of a World Bank sponsored food security programme. Second, a project champion (a village leader called father of fire") was vital in fulfilling management and organisational tasks and in establishing cultural norms required to change agricultural and household practices.

Identifying simplified indicators of sustainable resilient cities

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Growing urbanisation highlights the need for enhanced sustainability of cities. Developing countries alone will build the estimated equivalent of a city of a million people every five days till 2050. Indicators of sustainability will be of particular importance in the management and planning of these rapidly growing cities of the developing world. Decision-makers in these countries may not have access to the detailed data necessary for comprehensive sustainability indicators at the city-scale. Simplified indicators of sustainability, developed from widely available census data, can assist these decision-makers in managing the growth of these cities in a more sustainable manner. This paper assesses the South African Population Census of 2011 for possible indicators of sustainability for the eight major metropolises of South Africa. The main aims of the paper are to show that relatively freely available, accessible data can be used to determine the sustainability of cities in developing countries and monitor their progress in this regard; and to compare the sustainability of the eight major metropolises in South Africa using census data. The census data contain many variables of use in assessing the social aspects of the sustainability of cities, ranging across the areas of equity, health, education, housing and population change. These data are less useful in evaluating the economic and environmental aspects of sustainable cities. However, several items covered in the census may be used as proxies for ideal sustainability indicators in these areas. With regards to the sustainability of South Africa's eight major metropolises, comparison of these indicators shows that some metropolises are engaged in more sustainable development than others.

Scaling-up local niche experiments for transitions to low carbon transport systems

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To speed up the transformation to low-carbon transport systems, transition policy approaches highlight the importance of purposive experimentation with sustainable niche innovations such as battery powered vehicles, fuel cell vehicles and biofuels. The rationale for these transition experiments is to 'translate' in more concrete terms the long-term visions and transition pathways to sustainability by concentrating on search and exploration processes in which firms, research institutes, universities and governments are navigating and negotiating their way forward, gaining knowledge and experience along the way. An important policy challenge that has followed from various 'real' transition experiments concerns the crucial issue of 'upscaling' or 'aggregating' the niche projects towards broader and more widespread application in society or, phrased differently, to accelerate the process from the initial 'niche' to a large scale transformation that replaces dominant (unsustainable) practices. The paper seeks to gain a better understanding whether, how and when the spatial context of niche experiments influences the possibilities to upscale niches in socio-technical transitions. The paper addresses mechanisms to upscale niche innovation. Such insights will help policy to leverage the speed and momentum by which sustainability transitions unfold.

Integrated sustainability assessment: Modernising the design of the Assessment of the Human Environment

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Politics and policy increasingly focus on sustainable development as a long-term societal goal. In policy documents, however, sustainability is often no more than a 'dot on the horizon', without measurable policy objectives or accountable efforts. This feeds the scientific debate on how researchers could optimally contribute to sustainability policy by conducting assessments

and evaluations. This debate was also at the basis of the 17th Assessment of the Human Environment, and led to a shift away from the traditional focus on goal achievement and towards sustainable development as a goal-seeking process. The paper outlines how insight was created into the available room for manoeuvre for a government operating in a network society, followed by a reflection on how useful integrated sustainability assessments could be for policy. We worked from the hypothesis that shifting the focus from goal achievement to process-based and institutional aspects of policy-making could make the assessment more useful for a government that aims for a more sustainable society. The paper's elaboration on the report is done on the basis of comprehensive analyses of systems which have a significant impact on the quality of the environment, now and in the future. For every system, the analyses revealed different opportunities as well as barriers for policies that strive for sustainable development. The preliminary conclusion is that the latest assessment report has a richer analysis basis, provides more insight into the motivation and action of actors and thereby contributes to more realistic policy recommendations. The use of process-based and institutional perspectives, in addition to traditional perspectives on goal achievement, was crucial – although their elaboration still could be further improved.

Change as routine: Lessons for capacity building for sustainability transitions from the waste sector in England

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Progress towards sustainability, in waste as other areas of economic activity, requires adjustments from policy makers, the private sector and public participation. In numerous countries in the developed world, these and other stakeholders have combined to achieve a transition to a quasi sustainable waste management system. Globally, however, sustainable waste management remains an elusive challenge, in which the technological hurdles are not always the greatest. The significant increase in the recycling rates in the UK since 1999 appears to represent a sustainability transition success story. Without underestimating the need for further progress, the experience of the waste sector in England may provide useful lessons for others. However, whilst numerous studies have examined specific aspects of UK waste practices at different times during the course of this ongoing transition, there has not been a retrospective attempt to critically analyse the lessons from a transitions perspective. This paper examines the capacity for change that has enabled the transition within the English waste sector from the mid-1990s to the change of government in 2010. Twenty interviews were conducted with representatives of local authorities, regional and national regulators and policy makers, and waste industry representatives alongside an extensive analysis of policy documents. Whilst there has been a consistent drive towards resource recovery from supranational and national scales of governance, a wide array of policy instruments have been employed to effect the transition. The results suggest the need for a broader perspective than earlier work, acknowledging how the waste sector has evolved in a reflexive manner, in line with broader societal changes. Arguably, coping with change has become the norm for the waste sector, which bodes well for the capacity to cope with further sustainability initiatives.

Assessing participation in sustainability initiatives at higher education institutions – Critical success factors

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Universities, being important players in societies as they educate current and future decision-makers, have been attributed a key role in contributing to the transition to sustainable societies, becoming the institutions themselves examples of best practices, continuous research and a place of practical learning of sustainability principles. Many higher education institutions (HEI) have responded to this challenge in terms of campus greening, curriculum renewal and research orientations. But the dimensions of participation are less considered such as in the sustainability implementation process as well as in its assessment. The main objective of this paper is then to contribute to the discussion about sustainability at universities with a focus on the dimensions of participation and their possible assessment. It is embedded in an ongoing research project about developing an integrative measurement tool for participatory processes in campus sustainability initiatives. In depth-interviews with sustainability experts, carried out at a side event of the Rio+20 Summit, and international focus groups of selected European universities, are analysed to retrieve critical success factors concerning the involvement of the campus community in sustainable development implementation and to outline possible ways for their assessment.

ABSTRACTS ONLY (CONT.)

Pushing CSR for system innovation

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The role of CSR as a driver for innovation and value creation has been debated over the last couple of decades. The main contribution from this paper is to shed light on the different literatures and practices on CSR. Some of the literature features a polarized debate over the pros and cons of CSR and innovation and value creation, from strong focus on innovation, CSR and value creation as mutually supporting one another, to the critique against CSR for destroying value and contributing to business green washing. The paper addresses the business perspectives and the role of corporate social responsibility in sustainable system innovation seen from a larger perspective. The findings confirm that CSR and innovation clearly have stronger roles to play in some business models than in others, and these roles relate to certain types of CSR and innovation modalities. A general conclusion is that there are no simple answers to the role of CSR and innovation in facilitating growth and value creation. General arguments that have been stressed in the literature as well as in the public debate do not have the proposed general cross-cutting effects. Our findings are that there are fairly specific and selective effects that need careful investigation. The difficulty in establishing clear connection between CSR and innovation on the one hand and growth, productivity and value creation on the other, may have to do with the complexity of both CSR and innovation. As concerns innovation the study finds three distinct approaches: 1) General product and service innovation; 2) Process and organizational innovation; and 3) Marketing oriented innovation. While one dimension of CSR may interplay well with a given business model, another dimension may not.

Governing resource flows in the Gauteng City-Region

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Much of the urban resource analysis work to date falls into two schools: (1) scientific measurement and modelling of the quantum of resource flows through a city or region, or (2) theoretical and normatively-geared work that builds a case for new infrastructure configurations needed to reduce resource flows. These two perspectives – metabolic flow analysis (MFA) and transitions analysis (TA) – are both useful in their own right, and there are valuable recent efforts to integrate them. However, within these conceptual frames there has been little empirical research into how governments facing resource constraints understand flows accounting and plan for infrastructure transitions in practice. This paper presents preliminary analysis from a metabolic flows data-collection process in the Gauteng City-Region (GCR), one of South Africa's largest, fastest growing and most resource-pressured regions. It reads gaps and anomalies in the available data on flows of water, waste, energy, food, and other materials as indicative of weaknesses in the reach and capacity of government systems. This in turn raises the deeper issue for how government understands resource flows and infrastructure transitions. Drawing on urban political ecology and governmentality theory, this paper explores this issue through an institutional analysis of what governments in the GCR are doing to manage resource flows through the networked infrastructures they are building, and possible system-limits to the conceptualisation and articulation of more sustainable government objects and operations, in line with the insights of MFA and TA.

Bioclimatic architecture in hot regions: The SURE-Africa project

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This paper draws from the results achieved by the SURE-Africa project. The project aimed at strengthening knowledge and its application in practice, contributing to a sustainable development through the vital area of energy efficiency in buildings and cities, and, ultimately, to reduce poverty. The situation found in the participating countries was representative of many other countries in Africa, with developing economies and, often, marked by armed conflicts in the long run. The urban rehabilitation in these countries requires a different approach to incorporation of renewable technologies than in Europe. This is due to the scarcity of resources, building and planning regulations, and the pressing demand for social housing, and the construction of public buildings such as schools and hospitals. It is important to consider energy conservation through passive building design as a proven equivalent to renewable energy power generation. The project adapted well-established knowledge in this area to the economic and climatic context. An emphasis is on net demand reduction rather than generation; this approach making less downstream demands for maintenance and replacement, and being more compatible with traditional life-styles. In non-domestic buildings, a high priority is the avoidance of air-conditioning. In the case of housing, it is important that basic comfort performance criteria are met, since failure in this respect will prompt the occupants to purchase package

air-conditioners if and when reduced costs and improved finances allow. The project has also drawn from existing areas of expertise in post conflict reconstruction, trying to resolve inevitable conflicts between the short-term need, and the longer-term imperative of sustainability. It is recognised, that in the area of housing in particular, there is much self-build, and it is thus acknowledged that the support materials must not only be accessible to the design professional but to the layman as well.

Transition in ecological modernization: A case of Brazil China soy trade

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More land is planted in soybeans worldwide than all grains combined, with production increasing 14 fold between 1950 and 2010. Brazil is currently the second largest producer of soybeans, behind the US and ahead of Argentina. We describe a market-system innovation promoting sustainable development that involves collaborations among Cargill, The Nature Conservancy, and Brazilian landowners and government agencies. These organizations partnered because of concerns about loss of ecosystem services from conversion of tropical rainforest, the overrunning of Brazilian law and internal capacity to direct its land use, biodiversity loss, climate change mitigation, soil depletion and consequent threats to long term food security, displacement of indigenous cultures, and unfair labor conditions. Outcomes so far include improved monitoring and compliance with Brazil's Forest Code, one of the most lauded conservation statues in the world. Lessons learned here might be transferable to other situations, promoting sustainable transitions elsewhere, especially through ecological modernization.

Climate change and consumption: Analyzing perceptions of morally loaded behaviours among young consumers

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Lately it has been argued that climate change must become a morally loaded issue in order for consumers and society to begin to tackle climate unfriendly behaviors. However, few studies deal with the issue of why environmental problems in general and climate change in particular are not viewed as moral issues and also how different moral issues are related to each other in a consumption context. In particular, perceptions of to what degree an issue is morally relevant, and how this perception is related to environmental and climate related consumption behaviors, as well as individual values, are problems addressed in this paper. The purpose of this paper is then to analyze and present how young consumers view different types of morally loaded behaviors and relate these perceptions to environmentally significant consumption behaviors in general, and climate related behaviours in particular. The initial analysis shows that out of eleven problems, poverty (hunger and lack of drinking water), the environmental situation, and climate change were perceived as the most serious ones. Further on, of ten factors the respondents associated climate change primarily to rising carbon dioxide levels, the thawing of glaciers and rising sea levels. Correlational analysis of the initial data material shows that young consumers with norms related to climate change are more prone to decrease their climate unfriendly behavior. However, norms related to social situations such as helping others, are viewed as more morally loaded than norms related to environmental issues and climate change. The explanation might be that environmental and climate change issues are perceived as more abstract than everyday norms surrounding social behaviors.

Sustainable housing – Two systems perspectives

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Systems perspectives in sustainable architecture have received increasing attention in the international R&D community. One methodological consequence of seeing architecture as a part of socio-cultural systems is to investigate housing and its effects on the environment in order to evaluate and eventually optimize planning and building strategies. This systems perspective is for example present in the concept of 'Generative Systems Design'. Another concept focuses on practices related to housing and on their improvements rather than on the physical buildings. This approach is called here: 'Systems innovation by stakeholder involvement'. This paper discusses both concepts regarding their theory background, methods and applications. It analyses the 'Generative Systems Design' approach, its methodology and results for sustainable housing and gives an example for its application. It then discusses the theory and method of the concept of 'Systems innovation by stakeholder involvement' based on two case studies. It concludes with an appraisal of benefits and challenges of the two concepts and their value for sustainable housing. A methodological reconciliation of both concepts should be envisioned

ABSTRACTS ONLY (CONT.)

in future sustainable housing research and practice. A systematic analysis of the collected data with the help of algorithms may then provide information on the 'whats' and 'how much' of sustainable housing, while a discourse on how sustainability is interpreted, valued and practiced by different stakeholders supplements these data with views why sustainable housing is important in the first place.

Cultural resources as sustainability enablers: Towards a Community Based Cultural Heritage Resources Management (COBACHREM) model

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Cultural values are ubiquitous in inhabited geographic spaces of the world, making them readily available assets through which environmental sustainability could be implemented. Conservation indicators from resources of cultural and heritage nature, which are currently neglected when dealing with efforts to achieve sustainable development ideals, have a potential to enrich implementation strategies aimed at achieving environmental sustainability. In most parts of Sub-Saharan Africa, cultural heritage resources are key in devising coherent local land use planning; influencing people's attitudes to the environment; and recently, in redefining rural economic systems, e.g. tourism development. This paper devises a Community Based Cultural Heritage Resources (COBACHREM) illustrating a symbiosis between natural and cultural resources as a new way to achieve sustainability particularly in rural areas of developing countries. The model is relevant for site managers in protected and non-designated areas and can be applied by both policy makers and research scholars alike. The perspective brought about by the article is new unexplored perspective through which sustainable development ideals could be enriched through a focus on resources alternative to wilderness and wildlife and a focus on grassroots levels of developing countries. In addition to bringing a new perspective towards achieving sustainable development, the work provides opportunities to enhance conservation of the overall environment because recognition and addition of other forms of resources, consequently adds a new layer of environmental monitoring indicators.

Exploring Potentials of a Data-Intensive Approach for Sustainability Quantification

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Research towards the quantification of sustainability can help clarify the concept, track its progress, and assist policy makers objectively make decisions. This paper develops and explores a data intensive approach to quantifying the intensive dimensions of sustainability using the ecological information-based approach. Specifically, it is demonstrated how the network metrics of effective connectivity and effective number of roles can convey boundaries where economic resource networks are robust. Furthermore, the temporal trends of these metrics suggest multiple basins of attractions and provide clues on the resilience of these networks. The accuracy of the approaches presented in this paper can be increased with the availability of higher spatial and temporal resolutions, which may also enable analysis of the cycling of flows in these networks. This paper can help in establishing a new computational data-intensive branch in the field of sustainability sciences.

Breaking a chain of deforestation, ecosystem degradation and impoverishment in Madagascar

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Madagascar is off the east coast of Africa with rich biodiversity and unique landscape. The population grows rapidly and the demand for natural resources, namely fuel woods and food, has been rising drastically and compels local people to clear the forest to produce charcoal and reclaim paddy fields for rice production. Thus the people of Madagascar struggle to break the chain of deforestation and impoverishment, but their efforts are deemed as ineffective. The paper intends to present key factors for reversing such a vicious cycle toward achieving sustainable natural resource management and enhancing human well-being in Madagascar. Local farmers need to understand the negative impacts of actions for pursuing short term gains from intensive and exploitative natural resource management. As natural resource use becomes more and more intensive, communities need to strengthen mechanisms of collective natural resource management. Awareness raising and training of stakeholders are essential. It is vital to enhance the effectiveness of such mechanisms by organising and institutionalizing stakeholders. Interview results show that the governance structure for natural resources have been being rapidly downsized in terms of budget and human resources. As a result, the governance structure for natural resource management has been emasculated.

Pricing irrigation water: A study of social acceptability in China based on a household survey

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Water pricing is an effective market-oriented instrument in water resources management to provide water users with incentives to save water. In China, reforming the pricing of irrigation water has been considered as one of the main policy instruments for dealing with the water scarcity problem. Recently, in determining water prices, the policy makers around the world address the demand-side information rather than solely rely on supply-side information. A household survey is frequently used to collect the information on the demand side. China is no exception. However, in the literature, there are very few quantitative studies investigating demand-side information in China. This paper then aims to explore the farmers' acceptability of different irrigation water prices (willingness to pay) for irrigation facility improvement. Though preliminary, results suggest that the farmers' WTP for irrigation water is not significantly different from the current price that they are paying. A low elasticity of farmers' demand to price changes in irrigation water is also found. This is presumably because the cost of irrigation water accounts for a small share of total production cost of farmers. The results are expected to provide policy recommendations to the Chinese government agency for the development of irrigation water pricing mechanism, which incorporates the demand-side information.

The evolving role of industrial wastes and by-products in contemporary production processes: A case study of Pennsylvania

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A key element of any transition to a more sustainable society will need to include the consideration of very large volumes of non-hazardous industrial waste (NHIW), resulting from current production systems. Unfortunately, broader systematic studies of how NHIW flows through economic networks are hampered by the lack of available data. A major exception is Pennsylvania. The basic empirical questions raised by this research is how NHIW is being (re)directed to productive activities at the level of both the individual firm, and, more importantly, at the scale of the broader economy, using Pennsylvania as a case study. The key conceptual question driving the work is to examine what are the major drivers and motivations behind NHIW flows. Rather than focus on individual firms, the study offers a holistic conceptual framework for the kind of significant systematic study necessary to evaluate if firms are changing how they perceive of, and deal with, their industrial wastes. The preliminary conclusions suggest that firms in many sectors have reduced the weight of NHIW over years, despite the fact that the total weight of manufacturing commodities shipped out of Pennsylvania increased by an estimated 9 percent during the study period. With the exception of large increases in the generation of fly ash (the largest type of NHIW), from the utility sector, all other major categories of NHIW decreased. At the same time, however, the proportion of fly ash that is treated and reused has increased substantially. Increases in reuse strategies for other sectors are less stable, but the general trends are a decrease in disposal and growth in new non conventional strategies, namely industrial ecology type practices.

Converging social-ecological systems in the sustainable management of Protected Areas: Reconciling elephant numbers and ecotourism demands

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Ecotourism is increasingly seen as a mechanism to achieve the financial sustainability of Protected Areas (PAs). To this end African elephants have been stocked in PAs under the assumption of increasing ecotourism value. However, when managed at moderate to high densities, the impact of elephants is costly and numerous studies have documented severe changes in biodiversity brought about by elephants. PAs focusing on maintaining high numbers of elephants therefore face a conflict between the social and ecological resilience which may disrupt the whole system. It is thus important to address this conflict and incorporate the complexity of social-ecological systems into the management of PAs. In this study, various PAs were used as case studies to assess the relative importance of year and elephant density on tourist numbers. The results indicate that elephants play an important role in attracting ecotourists; however, there is no evidence that stocking these charismatic species at high densities ensures game-viewing satisfaction or increases in tourist numbers. This finding indicates that the social and ecological requirements of PAs in terms of elephants and tourism actually converge, in that high elephant densities and the associated ecological costs, are not required to support ecotourism operations for financial sustainability. This study highlights the importance of conducting evidence-based studies to guide the management of PAs.

ABSTRACTS ONLY (CONT.)

Vernacular and social innovation architecture supporting green architecture – updating old lessons to upgrade a new responsible design. The case of the humanitarian association Building4Humanity

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This paper focuses on the relations between vernacular & sustainable architecture and green architecture, considering the last one as a responsive approach to the design of the build environment. Learning from vernacular architecture practice the research addresses bioclimatic and ecological principles of traditional buildings in different geographical & cultural contexts keeping in mind the transfer of this low tech knowledge to contemporary green architecture. Selecting examples in such different latitudes as Western Africa and the Portuguese rural territory, the aim is to investigate how local-based- resources architecture responds to environmental, social, psychological and spiritual needs. The use of local raw materials; the reuse and recycle of building materials and also the natural systems of ventilation, heating and cooling, typical in vernacular architecture, will be examined. As a study case, we will take the ongoing architectural and renewal urban project for a community in Guiné-Bissau of a Portuguese humanitarian association- Building4Humanity, Designing and Reconstructing Communities Association (B4H).

The change of paradigm in building, from the obsolete carbon-based house to the announced zero-carbon house, was gradually enabled by technological advances occurred in the renewably green energy industry. However, we are aware that in architecture, sustainability is further more than the implementation of high technology solutions though they improve energy and consumption performances. Thus, it might be the right moment to make a pause in our beliefs in high-tech and revisit traditional building knowledge. The aim is to bring in sustainable lessons of vernacular and social innovation architecture to be incorporated to green architecture and urban design.

Identifying stakeholder views on sustainable transitions of municipal solid waste management systems

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Recommendations from technical-environmental assessments of future scenarios for MSW management systems (e.g., LCAs) are often used to guide policies. Yet without properly analyzing stakeholder views on these scenarios, such recommendation will most probably not translate into action. The goal of the paper is to show how identifying and analyzing stakeholder views on transitions can generate additional information and provide insights on their feasibility with Swiss waste glass-packaging disposal as case study. By means of an online survey, approx. 130 stakeholders (i.e., decision-makers from national and regional EPAs, municipalities collecting waste glass-packaging, recyclers and downcyclers) are asked to rate a set of disposal scenarios. Criteria used are desirability, probability, and sustainability of these scenarios. Respondents are provided with information on the ecological and economic performances of scenarios (e.g., CO₂ emissions). We test hypotheses addressing individual assessment behavior of decision-makers and differences between stakeholder groups. We discuss how insights from these preference assessments can be fed back into the policy making process.

Beyond traditional Corporate Social and Environmental Reporting: A proposed supplementary report to convey the full extent of environmental impact

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There have been significant developments in Corporate Social and Environmental Reporting in the last decade, especially in South Africa, including the Johannesburg Stock Exchange's sustainability index, and most recently compulsory integrated reporting. However, such reporting, by its nature, can be very detailed, and the full impact of a corporate's activities, can be lost on many readers. Based on the principles of ethical stakeholder theory, this paper suggests and new model for reporting; a supplemental model. The paper shows how the supplemental reporting model can quickly convey the impact of a corporates' activities, and that although it should no replace the detail of CSR, it would supplement traditional reporting. This model is to traditional CSR what earnings per share is to the complete annual financial statements is in financial reporting. This paper then explores the limitations of traditional CSR, a key accountability mechanism in promoting sustainability, and proposes a simpler but effective reporting format to convey the impact of corporates activities.

Discussion paper: Moving beyond contemporary spirituality and duality, non-duality and sustainability

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There have been several recent papers exploring concerns that western traditions, religions and even contemporary spiritual movements, tend to be anthropocentric and dualistic and fail to adequately address the exploitation and abuse of the earth. This paper specifically explores the paradigm of non-duality, be it tribal, eastern, spiritual or underemphasized in Western thought, as a paradigm that perceives the oneness and sacredness of all life and forms, and supports the principles of sustainability. The author argues that pervasive shared world views, beliefs, traditions and even religions that view humans as separate, distinct or even superior to the rest of nature, are less likely to translate into behavior that supports sustainability, than non-dualistic views. Just Transitions, urgently seeks an "understanding of the barriers and mechanisms for rapid transitions to a more just, resilient and sustainable world", and this paper explores the idea that a shift beyond the notion of duality, would be such a mechanism.

Gender, religious heritage and planning in Jaipur

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The aim of the paper is to argue that religion has an important role in defining sustainable urban development policies in cities. Specifically, the paper studies the impact of religiously-influenced planning and heritage in Jaipur city in India by using gender as a category of analysis. The paper demonstrates the challenges, as well as opportunities, for sustainable urban planning in these regards and ultimately argues that religion is a critical determinant of sustainable urbanisation in Jaipur (and potentially other Indian cities) and that secularist urban planning has limitations. The paper combines the specialist knowledge of the classical Indian architectural theory (vastu vidya) with various theories on sustainable urban development. The paper demonstrates a strong link between women's experiences of the city in terms of access and mobility, religious heritage and urban design. It shows how the interpretation of specific values that are grounded in religious texts is transferred onto the lived experiences of women living in the modern secular city of Jaipur. The paper concludes by suggesting ways for a gender-sensitive secondary interpretation of textual and visual heritage that must be further reflected in key urban planning policies. Lastly, the paper emphasises the importance of identifying the cause and effect of ruptures between orthogenetic and contemporary city development in South Asian cities by understanding the Hindu as well as other religious influences on the urbanisation and the city-building process. The paper also identifies ways in which multi-religious influences may be usefully engaged in incorporating heritage in contemporaneous sustainable urban planning in South Asian city spaces.

Women As Drivers Of Economic Development In Sub-Saharan Africa

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A Girls and Women-Led Approach to Sustainable Economic Development (SED) in sub-Saharan Africa is proposed. Gender inequality, gender inequity, stereotyping and girls and women's disempowerment are presented as the main causes and maintainers of chronic poverty in sub-Saharan Africa. At the core of its engagements, the article critically analyses encumbrances to women and girls' rights, gender-based discrimination and alienation, attitudes, norms, cultures, laws and practices, and popular economic thinking that perpetuate girls and women's dependency on boys and men. The article brings gender imbalance and systemised radical patriarchy to the fore. Equally, access levels to productive assets, formal and true education, formal employment, political participation, recognition and economic empowerment are analysed. In a just transition, only a better use of girls and women in sub-Saharan Africa can levitate SSA's economic activity and output, critical for misery and abject poverty alleviation. Women and girls have the potential and the wherewithal to augment sub-Saharan Africa's human capital. Women and girls can advance sub-Saharan Africa's well-being, reduce the mire of abject poverty, protect the environment, lead, manage, educate, empower, as well as shatter all forms of deprivation and backwardness.

ABSTRACTS ONLY (CONT.)

Participatory logic, governance and sustainable development

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Involving stakeholders from the broader community in collaborative governance allows for a more reflexive consideration of ecological science outputs within a wider socio-economic and cultural context. However the role of stakeholder participation remains problematic especially when the involvement is short term and limited in what has become known as the 'project state' where the new governance regime uses the 'project' as a means of finding solutions to distinct and delimited policy problems. To overcome the problems associated with securing stakeholder participation in the project state we argue for the development of a 'participatory logic', or logic of participation, that includes five key elements: the institutionalization of the processes that derive from stakeholder co-production and co-management; the ability and capacity to make meaningful decisions about issues of importance in an on-going way; the inclusion of all stakeholders in the process; the flexibility of central policies that enable participation by stakeholders at local level; the allowance for pathways for the uptake of all knowledge systems. Using the example of the Estuary Entrance Management Support System (EEMSS) in Victoria, Australia we explore how the concept of participatory logic can assist in identifying and overcoming short termism and other difficulties associated with the project state. We begin with an outline of the project state and its relationship with participatory stakeholder engagement. We then develop the concept of participatory logic and explain its political nature. Following this we describe the EEMSS project and explore its diffusion and scaling up in terms of its participatory logic.

The role of social networks on climate governance in municipalities

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Municipalities can play an important role in the design and implementation of climate adaptation policies, as the tier of government closest to the ground. Therefore, the implementation of large-scale organizational change within municipalities will become increasingly important as they attempt to reconfigure themselves to meet the impacts of climate change. This paper builds on detailed research on climate adaptation in eight Western Province municipalities (South Africa). The aim is to identify, through a case study of the two municipalities most successful at adaptation mainstreaming, some of the factors that enable organizational change at the municipal level. We consider the influence that social networks play in enabling municipalities to shift away from pre-existing and unsustainable development paths to more sustainable trajectories, and put forwards a conceptual framework to account for these influences. In municipalities most successful at adaptation mainstreaming we posit that there is a greater abundance and diversity of networks, strong and weak, internal and external, and across system levels. These network connections facilitate change implementation by sharing information, providing the capacity to exchange and combine knowledge, and enabling more locally-relevant self-design. We also account for (i) the different effects of administrative and political leadership in terms of the positioning of officials and councillors within the network, (ii) the role of physical proximity in network formation, and (iii) the interplay between networks and institutional silos. Our research suggests the need for implementers of institutional change within local government to consider such network effects for the implementation of successful change.

A framework for sustainability performance evaluation of the public sector

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Little research has been developed so far on approaches and tools to evaluate the sustainability performance of the Public Sector (PS). The main aim of this paper is then to present and discuss an innovative framework – sustainability performance evaluation (SPE) – designed to evaluate the sustainability performance of the PS. The Portuguese PS is used as a case study. The proposed framework, tested in the Portuguese case study, can effectively evaluate the sustainability of PS organizations, not only at an operational level, but also at a strategic level. The framework allows PS organizations to: (i) check their sustainability performance and optimize performance management – to benchmark performance and facilitate continuous improvement and exchange of good practice; (ii) improve sustainability performance through daily activities; and (iii) assess how sustainability principles are embraced in decision-making management processes. Stakeholder's participation crosses the entire design and development of the framework, playing a decisive role in credibility, transparency and robustness of the approach. The framework is designed for general use by public agencies operating in all tiers of government, creating a common comparable structure that allows for suitable benchmarking. It provides organizations with the opportunity to assess individual sustainability performance as well as in comparison with others. Also, it demonstrates how the concept of sustainable development can be operationalized in such a way that the performance of public agencies against sustainable development criteria can be assessed and their interaction analysed.

Flexitarianism as social innovation and individual empowerment for sustainability

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Western diets are strongly encouraging ecologically unsustainable and unhealthy levels of meat consumption. This growing but unsustainable trend of high meat intake is supported by the seemingly unstoppable power wielded by the global livestock industry and related industry stakeholders and government structures whose mixed dietary messages ensure individuals remain unwittingly complicit and complacent, and ultimately socially disempowered. Based on existing environmental and public health research evidence, this study describes the human, ecological and animal welfare consequences of excessive meat production and consumption, including climate change, water depletion and degradation, land misappropriation and degradation, rainforest destruction, biodiversity and rapid species loss, perpetuating local and global inequity and the significant and mounting threats and challenges posed to human health and well-being. It also identifies the large inequities embedded in the use of the planet's resources by the livestock industry. The study uses the available "stock of knowledge to devise new applications" (Frascati Manual). Flexitarianism (part-time vegetarianism), often deliberately dismissed as having insignificant value for the global food agenda, is such a social innovation with the existing scientific evidence pointing to its enormous benefits for people and the planet. This research demonstrates that flexitarianism is a new effective way to immediately decouple production and consumption from resource limits and ecological constraints whilst empowering people individually and collectively; locally, regionally and internationally to participate in a global transformation towards a more livable, just and sustainable world.

Global sustainability graduate education and professional development projects

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The complex social challenges of sustainable development demand interdisciplinary and collaborative problem-solving strategies. We describe a pedagogy and application promoting these outcomes. We organize teams of students to function like professional consultants to undertake projects for business, government, and ENGO partners working in BRICS countries. Our example in Brazil examined rapid transitions in agriculture driven by soybean exports to China. Students met virtually for a month, reviewed relevant literature, identified resource needs and interview questions, developed team skills, took cultural competency diagnostics, and so on. Faculty and students took a fieldtrip for data collection. Upon return, a month was spent on analysis and report generation. Students enrolling in a graduate class received a formal evaluation. Others participating for professional development used the project report and faculty reference to augment career advancement. Our conference presentation will include examples of student work as well as evaluations of the project experience.

Sustainable urban energy transitions and regulation: The City of Cape Town as a case study

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In the past decade, the Department of Energy, the National Energy Regulator (NERSA) and National Treasury have promulgated a suite of regulations which have potentially significant implications for facilitating sustainable urban energy transitions. These include regulations governing large scale renewable energy, small scale embedded generation (SSEG), smart grid applications, energy efficiency, demand-side management, electrification and energy service provision. On the other hand, implementation of many of these directives, by municipal local government, has been challenging. This study seeks to understand the various delays and obstacles in implementation through a case study of the City of Cape Town. It evaluates regulation, of significance to local government, around tariff setting, energy efficiency and demand-side management, small scale embedded generation, large scale renewable energy, smart grids, energy service provision and electrification. Through a range of data collection methods, including interviews and participant observation, the study seeks to understand reasons for non-implementation and perceptions around the City's role in facilitating sustainable energy transitions. The study finds that within municipalities there appears to be a wide divergence of interpretation on national directives; variance of opinions on the City's role in supporting sustainable energy transitions and uncertainty around local government's authority in regulating certain energy matters. A range of reasons are identified for lack of implementation, rather than only regulatory barriers as first assumed. These include: a lack of national vision for distributors; regulations of an unclear, unreasonable or conflicting nature; absence of communication between various stakeholders; and issues around institutional capacity, structures and cultures.

ABSTRACTS ONLY (CONT.)

How market influences undermine traditional modes of regulation: Observations from Kenya, Mongolia and the Philippines

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Ecosystem services have been described as nature's free gifts to humankind. This paper demonstrates that they are not gifts of nature but human products, shaped by culture specific interpretations of the use value potential of certain ecosystem functions. This understanding allows analysing processes of cultural change and environmental conflicts as distributional and hierarchical conflicts over the interpretation of nature. The paper then fills gaps in the discourse and analysis of ecosystem services, which often equates to ecosystem functions, service potentials and services. This is appropriate if – and only if – the analysis is restricted to short term marginal changes. Giving room for including longer term perspectives and more fundamental changes of use patterns requires ending the assumed equivalence. The paper extends one of the dominant new concepts – ecosystem service potentials – to accommodate issues of fairness and to make it applicable to change and transition processes. As the simple version of the concept is propagated at the World Bank, the critique is also relevant for political processes. It illustrates the applicability of the concept by four short case studies from different continents.

Translating GHG reduction – Case studies from the Swedish agricultural sector

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Reducing GHG emissions is a fundamental part of the transition to a sustainable society. However, necessary changes in industrial practices are lagging behind as emissions, in the aggregate, continue to rise. This paper addresses the discrepancy between needed and actual changes in industrial practices by exploring how the issue of GHG reduction is channelled through policy to industrial producers in a sector of relative importance: Swedish agriculture. The purpose of the paper is to explore how translation of the issue of GHG reduction affects the meaning of industrial practice. The results stem from two case studies exploring how the issue of GHG reduction is channelled through Swedish agro-policy. The cases show how translation results in new meanings for GHG reduction as well as current agro-policy and practice. However, changes occur mainly at the level of discourse rather than at the level of practice. The argument of biological complexities, rendering agricultural emissions special and more difficult to reduce, takes on a status as a taken-for-granted truth that precludes substantial emission cuts and radical practice changes. Framing GHG reduction as concerning efficiency in agricultural practices reconciles possible opposing interests and protects the legitimacy of existing practice. Subsequently, arguments for radical practice changes are weakened. The results shed light on some of the reasoning that explains inertia in transitions to a sustainable production in advanced nations. Further, the results illustrate the limitations of the eco-modernist principles that currently guide policy making, especially in addressing global issues such as climate change. Such principles effectively preclude discussions of equity and fairness in terms of how much emission a sector and its producers have capacity for.

Remanufacturing: Technology trends, business opportunities and ecological benefits: A global overview

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Remanufacturing is a key industrial discipline at the end of a product's life-cycle and sees widespread applications both inside and outside the automotive industry. By making products reusable remanufacturing is a major contributor to global sustainability. But: Innovation Cycles as well as Time-to-Market Sequences become shorter and shorter. At the same time product durabilities and usage durations increase. This asks for improvements and innovations in the field of remanufacturing technology. The speaker runs the European Remanufacturing Technology Center at the University of Bayreuth, Germany. Together with a research alliance of partners from around the globe, they offer R & D for product and process innovation in the field of remanufacturing. This contribution will present the global state of the art and examples.

How retail organisations can succeed in a resource-limited and carbon constrained world: A case study in the airport retail industry

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Climate change poses potential risk all sectors due to the physical changes it is likely to impose on the planet, and the regulatory responses from government as a means to mitigate such threats. Aviation is at particular risk as it is due to experience levels of growth in coming decades that outstrip its ability to deliver efficiency improvements. The result is that all actors in the sector will come under pressure to act on the climate challenge. This study sets out to quantify what the contribution to climate change is from activities associated with airport retail, and to identify new business models that may reduce this impact, whilst maintaining profitability. This could involve simple process innovations, to new approaches to business strategy, and changes to government policy that may constrict certain initiatives from coming into practice.

In pursuit of rapid transitions: Are transition pathways the weakest link?

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The appeal of transitions theory for policy and industry decision-makers is the credence it gives to the potential for systemic change. However, the theoretical and analytical focus tends to be skewed towards innovation dynamics and historical processes of change, predominantly from a top down, governance perspective. This is to the detriment of development of our understanding and ability to implement transitions, to scale up innovative activity, to instigate lasting changes in working practices, to enable transition pathways to occur. The majority of England's social housing need to be made fit for future habitation, adapted to the anticipated changes in climate. To address this, a shift in the current socio-technical system, a rapid transition, is needed. The paper draws on preliminary findings of research into the conditions and institutional determinants necessary to enable transition pathways across a whole sector. It is evident that adaptation activity within England's social housing sector appears to require large coalitions of actors working across professional areas of expertise, as well as across structural and organisational boundaries, often in an informal and self-directed manner. The common resources and infrastructure that enable this activity require greater focus, particularly with regard to the structures of organisations, the way in which the work activity itself is structured, as well as the underpinning material and non-material resources; the information technology systems, the means of and cultural norms of communication within the workplace, and the implications this cumulatively has for cognitive processes and the degree of individual agency of individual practitioners. To enable transition pathways, and to expedite them, decision makers should focus to a greater degree on incremental improvements within the institutional infrastructures rather than on individual/leader/product based innovation, which is the current trend.

Building capacity for sustainability transitions

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From a global perspective transition dynamics still needs to be better understood in relation to innovation systems and their governance, capacities and capabilities, and how they assist in the transition process in differentiated geographic scales, places and spaces. This paper unpacks these issues, taking into consideration the most recent debates in the transitions and innovation systems literature, and aims to reveal important new directions for research. The challenge of achieving more rapid transitions to sustainability can be summarized as a lack of capacity to provide and implement alternatives, as showcase environments. It is assumed that these showcase environments may have a direct effect on the socio-cognitive paradigm of communities – arguably one of the strongest barriers to change. This paper asserts that these challenges of providing showcase environments, such as smart cities for sustainable development alternatives are more complex in developing countries and continents such as Africa.

ABSTRACTS ONLY (CONT.)

Sustainable production, consumption and livelihoods - The Global Research Forum on SPC as a case of institutionalizing transdisciplinary research

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Sustainable Production and Consumption (SPC) has recently been recognized as an important area of sustainable development, through the adoption of the "10 Year Framework of Programs" by the UN Rio+20 conference in June, 2012, in Rio de Janeiro. Also in June 2012 in Rio, the Global Research Forum on SPC held its inaugural workshop. In this paper I will lay out the main research topics of the emerging field of SPC, which includes sustainable lifestyles, livelihoods and grassroots innovations; criticism of the economic growth paradigm; beyond consumerism; sufficiency; incentivizing the individual consumer; green business models and supply chains; sustainable technologies and design; and leapfrogging. I will then discuss the main research questions that this field seeks to address, including how to avoid "overshoot" when developing from subsistence into middle class consumerist life styles; how to operationalize sufficiency; the relationship between consumption of material goods and wellbeing; how to address inequities, and many other questions. I will then develop an institutional approach how to address these wicked research questions through international interdisciplinary and transdisciplinary research arrangements. GRF-SPC will be offered as a case study which illustrates such an institutional approach.

Sustainable development: In search for a comprehensive measurement tool

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In various sustainability practices a comprehensive mechanism for measuring the contribution to achieving sustainability is needed, and many efforts are actually made, often without acknowledging earlier efforts elsewhere. In 2012 the third Rio+20 Summit also stressed the need for comprehensive goals and measurement of the level of progress made. Many of these efforts are based on theoretic reason, starting with observed global issues and derived from identified future challenges. In many cases such efforts are 'locked in' in restricted disciplinary perspectives and based on fields of excellence of the specific authors or organisations. The paper maps the main axes of diversity in these approaches in order to illustrate the required broadness in scope of a comprehensive definition and indicator system. A deductive synthesizing approach is then applied, using the most widely accepted, but competing indicator systems, to map them in a theory of change for sustainable development, illustrating the steps from problem issue, via societal causes, identified solution routes and solution implementation interventions towards required impact. In this way further conceptual confusion can be avoided.

Sustainable development: Views on prerequisites for academic teaching based on a worldwide survey

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Academic teaching in sustainable development has emerged in very different contexts. Some master programs in Sustainable Development take a strong science approach, while other program focus on the process of implementing sustainability projects, some times connected with forms of action research and teaching. A worldwide survey, of more than 30 sustainable development master programs on all continents, reveals the diverse views on the concept of sustainable development as well as views on the most relevant modes of teaching. The core requirements that are needed for sustainability professionals are identified and organize in three main groups: Know, Interact & Be. Teaching for Just Transitions requires addressing sustainable development in its full scope and balancing the identified requirements. Consequences for academic teaching include further matching of perceived needs with experience teaching practices.

"Non-material" indicators for local and regional sustainability assessment: the Brazilian case of Maceió and Alagoas

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Despite the diversity of tools to evaluate regional and local sustainability, indicators sets are one of the approaches most used; also to analyse the interactions between regional and local scales of assessment. Sustainability indicators usually cover the main dimensions and several specific thematic areas. However, further than to include traditional policy and management issues, indicator initiatives should be ready to integrate and well reflect the uncertainty values of the non-traditional aspects of sustainability, particularly those involving ethics, aesthetics, and general non-material" values. The paper explores how this may be achieved.

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