

ISIE Fall 2014

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ISIE News

Volume 14, Issue 2

International Society for Industrial Ecology



Dear ISIE Members:

My term as President expires on December 31, 2014 and our new President, Professor Chris Kennedy of the University of Toronto, will step up to this role for 2015 and 2016. I wanted to offer a short report to include key areas enunciated in our strategic goals and to offer my many thanks to you the membership as well as the people that I have worked with most closely. EVENTS. Institutionally, a lot of what ISIE is most involved with are major events.



- Our 2013 meeting in Ulsan, Korea was a milestone and who can forget the banners around the city welcoming us so warmly to our first Asian bi-ennial conference? Prof. Hung Suck Park, our conference chair, executed a substantive and comprehensive gathering that included meetings of all six ISIE sections and a chock-a-block schedule of student events led by former ISIE Student Chapter President, Graham Aid.
- As soon as the meeting was done, we reviewed competitive proposals for ISIE 2015 and are now getting ready for our meeting in July 2015 at the University of Surrey offering industrial ecologists both a look back and a look forward about our field chaired by our great ISIE colleague Prof. Roland Clift.
- Prof. Helga Wies organized and led the thoughtfully prepared Gordon Research

OUTREACH. This happens in many ways at many levels but some highlights are included.

- Effort and involvement by ISIE members with important international audiences including the World Economic Forum, World Resources Forum, participation by many members on the Intergovernmental Panel on Climate Change, and UN Resource Panel to name a few.
- Listing of the 132 ten year members in the ISIE 2013 conference brochure
- Record number of notices on the ISIE jobs board for academic and professional positions
- Final draft of a comprehensive brochure, overseen by Chris Kennedy with input from Council members Anthony Chiu and Julia Steinberger, directed at Deans of Engineering Schools for improving integration of industrial ecology.
- A new prize offered by the *Journal of Industrial Ecology* for best articles by a senior author and a junior author.
- A redesigned ISIE newsletter edited by Prof. Vered Blass with help from student Amit Meidata and always looking for more contributors.

There are many people to thank, but I want to single out Reid Lifset and Melanie Quigley as tremendous colleagues who work very hard on behalf of ISIE. We also have a strong ISIE Council that is discussing and deliberating regularly. I have been very proud to serve as ISIE President. ISIE continues to astonish me as both intimate and welcoming while global in its reach. I hope on my watch we have extended both the intimacy and the global and I expect to continue to work with Chris Kennedy on my original themes of increased geographic membership and growing recognition for industrial ecology and ISIE as Immediate Past President.

Finally, I couldn't be more delighted to pass the baton that Greg Keoleian passed to me two years ago, to Incoming President Chris Kennedy. Chris is a fine scholar and human being – my favorite combination. As President Elect, Chris worked shoulder to shoulder with me, was

Conference on Industrial Ecology in Tuscany this past summer. Ah Tuscany! Through Helga's fundraising efforts with the Bosch Foundation, support was offered to many international representatives who were able to attend from countries including India, Panama, Nicaragua, Colombia, Ghana, and Costa Rica.

- On November 17th, the 4th Asia Pacific regional meeting will open in Melbourne, Australia under the watchful eye of Chair Heinz Schandl of CSIRO].
- The Request for Proposals for the Bi-ennial Meeting of 2017 has been issued as we look for the best venue for our ninth such gathering.

always there for a phone call or critical cup of coffee, and kept thinking of new ideas and opportunities for the Society. ISIE'ers – we are in very capable hands.



GOVERNANCE. Our system of governance, as enunciated in our by-laws, offers a great deal of continuity to the membership since there is always a triumvirate at work of the President, the Immediate Past President, and the President Elect in addition to the ISIE Council.

- We searched for a new Executive Director following Roland Clift's departure and selected Mak Dehejia who took over in January 2014, jumped right in, and has joined together with ISIE Coordinator Melanie Quigley on numerous fronts to advance the organization.
- Working closely with the Student Chapter, its outgoing President Xiao Li and incoming President Tomer Fishman, we found a way to incorporate the reformulated Student Chapter into full ISIE membership.
- We also began discussions about how to advance ISIE among young professionals.

ISIE Sections Update

ISIE Student Chapter Integration

The announcement below reports on an action proposed and voted by the Student Chapter Board and subsequently by the Council of the ISIE on Monday, September 22. It provides information about the amended relationship between the Student Chapter and ISIE which we believe will increase opportunities for the Student Chapter and make it more feasible to have the ISIE support student activities. In consideration of the ongoing Student Chapter Board election, its procedures will not be influenced by the proposed action.

Xiao LI, Student Chapter President
Marian Chertow, President, International Society of Industrial Ecology

Dear Members of the Student Chapter,
Dear Members of the ISIE,

The Student Chapter, as the international student organization in the industrial ecology community, has undergone substantial growth since it was founded in 2002. It gathers students from all over the world, providing a platform for communication, sharing, and organizing activities. It has formed branded events and activities such as the Symposium on Industrial Ecology for Young Professionals (SIEYP), Student Poster Competitions and social activities during the large ISIE meetings. The Chapter applied for and successfully got funding to sponsor students' participation. It provides opportunities for students to take part in and develop the organization, and to make students heard in the larger industrial ecology community.

With the fast development of industrial ecology in research, education and practice, many new students join IE-related programs and courses every year. The energy accumulated in the student community is higher and higher. 33 students joined the Student Chapter during the past 30 days and 104 students registered since 2014. 14 students ran for the board election in 2013, hitting a historical high. The chapter board receives emails now and then from students expressing their interest in contributing to the community. These bring great opportunities to the development of the student organization but also challenges to its current structure.

Most of us may not realize that the Student Chapter has not been an official part of the ISIE since it was founded, although they have been closely connected. The ISIE has supported the Student Chapter in many ways and the Student Chapter has organized activities at ISIE events. The Student Chapter membership is different from the ISIE membership. To join the ISIE, students must register as ISIE members, and can choose its student-type membership among all different membership categories (for details, please refer to <http://ordering.onlinelibrary.wiley.com/Membership.asp?ref=1530-9290&site=1>). In contrast, Student Chapter membership is an individual, cost-free membership without official connection with the ISIE. This separation, which is not very common in similar communities, has brought some existing and potential problems to the development of the student group and the broader industrial ecology community,

Based on these concerns, the Student Chapter board discussed and proposed the integration of the Student Chapter into the ISIE. It discussed this proposal with the ISIE council, analyzing possible impacts and questions together. We brought it as an issue to the ISIE council meeting during the Gordon Research Conference this June, asked for more opinions during the conference, and received supportive feedback.

The proposed scheme:

I Base the Student Chapter on ISIE student membership. The current Student Chapter members are encouraged to register as ISIE student members. The new chapter will start to run from January 1, 2015. It will be called the ISIE Student Chapter.

I The ISIE student membership fee is lowered to USD 15 per year from USD 35, as a preferential condition and registration stimuli for students. The implementation of the new registration fee starts on January 1, 2015.

I The Student Chapter is managed by a board of six student members, who are elected through ballot in the Student Chapter. On its behalf, President of the Student Chapter will be a member of the ISIE Council. In this transitional period, the board election this year will be from both the current Student Chapter and the ISIE student members.

Benefits of being a student member:

I Discount off the registration fee for ISIE Biennial Conference and other related conferences (NEW)

I Scholarship opportunities for ISIE Biennial Conference and other ISIE related conferences

I Online access to all available back volumes of journal of industrial ecology (NEW)

I Receipt of ISIE newsletters (NEW)

I Access to ISIE student directory and dissertation information database

I Ability to join topical sections as full members (NEW)

Benefits for the Student Chapter and the ISIE:

I Better representation of the student group in the ISIE and its decision making

I A more compact student community, and a more coherent structure in the student group and the ISIE

I Tracking of student members by ISIE staff as they proceed in their careers related to industrial ecology rather than the absence of communications when students graduate.

I Network benefits, opportunities for presentations and feedback, within a global but intimate scholarly and professional society.

Less tangible benefits that come in the form of access and mentoring by the current ISIE members who have generously contributed their time and experience to aspiring students in person, email, and social media.

We have started a topic on the discussion forum of the ISIE website, where you can post your comments (<http://www.is4ie.org/discuss>). We would like to ask for your opinions and look forward to hearing from you. You may also wish to contact either one or both of us privately at the

emails below with any questions or comments.

Journal of Industrial Ecology News

Lots of good news from the *JIE*!

JIE's Impact Factor Increases to 2.7!

The *JIE*'s two year impact factor for 2013 was released late this summer. It increased from 2.2 to 2.7. Impact factors are the ratio of the number of citations received by papers published in the last 2 years to the total number of papers published in those years. Not only is this a noteworthy increase but it moves the *JIE* ahead of several peer journals that publish industrial ecology content.

Online-Only Publication

The *JIE* is joining a growing group of academic journals that have chosen to switch to online-only publication. The *JIE* is responding to a rapidly changing journals market and to the desires of its publisher and most readers as indicated by the poll taken at the ISIE Conference in Ulsan, Korea in 2013. Online-only publication will start with the first issue of 2015. This will lower the *JIE*'s costs considerably and assist in making the journal financially sustainable.

At the same time, an “app” – a customized software application for mobile devices-- for the *JIE* is in development and scheduled to be available early next year. In addition, subscribers who want to continue reading a print version of the *JIE* can order “print-on-demand” (POD) copies from the ISIE administrative office. More details on POD will be coming soon.

Best Paper Prize

The *JIE*'s Best Paper Prizes announced in the *ISIE News* last year are in the works. One prize will be awarded for a senior author and one for a junior author. A prize committee chaired by Helge Brattebø of NTNU is in the midst of evaluating nominations and winners will be announced at the ISIE Conference in Surrey in June!

Prize committee members are: Clinton Andrews, Rutgers University, Faye Duchin, Rensselaer Polytechnic Institute, Yong Geng, Chinese Academy of Sciences, Jeroen Guinée, Leiden University, Alissa Kendall, University of California, Davis, and Yuichi Moriguchi, Tokyo University.

For more information about the Best Paper Prizes, see http://jie.yale.edu/best_paper_prizes

Two recent papers in the JIE have gone viral. A paper by Kieren Mayers and colleagues, "[The Carbon Footprint of Games Distribution](#)" presents evidence that online distribution isn't always better when delivering digital content. They found that Blu-ray Discs delivered via retail stores caused lower greenhouse gas emissions than game files downloaded over broadband Internet. The article generated a great deal of online commentary including 4 YouTube videos discussing the paper (and one in Portuguese!). A paper by Martin Heller and Greg Keoleian, "[Greenhouse Gas Emission Estimates of U.S. Dietary Choices and Food Loss](#)" argues that if Americans altered their menus to conform to U.S. federal dietary recommendations, GHG emissions could increase significantly. This paper, too, generated a lot of discussion in social media (though it didn't lead to any Portuguese videos).

Call for Papers: Linking Local Consumption to Global Impacts

Submission Deadline: **January 15, 2014**

Globalization increases the interconnectedness of people and places around the world through markets, flows of capital, labor, services, information, and human migration. Goods and services consumed in one country are often produced in other countries and exchanged via international trade.

The goal of this special issue is to bring together different approaches including global supply and value chain analysis, material flow analysis, life-cycle assessment, integrated impact assessment, and social network analysis to account for and analyze drivers of globalization and global environmental impacts and global inequalities in wealth by explicitly linking the local to the global.

Appropriate paper topics include:

- Theorizing, describing and analyzing the local to global links between consumption and production within their biophysical, socio-economic and institutional contexts
- Assessing how consumption and production impact the environment and society at different spatial and temporal scales
- Calculating the main environmental indicators (e.g. carbon, water, land, air pollution) and socio-economic indicators (e.g. jobs, value added, wealth distribution) for different development scenarios and strategies
- Synthesizing current datasets and performing analyses on trade-offs and win-win strategies towards a more sustainable future

For the full call for papers, please go to: <http://jie.yale.edu/jie-cfp-local-global>

[Klaus Hubacek](#) and [Kuishuang Feng](#) University of Maryland College Park, [Bin Chen](#), Beijing Normal University, and [Shigemi Kagawa](#), Kyushu University will serve as co-editors.

Do you receive the *JIE* table of contents alerts? If not, be sure to sign up to receive these emails or RSS feeds so that you always have the latest in industrial ecology research: <http://onlinelibrary.wiley.com/myprofile/alertManager>.

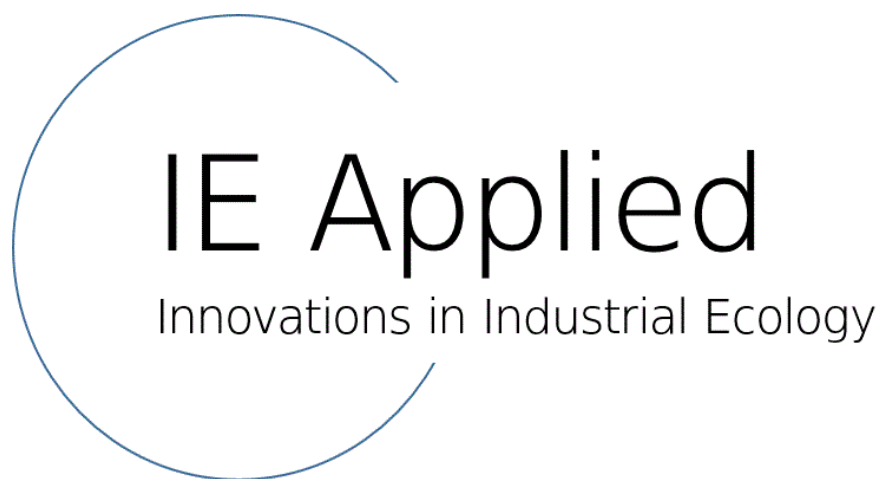
IE News from around the world

New Centre for Applied Industrial Ecology Opens in Israel

Dr. Vered Blass, a member of ISIE who has been promoting cooperation between industrial ecologists, businesses, and policy makers internationally, has opened a new lab for industrial ecology innovation at Tel Aviv University. The lab is a cooperation between the Faculty of Management and the Porter School of Environmental Studies.

The new lab aims to push the boundaries of industrial ecology, to progress research, and to find new ways to apply the tools and insights from our discipline within business management and policy design. Dr. Blass works with an impressive team of master's students, PhD students, and research assistants who graduated from top universities in the US and Europe. The lab research topics include modeling for localizing LCA results, promoting servicizing in new markets and fields, creating innovative end-of-life infrastructure to support material efficiency, mobility electrification and Green ICT.

The lab will work closely with key industry partners and policy makers throughout the year, and host round tables and international events to demonstrate the potential of industrial ecology in shaping our industry and governance systems and their interaction with the environment.



Network Industrial Ecology: New Website and Blog

To further develop industrial ecology in Germany, several initiatives have been started in the last years [see ISIE News 7(3) and 8(3)]. The University of Bremen, especially the Research Center for Sustainability Studies (<http://www.uni-bremen.de/en/artec.html>) and the Munich University of Applied Sciences (www.hm.edu) played a decisive role in these initiatives. This note provides an update, announcing the Network Industrial Ecology and its new website and blog.

Network Industrial Ecology

The German Network Industrial Ecology is a joint project, initiated by the University of Bremen and the Vereinigung für ökologische Wirtschaftsforschung (VÖW), Berlin, supported by the Munich University of Applied Sciences. Based on a series of predecessors, the inaugural meeting of the German Network Industrial Ecology was held at the University of Bremen, March 21st 2014. The Network and its website and blog are an endeavour with more than 20 leading research institutions in Germany involved, focusing on industrial ecology issues in science, management, higher education & training, and industrial applications.

The overall goals of the network are:

- to improve visibility of the various industrial ecology related activities ,
- to vitalize exchange and fuel discussions among researchers, the policy arena, and other interested parties, and –
- no less important – to foster co-operation by organizing workshops, conferences, and publications, and by initiating research projects within funding programs relevant for industrial ecology.

A first result of the Network was the publication of a special issue in the journal “Ökologisches Wirtschaften” 29(3) 2014 (<http://www.oekologisches-wirtschaften.de/index.php/oew/issue/current>).

Website and Blog on Industrial Ecology

The website provides a platform to share information on current issues, discuss scientifically interesting topics, and to distribute notes and activities of its network members (www.industrialecology.de). Latest news are highlighted in a blog (ieblog.ioew.de/). Currently, the website provides online resources on industrial ecology, an RSS-feed, description of the network and around 20 profiles of leading research institutions in Germany active in the field. Website and blog have been launched in February 2014. Further services are planned to be included step by step.

All friends and promoters of industrial ecology, and other interested parties are cordially invited to post their comments and fuel discussions by notes, remarks, or any information relevant for the field, be it in German or in English.

Website: www.industrialecology.de

Contact: sgr@uni-bremen.de and ralf.isenmann@hm.edu

New Handbook on Social LCA

A group of 12 industry company, Ahold, Akzo Nobel, BASF, BMW Group, DSM, L'Oréal, Marks & Spencer, Philips, RB, Steelcase, The Goodyear Tire & Rubber Company and a chemical company led by consulting firm PRé Sustainability has recently released an handbook to support LCA practitioners in assessing Product Social Impact. The handbook is available on the website:

<http://product-social-impact-assessment.com/>

Last september, we presented the methodology at the New Metrics Conference, organised by Sustainable Brands (See here the review:<http://tinyurl.com/nhftdqy>). More information you can also find in:<http://tinyurl.com/p7zgbyc>

New Program in Industrial Ecology at Ecole Centrale Paris

Ecole Centrale Paris (www.ecp.fr) will launch in March 2015 a new Advanced Master (*Mastère Spécialisé*) on Industrial Ecology. This training program is intended for professionals (mainly master degree with at least 3 years of experience), who wish to become experts in Industrial Ecology, able to develop and manage ambitious projects in their organization (companies, local or national authorities, NGOs...). This training is a part-time program with 65 days of campus-based teaching (5 consecutive days per month during 13 months) and 25 days of personal/collective work, followed by 4 to 6 months of industrial mission validated by a professional thesis. It will be reiterated every year, mainly in French.

This program leans on three complementary research entities:

- Laboratoire Génie Industriel (Industrial Engineering Laboratory, www.lgi.ecp.fr) of Ecole Centrale Paris, working on modeling, simulating and optimizing complex industrial systems and activities;
- Laboratoire Génie des Procédés et Matériaux (Process and Materials Engineering Laboratory, www.lgpm.ecp.fr) of Ecole Centrale Paris, working on simulating and optimizing bio-materials and bio-processes;
- Paris Saclay Energy Efficiency (PS2E, www.ps2e.com), working on energy efficiency and flexibility of urban and industrial areas and eco-industrial parks.

This program is also characterized by strong industrial partnerships. About one third of the teaching is performed by industrial experts, who are also providing numerous industrial case

studies.

The training will be structured around 9 themes:

1. Context and stakes of Industrial Ecology
2. Environmental management
3. New industrial et territorial methods
4. Multi-actors project management
5. Energy efficiency
6. Economy
7. Law
8. Innovative problem solving methods
9. Industrial visits

For more information, please contact Dr. François Cluzel (educational manager, francois.cluzel@ecp.fr) or Pr. Bernard Yannou (scientific co-manager, bernard.yannou@ecp.fr), or consult our webpage (in French): <http://goo.gl/v4Ejm8>

Sustainable waste and resource management to support the energy turnaround (wastEturn)

Following the Fukushima nuclear accident in 2011 and the Swiss parliament's decision to phase out from nuclear power, the Swiss Government adopted the Energy Strategy 2050. The strategy consists in reducing energy consumption with the objectives of curbing CO₂ emissions, dismantling all Swiss nuclear power plants, and limiting environmental impacts of future energy infrastructure. The project wastEturn is part of a National Research Programme supporting the turnaround from a science perspective.

The aim of the project is to optimise the contribution of the Swiss waste management system to the Energy Turnaround. It comprises four subprojects covering the assessment and optimisation of the energetic and resource recovery potential of municipal solid waste (MSW) as well as of industrial waste-to-energy (WtE). A comprehensive environmental and economic assessment of the studied systems is carried out, while the transition towards optimised waste management systems is analysed and facilitated from a social and practical perspective. In this way, all three pillars of sustainability are considered.

Overall, the project contributes to the energy turnaround by (i) identifying and assessing potential measures for increased eco-efficiency for the most energy-relevant waste streams and the related industries in the Swiss waste management system, (ii) analysing the need for investments and the financial viability and value creation of an environmentally optimal waste management system on

both a national and sectorial level, (iii) analysing drivers and barriers of the transition to optimal waste management systems, (iv) supporting implementation and operation of complex WtE systems through the formulation of optimisation models, and (v) fostering capacity building among academia, industry and policy-makers.

Project leader: K. Hungerbühler, ETH Zurich

Project partner: S. Hellweg, ETH Zurich

R. Frischknecht, treeze Ltd.

Ch. Hugli, FHNW

M. Stauffacher, ETH Zurich

HORIZON 2020: Second round of proposal evaluation on IS projects to conclude in September

The first phase for the 2014 call on *Waste: A resource to recycle, reuse and recover raw materials* closed with a total of 100 proposals submitted, of which 27 passed the evaluation thresholds. The total budget requested amounted to EUR 231.3 million.

This call was specifically aimed at proposals focusing on “*Moving towards a circular economy through industrial symbiosis*” (WASTE-1-2014). In this context, the Commission sought to support projects that demonstrate and analyse, under a life cycle perspective, innovative processes and services, including organisational and management systems and business models, or a combination thereof, that increase product life-spans, enable product and material reuse, recycling, recovery with an upgrading cascading approach for recovered materials and products, and reduce the generation of waste.

Proposals were asked to give a significant role to SMEs and focus on a specific production value chain, have a cross-sectoral approach establishing industrial symbiosis leading to closed-loop processes, or a combination of both cases. The funding is oriented towards “Innovation Actions”, meaning it will be directed at supporting activities directly aimed at producing plans, arrangements or designs for new, altered or improved products, processes or services (e.g. prototyping, testing, demonstrating, piloting, large-scale product validation and market replication).

According to the Flash information on the overall results of the first-stage proposals, there were 55 proposals submitted for WASTE-1, from which 19 received an evaluation score above thresholds. The total budget requested was EUR 160.5 million; with an indicative budget of EUR 44 million, it is expected that somewhere between 4 to 6 projects on Industrial Symbiosis are to be approved until the end of the year (average budget: EUR 8 million).

The second stage for the evaluation of the remaining 19 proposals will close on September 16th, results to be expected in December. It is expected that the grant agreements will be signed by 16/05/2015.

EarthShift offers a new Practical LCA Training Lab

For universities without in-house capacity for introductory LCA training, EarthShift's Practical LCA Training Lab will introduce students to the LCA methodology and teach them practical skills for incorporating sustainability into their studies and their future careers. The course easily and affordably enhances universities' sustainability curricula, giving students an advantage in their field. The course material is appropriate for both high level undergraduate programs and introductory graduate studies.

The curriculum will teach students to:

- Comfortably apply LCA in a practical project setting, such as product design decisions.
- Scope out LCA projects.
- Develop practical LCA models for products and processes.
- Have a better understanding of how LCA can be used effectively to achieve sustainability goals.

Perfect in Any Discipline

- **Engineering and Technical Programs:** students will learn to incorporate LCA into product and system design. This skillset will put them at the forefront of their field where Design for Environment is the way forward.
- **Environmental Studies and Sustainability Programs:** students will learn a deeper understanding of sustainability using life cycle thinking, and will gain a practical skill in their field.

The Lab is offered in two convenient formats: (1) Pre-recorded modules: Students download training modules and watch at their convenience. (2) Live Interactive online sessions: Online sessions are scheduled at your convenience. Choose either two 3-hour sessions or four 1.5-hour sessions. Both formats include access to an LCA tool with over 8,000 global and North American LCI datasets.

See http://www.earthshift.com/Practical_LCA_Training_Lab for more information.

New Project: Water Scarcity Risk for the Global Trade Network

A new project entitled “Water Scarcity Risk for the Global Trade Network” was recently awarded to the University of Michigan (PI: Ming Xu, Co-PI: Josh Newell) by the US National Science Foundation. The project aims to develop an integrated analytical framework to evaluate water scarcity risks for industries with global supply chains. The results are expected to help businesses to develop strategies to mitigate water scarcity risks and contribute to global water conservation. More details can be found at <http://goo.gl/EvxxDW>, <http://complexsustainability.snre.umich.edu>, or mingxu@umich.edu.

Advancing Infrastructure and Institutional Resilience to Climate Change for Coupled Water-Energy Systems

Researchers at Arizona State University have recently won a National Science Foundation Water, Sustainability, and Climate grant to study how coupled water and electricity systems will be vulnerable to extreme heat and a changing climate and how anticipatory governance capability can be developed to proactively reduce vulnerabilities. Mikhail Chester, Tom Seager, Clark Miller, Susan Spierre Clark, Ben Ruddell, graduate students, and research scientists will partake in this three year research effort.

Western US regions are expected to experience more heat days, water shortages, intense precipitation events, forest fires, and increased peak power demands in the future. Desert regions are particularly vulnerable to future climate-induced environmental changes, given their scarce water resources and heavy reliance on thermoelectric power generation. As climate-related environmental events become more common, water and electricity managers will be either directly or indirectly exposed to vulnerabilities in the interdependent water-electricity systems.

These vulnerabilities may arise because the infrastructures were designed for a climate and demand profile that may be significantly different than what will be experienced in the coming decades, and because the institutions that manage the systems do not yet have anticipatory governance structures that would enable them to proactively address the future. This project will develop a framework for assessing coupled water and electricity infrastructure-institution vulnerability at cross-scales to future climate events. It will create an educational game for infrastructure managers to learn how to anticipate future vulnerable states of the infrastructure

and proactively deploy physical and institutional changes that will improve the resilience of the coupled systems.

Additional project information is available online at www.urbantransitions.org/nsfwsc/

Industrial Ecology in North Carolina

The Department of Forest Biomaterials at North Carolina State University, created a new class that we have taught for 2 semesters now called Introduction to Industrial Ecology, this is part of a new curriculum named Sustainable Materials and Technology that since we launched during summer, we have more than double our enrollment and the interest for this program (a major and a minor) has continuously increased.

Provoking Interest and Engagement in Social Life Cycle Assessment (S-LCA) Education: a few suggestions & an invitation to collaboration

A small but growing body of literature has appeared concerning the integration of Life Cycle Assessment (LCA) into the academic curriculum. Despite these developments, there appears to have been little focus on pedagogical developments related to Social Life Cycle Assessment (S-LCA). This is surprising given that a 'social welfare impact category' in LCA was initially proposed two decades ago. Recent research exploring educational endeavours in the general fields of environmental education, education for sustainable development (ESD) and industrial ecology education has similarly noted its weak infrastructure. Conscious of deficits in the field, in 2009, the United Nations Environment Programme reviewed general research needs in relation to S-LCA and called for the production of educational material to support it.

This communication is intended to initiate a discussion, and invite collaboration around the development and use of educational materials to support S-LCA. Partly in response to the increasingly positivist approaches which are evident in S-LCA two texts are proposed which undoubtedly lie outside of standard S-LCA and LCA academic reading lists.

The first text is *Fast Food Nation: The Dark Side of the All-American Meal* by investigative journalist Eric Schlosser (2001). This book explores the local and global influence of the United

States fast food industry incorporating a form of systems analysis. Many people that have not read this book will assume it simply addresses issues related to un/healthy eating and the constituents of fast food products (notably burgers). However, this text goes much further exploring both upstream and down-stream implications, including such issues as food poisoning, labour conditions and the impact of the fast food industry on farming practice. Recommending this controversial text is deliberately provocative, and undoubtedly invites criticism. However, this polemic is suggested to ignite interest and debate among students, who can then be introduced to 'Cradle to Grave' concepts and the importance of a Triple Bottom Line (TBL) approach focussing on Society, Environment and Economy.

The next text is a fictional work (albeit based on first hand experiential 'research') and as such probably invites even more criticism from mainstream positivist LCA perspectives. The second text also concerns the US food industry, albeit from an earlier era (1906), and is Upton Sinclair's classic 'muckraking' work *The Jungle*. This fictional work follows the seemingly unstoppable decline of its main character, Jurgis Rudkus, a Lithuanian immigrant working in the Chicago meat industry. Although the socialist message in the text may not be popular in some quarters, the brutal conditions and filth described evoked a national response. Responding to public pressure resulting from this text US President Theodore Roosevelt was forced to pass the Meat Inspection Act and the Pure Food and Drug Act of 1906 (which established the Bureau of Chemistry, which in 1930 became the Food and Drug Administration).

Student interest and engagement is essential to the future of LCA and particularly S-LCA. A crucial element in engagement is emotion and these texts invoke both anger and compassion. While anger may seem an unusual target in standard academic settings, its power should not be under-rated. Harnessing appropriate anger constructively has been advocated since at least Aristotle and continues to appear, albeit rarely, in exceptional and inspiring academic texts. Outlined above are two texts that are recommended to help promote student engagement with topics related to S-LCA. Although they may not be standard academic texts, they have been deliberately chosen to evoke emotion. Readers are invited to comment on the texts above and to share their suggestions for useful texts and tools to engage students in S-LCA.

Frank Houghton Phd, MPHe

College of Health Science & Public Health at Eastern Washington University, WA, USA.

Members' News

Dr. Cassandra Thiel has received a Fulbright-Nehru Academic and Professional Excellence Award to study the environmental footprint of high-volume cataract surgeries at *Aravind Eye*

Hospital in Madurai, India. Dr. Thiel is currently a postdoctoral associate at the University of Pittsburgh, developing dynamic life cycle assessment methodology for use in green buildings under Dr. Melissa Bilec.



The US federal government spends roughly \$3.4 billion annually, or 12% of the entire Medicare budget, on cataract surgery. Each of the 3 million US cataract surgeries per year costs an average of \$3,300 and is characterized by large quantities of disposable materials. *Aravind* performs 200-300 cataract surgeries per surgeon per day, 60% delivered at no or low cost to the patient, with outcomes and complication rates lower than those of cataract surgeries in the United Kingdom. Dr. Thiel will collect data on material flow through the hospital and resulting life cycle impacts during her four months in southern India.

Lynette Cheah joined the Singapore University of Technology and Design (SUTD) as an Assistant Professor this year. She is having fun developing and teaching a class on Sustainable Engineering, intended for undergraduate seniors. Together with co-PI Professor Karen Willcox from MIT, she recently won a grant from the MIT-SUTD International Design Centre to study "Uncertainty in Design for Environment". Lynette is looking to expand her team, and currently has an open postdoc position to study uncertainty in LCA. She looks forward to catching up with the ISIE community at ISIE-AP in Melbourne later this year

Shweta Singh is winner of 2014 Student Paper Award from the American Institute of Chemical Engineers' Sustainable Engineering Forum

Shweta wins this best student paper award for her article, "Accounting for the Biogeochemical Cycle of Nitrogen in Input-Output Life Cycle Assessment," which appeared in *Environmental Science and Technology* last year. The award will be presented in November at the AIChE Annual Meeting to be held in Atlanta.

Wang PinChih's PhD dissertation was awarded the 2013 Endorsement from the Center for Global Change and Sustainability Science (CGCSS) at National Taipei University (NTPU).

Wang PinChih's Shweta Singh is winner of 2014 Student Paper Award from the AIChE Sustainable Engineering Forum. Shweta won this best student paper award for her article, "[Accounting for the Biogeochemical Cycle of Nitrogen in Input-Output Life Cycle Assessment](#)," which appeared in Environmental Science and Technology last year.

Upcoming Conferences

11th International Society for Industrial Ecology (ISIE) Socio Economic Metabolism Conference

The Student/Early Career Researcher Organising Committee have set up the Twitter hashtag #isiesem to share important contents during the 11th International Society for Industrial Ecology (ISIE) Socio Economic Metabolism Conference that will be held in Melbourne, Australia from Monday 17 to Wednesday 19 November 2014.

A Twitter feed for the hashtag #isiesem will be included on the conference website <http://wp.csiro.au/isie2014/>

(on behalf of the student/ECR organisers: Katy Roelich, Walter Reinhardt, Tomer Fishman, Luis Felipe Vásquez Correa, Jonathan Busch, Luca Ciacci and Helen Hamilton)

IELab Conference 2015

Save the date:

IELab Conference 2015

11-12 June 2015, Manly, Sydney, Australia

First conference of the Industrial Ecology Virtual Laboratory project

Dr Tommy Wiedmann

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Sustainability Assessment Program | School of Civil and Environmental Engineering

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CIRP Conference on Life Cycle Engineering

Sustainable Manufacturing and Life Cycle Engineering Research Group (SMLCE) at The University of New South Wales cordially invites you to the 22nd CIRP Conference on Life Cycle Engineering in Sydney, Australia 7 - 9 April 2015.

The 22nd CIRP conference on Life Cycle Engineering (LCE) 2015 continues a long tradition of scientific meetings under the auspices of the International Academy for Production Engineering (CIRP). A comprehensive program is currently being developed with a focus on “Efficiency to Effectiveness: Sustainability in Manufacturing”.

The scope of the conference covers topics including:

Energy, Water and Resource Efficiency and Effectiveness;
Eco-Design;
Life Cycle Assessment and Costing;
Sustainability in Supply Chains, Manufacturing and Waste Recovery;
End-of-Life Strategies;
Disassembly, Reuse, Remanufacturing and Recycling Technologies.

All papers will be peer-reviewed by the international scientific committee and the proceedings will be published by Elsevier.

<http://www.lceresearch.unsw.edu.au/lce2015/>

Are you afraid of the dark? Energy security in the age of cyber terrorism

Part of the Annual Roland Clift Lecture Series on Industrial Ecology.

Date: Wednesday 29 October 2014

Time: 1900 – 20.30

Location: University of Surrey, Austin Pierce (AP) Building, Lecture Theatres 1 & 2 (Stag Hill campus), Guildford, GU2 7XH

The sun may be setting on the time when you could flick a switch, confident that the energy system could always deliver power on demand. Factoring energy security into the way we think about modern sustainable energy systems needs some care. For the UK this reframing is especially arthritic, given that the country has been self-sufficient in its power supply since

Faraday made the first electric motor. But how many so-called threats to our security will really happen? Is all this talk just trying to make us afraid of the dark? Or are we in the dark already.

Agenda

6:00pm - Refreshments

7:00pm - intro from Richard Murphy, Director of CES, Univ. of Surrey

7:05pm - Keynote: Professor David Fisk, Imperial College London

8:00pm - Q&A with Jacqueline Cramer, Utrecht Sustainability Institute (USI)

Registration

Please visit <http://www.surrey.ac.uk/ces/> to register for the event

[Event page](#) for more information

Any queries please email feps.marketing@surrey.ac.uk

World Resources Forum Asia-Pacific 1-2 June 2015, Sydney, Australia

Wealth from Waste: Resource Productivity and Innovations Website: www.wrfasiapacific2015.net

The inaugural World Resources Forum Asia-Pacific will be held in Sydney 1-2 June 2015, co-chaired by Damien Giurco, Institute for Sustainable Futures at the University of Technology, Sydney (UTS) and Scientia Professor Veena Sahajwalla SMaRT@UNSW.

The World Resources Forum (WRF) is the global science-based platform for sharing knowledge about the economic, political, social and environmental implications of global resource use.

Key themes of the Forum will include:

- Resource productivity in the Asia-Pacific
- Radical innovation in production and consumption
- Transition pathways to realise wealth from waste

Be part of seeing how technology, policy and innovative business models can harness new value from resources and unlock prosperity.

Join us in Sydney and register now at www.WRFAsiaPacific2015.net

Registration also includes attendance at the 2015 Sustainability Symposium, 2-3 June, UNSW, Sydney smart.unsw.edu.au



Industrial Ecology in the Asia-Pacific Century: Interdisciplinary science for building sustainable industrial systems and human settlements

17 to 19 November 2014

Melbourne, Australia

Not long till the ISIE conference in Melbourne. The conference program, plus listings of oral and poster presentations, are available for download from <http://wp.csiro.au/isie2014/conference-program/>.

A few reminders:

- If you haven't yet registered, please do so at <http://wp.csiro.au/isie2014/registration/> before the end of October.
- If you'll be coming from overseas, please check whether you need a visa, and if so whether you can apply online (<http://wp.csiro.au/isie2014/travel/visiting-australia/>). If you are not able to apply online and have not yet applied for a visa, please contact karin.hosking@csiro.au **urgently** to request an invitation letter, as you'll need one to apply.
- Have you decided where to stay in Melbourne? The conference organisers have negotiated discounted rates with three hotels (<http://wp.csiro.au/isie2014/travel/accommodation/>); we suggest you book soon to secure a room.

Any questions? Please check if the answers are on the conference website (<http://wp.csiro.au/isie2014/>) and if not, please contact karin.hosking@csiro.au.

2nd Discussion Forum on Industrial Ecology and Life-Cycle Management.

March 5-6, 2015, University of Coimbra, Portugal

Not long till The Center for Industrial Ecology at the University of Coimbra is organizing the **2nd edition of the Workshop "Discussion Forum on Industrial Ecology and Life-Cycle Management"**, to be held on **March 5-6, 2015**, in the Auditorium of the Department of Mechanical Engineering, University of Coimbra, Portugal.

This discussion forum aims to address current research in Industrial Ecology and Life-Cycle Management. The forum, conducted in English language, brings together faculty, researchers and students to discuss the latest methodological developments and extended approaches in Life-Cycle Assessment.

The forum is organized in several working sessions and includes two key-note lectures, by Prof. Roland Clift (University of Surrey) and Prof. Paulo Ferrão (University of Lisbon).

The deadline for abstract submission is **November 30, 2014**. For more information and online abstract submission, please visit the Workshop website:

www2.dem.uc.pt/CenterIndustrialEcology/Events.htm

Open Positions

Faculty position in Urban Ecology and Sustainable Living at the Ecole Polytechnique Fédérale de Lausanne

To promote women's leadership in the broad field of urban ecology and sustainable living, EPFL's School of Architecture, Civil and Environmental Engineering (ENAC), with the support of La Mobilière Insurance, seeks to hire an outstanding woman as a tenure-track assistant professor or, in exceptional cases, at the associate or full professor level, for a faculty position in this field.

The candidate should embody a holistic vision of urban ecology and/or urban ecosystem services from one or more of a range of approaches including but not limited to: monitoring and bottom-up modeling methods for the environment (e.g. with reference to human mobility and urban micro-climate); urban metabolism and energy/material flow analyses; urban ecology, food urbanism; urban and landscape design; city growth mechanisms and environmental impacts; public spaces and urban well-being. The candidate should be able to conduct project-oriented teaching that links the natural, the built and the social environments towards sustainable urban living systems, at different scales.

The successful candidate will have the potential to develop an innovative and internationally recognized research program leading to an outstanding record of scientific accomplishments.

As a faculty member of the ENAC School, she will excel in undergraduate and graduate teaching and supervise doctoral students.

We offer significant start-up resources and internationally competitive salaries and benefits as well as excellent experimental and computational facilities. To apply, please follow the application procedure at

<https://academicjobsonline.org/ajo/jobs/>

The following documents are requested in PDF format: cover letter including a statement of motivation, curriculum vitae, publications list, statement of research and teaching interests as well

as the names and addresses (including email addresses) of at least three references.

Screening will start on October 15, 2014 and the search will continue until the position is filled.

Further enquiries should be made to the Chair of the Search Committee:

Professor Marilyne Andersen

Dean School of Architecture, Civil and Environmental Engineering (ENAC), EPFL

e-mail: marilyne.andersen@epfl.ch

For additional information on EPFL, please consult:

<http://www.epfl.ch> or <http://enac.epfl.ch>

PhD Researcher Circular Economy and Sustainability

A position exists for a PhD Candidate at TU Delft Industrial Design Engineering in the area of circular economy and sustainability. The post holder will be located at Design for Sustainability at TU Delft Industrial Design Engineering.

The concept of a circular economy, where products are reused and materials recycled, is often equated with 'sustainability'. There is however very little research into the relationship between circularity and sustainability. The ResCoM project, an EU FP7 funded collaborative research project, offers an opportunity to study the sustainability effects of 'going circular' of four case study companies.

The ResCoM project brings together four key pillars – business models, supply chains, design and technology – to investigate and accelerate the move to closed loop product systems. This empirical basis will be a starting point for more fundamental questions, such as:

- How can products with multiple lifecycles best be modelled using relevant methods such as LCA?
- When does prolonging a product's useful life (product life extension) make sense from an environmental impact perspective?
- How can the product end-of-life strategies be assessed in a meaningful way, when looking at remanufacturing for instance?

Criteria

- A completed MSc in a relevant field of study, such as a Environmental science/ engineering; Sustainability; Industrial Design Engineering.
- Demonstration of excellent research skills (e.g. through a high-quality MSc dissertation).
- Demonstration of high-level proficiency in English (writing, reading, oral).

Start-date/ contract:

- 1 January 2015

- 1 year contract, with a possible extension to four years, provided a positive recommendation is given at the end of year one

Dr Nancy Bocken
nmpb2@cam.ac.uk

PhD Scholarship available in Resource Management at Vienna University of Technology

Quantification and analysis of plastics flows and stocks in Austria

A PhD project under the Christian Doppler Laboratory "Anthropogenic Resources". The project develops the methodological requirements to extend Material Flow Analysis (MFA) to routine Materials Accounting. This is done exemplarily for plastics and their additives (e.g. stabilizers, pigments) for which a static material flow model has already been developed, which has to be extended now to a dynamic MFA model. The overall aim of the project (Case Study C of the Christian Doppler Laboratory) is

- a) to predict future quantities and qualities (with respect to polymer type and additives) of plastic wastes in Austria and
- b) to develop scenarios for an optimized utilization of plastics waste (e.g., access points, separation, material recovery vs. thermal utilization).

A salary is provided according to the TU Wien scheme (14 times € 2,615.- gross salary), together with a significant allowance for travel and research support. The contract will be for three years. The preferred starting date is December 1, 2014.

Candidates should send a letter of application, a statement of research interests, copies of master thesis and education certificates and a Curriculum Vitae to johann.fellner@tuwien.ac.at (pdf format), or as a hard copy to Institute for Water Quality, Resource and Waste Management, c/o Ass.Prof. Dr. Johann Fellner, Vienna University of Technology, A-1040 Wien, Karlsplatz 13/226, Austria. Please quote as reference: Anthropogenic Resources.

Application deadline is October 24, 2014. Short listed candidates will be invited to a selection seminar.

Further information about the CD laboratory "Anthropogenic Resources" is available at: <http://iwr.tuwien.ac.at/anthropogene-ressourcen/forschung.html>

Faculty Position in Engineering for Sustainability

The Department of Civil and Environmental Engineering at the University of California, Berkeley, invites applications for a tenure-track Assistant Professor position in the broad area of Engineering for Sustainability. Candidates should be engaged in research that helps to fulfill the strategic vision of the Department: <http://www.ce.berkeley.edu/about/overview>

Sustainable engineering employs an understanding of environmental, economic and social conditions to maintain and improve the quality of life while safeguarding the world's resources for future generations. To address this need, we seek candidates who develop new designs, analysis methods and tools, and technologies to provide sustainable solutions to growing needs for buildings, energy, mobility, and water. Application areas may include, but are not limited to: systems of sensors and actuators to enhance sustainability; design and multi-scale analysis of energy-efficient materials and buildings; and development of sustainable water and wastewater treatment technologies.

The faculty member will teach undergraduate and graduate courses as part of the Civil and Environmental Engineering curricula. The faculty member will have the opportunity to interact with faculty throughout the Department and across the Berkeley campus.

Applicants are required to send by November 17, 2014, your most recently updated Curriculum Vitae, a cover letter, a statement of teaching, a statement of research interests, the names and contact information for three references, and (optional) copies of no more than two publications or manuscripts. The department will solicit reference letters at a later date and candidates will be notified in advance. All letters will be treated as confidential per University of California policy and California state law. Please refer potential referees to the UC Berkeley statement of confidentiality: <http://apo.berkeley.edu/evalltr.html>.

The expected start date is July 1, 2015. To be considered for this position, completion of all degree requirements except the dissertation must be met by the time of application. A Ph.D. degree or equivalent is required by the date of appointment. Please submit your application materials electronically through Berkeley's Academic Personnel recruiting website at <http://aprecruit.berkeley.edu/apply/JPF00515>.

For questions or problems you encounter, please contact us at jobs@ce.berkeley.edu. Applications received after the deadline will not be considered.

The University of California is an equal opportunity affirmative action employer, committed to excellence through diversity. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age or protected veteran status. For the complete University of California nondiscrimination and affirmative action policy see: <http://policy.ucop.edu/doc/4000376/NondiscrimAffirmAct>. The university seeks candidates

whose research, teaching, or service has prepared them to contribute to our commitment to diversity and inclusion in higher education. The university is also committed to addressing the family needs of faculty, including dual career couples and single parents. For information about potential relocation to Berkeley, or career needs of accompanying partners and spouses, please contact the CALcierge office at calcierge@berkeley.edu or visit calcierge.berkeley.edu.

The ISIE newsletter is published four times a year. The aim of the newsletter is to keep our members informed about the latest and greatest ISIE news from around the globe. We can only do it with your help! Please send us any information you think is worth including in the newsletter (conference summary, important publications, job posting, new appointments, etc.) to Vered Blass, isienewsletter@gmail.com

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