

**Industrial Symbiosis Eco-Industrial Development Section Update**  
**March April, 2012**  
**International Society for Industrial Ecology**  
Peter Lowitt, FAICP

This update service is provided by the Industrial Symbiosis Eco-Industrial Development Section of the International Society for Industrial Ecology. We welcome your announcements, call for papers and announcements of academic publications, corrections, insights and feedback.

The Section board consists of Marian Chertow (Professor, Yale U., USA) , Weslynn Ashton (Board Secretary and Assistant Professor, Illinois Inst. Technology, USA), Ankit Aggarwal (Student, TU Munich, Germany, Student Member), Professor Shi Han (Board Treasurer and Assistant Professor, City U of Hong Kong, China) , Rachel Lombardi (Research fellow U. Birmingham, UK and Practitioner with NISP), and Peter Lowitt (FAICP, practitioner, Devens Enterprise Commission USA and board Chair). The board serves for a two year period from 2011-2013.

- Communications: this committee will work on establishing protocols for communicating with members and be responsible for sending out updates. The group should examine the various existing communications platforms and determine how best to communicate with members of the section and non-members. An active linked in discussion group has been one result of this initiative. ([http://www.linkedin.com/groups?about=&gid=1845383&trk=anet\\_ug\\_grppro](http://www.linkedin.com/groups?about=&gid=1845383&trk=anet_ug_grppro)). We encourage you to join up and add to the discussion. The active exchange of ideas on this site ranges from discussions of orange by-products as a source for biofuel to discussions of parallels' between the financial and climate crisis (see below for a summary of this update's topics).
- Programming and events: this committee will work on defining (co-)sponsorship of events, assist in planning events; determining ways goals and deliverables for the section, examining ways to fund initiatives such as PhD student exchanges or graduate consortium events. The 9<sup>th</sup> *Annual Industrial Symbiosis Research Symposium (ISRS)* will take place on October 19, 2012, in Tianjin Economic-Technological Development Area (TEDA), about 150 km southeast of Beijing. ISRS will be followed by the 3<sup>rd</sup> *ISIE Asia-Pacific Meeting* to be held in Tsinghua University, Beijing on October 20-21, 2012, which will focus on theme "*Asia-Pacific Toward Eco-Industrial Development*". <http://www.cern.org.cn/>. The section is participating in the International Working Conference Applied Industrial Symbiosis, Birmingham, UK June 12-14, 2012. International Synergies and Birmingham City Council will host a groundbreaking practical International Working Conference on Applied Industrial Symbiosis (IWCAIS 2012). IWCAIS will bring together 150 advocates of Industrial Symbiosis from the world's leading businesses, institutions and academia to work alongside

experienced Industrial Symbiosis practitioners and develop plans that will demonstrate how the methodology can be used to address many of the issues debated at Rio+20.

- Database and information sharing: this committee will work on determining the best means of sharing information about projects and synergies, utilizing existing platforms or suggesting new ones, and working together to organize this initiative. We need volunteers for this committee.

**Linked In Questions and IS Case Studies:** Much thanks to Ines Costa for jump-starting this group. The following are some of the recent postings. Be sure and go to our Linked-in site for more in depth information on these and other items. This effort assists the Section in implementing our communications plan.

Member Graham Aid asks: Active vs Passive IS Facilitation: “Does anyone have specific data showing the success rates (using metrics such as transfers created) regarding passive (such as web based waste exchanges) and active facilitation (such as quick win workshops or strategic brokering)? Also interesting could be resources input / weighted consequential connections.”

Robert Droop launched a discussion on Sustainable Construction through Value Chain Innovation.

A.W. Armstrong from the US Business Council for Sustainable Development posted: “The US Business Council for Sustainable Development is very pleased to announce the launch of the Chicago Waste to Profit Network website. In addition to information about by-product synergy and the WtP Network, the website provides direct access to both cirrus, our cloud-based application for managing resource and synergy data, and WtP Social, our platform for network collaboration and ideas exchange. Please let me know what you think.”

Tiago Cruz provides a link to the work of Tyler Barnes, a high school student in Indiana who has uncovered a vast opportunity to use crustacean shell wastes to remediate mine tailing pollutants.

Brooke Farrell blogs about her Waste Not Want Not matching services from her Houston, Texas business.

Kathryn Cooper of the Sustainability Learning Center writes about an article by Swedish researchers identifying the traits of successful sustainability facilitators.

Weslyne Ashton writes: “ I just discovered that the set of articles published in the 2011 Business Strategy and Environment special issue on Industrial Symbiosis is currently free to download! [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-0836](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0836)

[Ritika Tewari](#) adds “ An interesting read about how a shoe making industrial cluster searched for environmentally sustainable solutions for their wastes that made perfect business sense.”

To read a summary, see <http://speakingself.blogspot.in/2012/04/midass-touch-how-industrial-symbiosis.html>

To download the research paper freely, simply visit <http://onlinelibrary.wiley.com/doi/10.1111/j.1530-9290.2011.00442.x/pdf>

Weslynn Ashton shares about an RFP and potential funding source for IS projects: “Hi all, Here is a new business competition focused on waste management technologies and business innovations that may be of interest to many of you: <http://launch.org/forum/11/beyond-waste>”

### **Melanie Quigley announces a special issue of the Journal of Industrial Ecology on Industrial Symbiosis: New special issue of the Journal of Industrial Ecology on Industrial Symbiosis**

The Journal of Industrial Ecology is pleased to announce a special issue on industrial symbiosis. The issue contains cutting edge articles on industrial symbiosis available for download at < <http://jie.yale.edu/Vol16Symbiosis>>.

Making one company’s waste the raw materials for another has long been one of the most intriguing notions in industrial ecology. This strategy, known as industrial symbiosis – by analogy to the manner in which some species in nature cooperate to mutual advantage – came to public attention in the early 1990s. An industrial district in Denmark with a dense web of resource sharing and by-product exchanges was discovered. Efforts to replicate the Danish example led to a search for other examples and strategies to create such industrial networks. Twenty years later, numerous examples have been documented and countries from China and Korea to the UK have embarked on programs to establish or facilitate industrial by-product exchange. This special issue highlights research that moves beyond case studies to more comprehensive analyses. Symbioses examined in this research include networks in the United Kingdom, the Netherlands, India, Australia, China, Japan, Finland, Sweden and Brazil.

To complement the special issue, a selection of previously published articles on industrial symbiosis has been compiled at <http://jie.yale.edu/symbiosis>. Included in the compilation is a comprehensive list of all articles and columns published in the Journal of Industrial Ecology on industrial symbiosis

### **Conferences, workshops, courses and other events**

- 2013 International Society for Industrial Ecology Society Conference, 2013, Ulsan, Korea

- International Working Conference on Applied Industrial Symbiosis (IWCAIS) is scheduled for June 12-14, 2012 in Birmingham, UK. See above for more information
- Martin Anderson is chairing and presenting ISKalundborg at the EU Presidency Conference 19-21 June in Aarhus, Denmark.
- The next Industrial Ecology Gordon Research Conference, "The Role of Industrial Ecology in Addressing Sustainability Imperatives" will be June 17-22, 2012 in Les Diablerets Switzerland.

For more information, visit the GRC Website:

<http://www.grc.org/programs.aspx?year=2012&program=industeco>. Applications and abstracts are due by May 20th and are being accepted at:

<http://www.grc.org/application.aspx?id=12727>

The Gordon Research Seminars will again take place before the GRC June 16-17th. The GRS application: <http://www.grc.org/application.aspx?id=14474>. For more information visit the GRS website:

[http://www.grc.org/programs.aspx?year=2012&program=grs\\_indust](http://www.grc.org/programs.aspx?year=2012&program=grs_indust)

- Leo Baas invites colleagues to the 18<sup>th</sup> Greening of Industry Network (GIN) conference in Linköping, Sweden, during 21-24 October, 2012. The website of the GIN 2012 conference is developed, the Call for Abstracts (deadline 15 April, 2012) is open, and an electronic Call for Papers for a special issue of the Journal of Cleaner Production is available. A reference group with representatives of industry, government and university, chaired by the County Governor, is currently working on the organization of on-site workshops as integrated part of the GIN2012 conference. All information about the GIN2012 conference, can be found on [www.gin2012.se](http://www.gin2012.se)
- *Eco-business.com* reports that specialty sustainability audit and advisory consulting firm Antimony Green Inc. will host a two-day Industrial Sustainability Conference on 23- 24 May 2012 in Johannesburg

## ○ **Sustainable Innovation 2012 Call for Papers**

### **Resource Efficiency, Innovation and Lifestyles**

Part of the 'Towards Sustainable Product Design' series of conferences  
17th International Conference

October 2012

Germany

Conference website: [Sustainable Innovation 2012](http://www.sustainableinnovation2012.com)

- **18<sup>th</sup> Annual International Sustainable Development Research Conference: People, Progress and Environmental Protection** will be held at the University of Hull, UK, June 24-26 2012. This interdisciplinary conference includes a number of opportunities to discuss industrial ecology, in addition to offering the opportunity to meet sustainability scientists with other specialisms. For the full call for papers and programme, please see the conference website at [www.hull.ac.uk/isdrc18](http://www.hull.ac.uk/isdrc18)

The conference will provide a forum for discussion on sustainability, comprising both empirical and theoretical contributions, considering developed, developing and/or transition economy perspectives around the following themes:

- Sustainable production and consumption
- Critical perspectives on sustainable development

- Regional approaches to sustainable development
  - Effectiveness of governance, institutional and economic structures for sustainability
- Science of Sustainability: determining the need for transitions, assessing progress and trends.

Scientific contributions (based on peer reviewed abstracts) are organised into tracks which relate to these themes. Tracks and their chairs are displayed on the conference website.

- **Electronics Goes Green 2012+ Joint International Conference and Exhibition. September 9 – 12, 2012 in Berlin, Seminaris Dahlem Cube**
- **ReuseConex 2012 (10/18-20/12):** *ReuseConex 2012*, the 2nd National Reuse Conference & Expo, will be held on October 2012 at the DoubleTree in Portland, Oregon. The Reuse Alliance Portland Chapter's Steering Committee will be spearheading the event planning efforts. To get involved (planning committee, exhibit, sponsor, or attendee), please contact us at [reuseconex@reusealliance.org](mailto:reuseconex@reusealliance.org).
- **US Eco Industrial Development networking event September 7-9, 2012** to be held at Devens Conference Center, Devens, MA. All US Eco Industrial Development projects are invited to attend a gathering to establish a network in order to share information about our initiatives and lessons learned.

## **Publications and presentations of interest:**

- The Natural Resources journal has issued a call for papers. A quick perusal of their requirements indicates that IS papers would be welcome. [nr@scrip.org](mailto:nr@scrip.org) for more information.
- The Mediterranean Eco-Industrial Newsletter No. 2 has been published and can be downloaded from the following web site: [http://www.medmeid.eu/wp-content/uploads/2012/03/Newsletter2\\_EMv2.pdf](http://www.medmeid.eu/wp-content/uploads/2012/03/Newsletter2_EMv2.pdf)
- *The Guardian Newspaper* 2-29-2012 has an article entitled “A Missed Opportunity on Waste” examining the UK’s lost opportunities to make better (re)use of its waste streams. Another *Guardian* article from April 5, 2012 “Business Needs to Learn to see Separate Challenges as Part of the Whole” urges the business community to model itself after natural systems.
- Slideshare has a number of interesting presentations on EcoParks on its web site. It is worth checking out.
- Jennifer Everett writes about Drexel University professors who have developed a new greener concrete: ”Drexel engineers have developed a cement that is more energy efficient and cost effective to produce than the more common Portland cement, according to a Feb. 20 Drexel press release. The research, which was published in “Cement and Concrete Composites,” was produced by a group of

Drexel professors and alumni that founded Greenstone Technologies Inc. in 2008. Their goal is to commercialize their research on the more environmentally friendly material, an alkali-activated composition known as AAC. Michel Barsoum, a professor in the materials science and engineering department, and assistant professor Alexander J. Moseson have worked with Aaron Sakulich, who has a doctorate in materials engineering from Drexel, and Sean Miller, who graduated in 2011 with an undergraduate degree in biological sciences. AAC consists of slag, which is an industrial byproduct, and 68 percent limestone, which is common, cheap and contains a low amount of carbon dioxide. AAC also emits 97 percent less carbon dioxide compared to Portland cement. A small amount of commercial alkali chemical is added with the slag product, and the entire process requires very little heat in comparison to the more common Portland cement, which is fired in a kiln that requires a large amount of energy and produces a great deal of carbon dioxide. Portland cement also contains only five percent limestone and uses a substitute mixture, clinker, which is formed by heating limestone, clay, bauxite and iron ore in the kiln. AAC also recycles materials as it uses the industrial byproducts of slag and fly ash in the production process. Additionally, it costs half as much to make AAC as it does to make Portland cement because AAC uses less heat. In terms of the environment, every ton of Portland cement production results in a ton of carbon dioxide emissions.”

- China Daily March 26, 2012 reports on evaluation by the Science and Technology Division of the Environmental Protection Ministry of a National Eco-Industrial Development Zone in Urumqi.
- Industrial Symbiosis and Green Chemistry by J. Clark. University of York, UK.  
**Summary:** The twin problems of resource depletion and growing amounts of waste can be solved through the valorization of waste into chemical, fuel and material products. While future “closed-loop” manufacturing should reduce waste through in-house use of by-products and products designed for end-of-life utilization of the components, we also need to find ways to capture valuable substances from existing waste streams and landfill sites. These waste valorization technologies must themselves be green so as not to add a substantial environmental footprint to new waste-derived products. Suitable green chemical technologies include bio-chemical processing (eg fermentation of food waste), thermo-chemical including microwave processing (eg conversion of paper waste to chemical intermediates), and benign solvent extraction (eg supercritical carbon dioxide extraction of waxes from cereal straws). One exciting new case study is on orange peel waste that is widely available in large quantities and rich in chemicals such as D-limonene and materials such as pectin: these and other valuable products can be simultaneously extracted in a novel microwave biorefinery process.

## **Eco-Industrial Development and Industrial Symbiosis in Practice:**

**Eco-Industrial Projects:**

**COUNTRY: USA**

**California:** Presentation to the Port of San Francisco on a concept to develop the Pier 90-94 Backlands into an eco-industrial park. Highlights include relocating an asphalt plant from a mixed industrial/residential setting and linking it with a concrete crushing plant, using the output of the concrete plant as input for the asphalt plant. Also looks into the feasibility of building a biodiesel plant on-site that would use the output of the currently existing rendering plant.

**Massachusetts:** The Devens Eco-Efficiency Center and Devens Enterprise Commission hosted a delegation of visiting dignitaries from PALME, an association of industrial parks mainly centered in France who seek to assist their industrial sector tenants in applying sustainable development techniques and methods to their operations, including becoming ISO 14001 certified, as many of their parks are. Plans are being made for the September 7-9, 2012 US Eco Industrial Park networking event at Devens. Interested parties should contact Peter Lowitt at [peterlowittatdevensec.com](http://peterlowittatdevensec.com).

Boston: MAPLAB.INC has posted students plans for a Resilient Boston Innovation District to their web site. The site envisions the development as grounded in green buildings and managing water while encompassing housing, office uses and eco-industrial development.

Preserve Corporation continues to show the way business can transform our thinking about waste as noted on their website:” Why send your recycling to waste management when you could get something out of it first? Four **B Corps** asked themselves this question and recognized the business opportunity in doing good by the planet. They got creative and two partnerships were formed, one between **Preserve** and **Recyclebank**, the other between **Method** and **United By Blue**, which bring B to B connections to a whole new level.

Preserve and Recyclebank have just partnered up to connect the recycling that is at the core of Preserve’s products with the rewards system of Recyclebank. Preserve’s *Gimme 5* program encourages people to donate their #5 plastic recyclables at retail locations, such as Whole Foods and local co-ops, to be recycled into Preserve’s products. Recyclebank, a fellow B Corp, incentivizes green actions with points that are tracked virtually online and can be redeemed for discounts and rewards at local and national businesses. Now through Preserve and Recyclebank’s new **partnership**, people can log their Gimme 5 contributions with the Gimme 5 **iPhone app**, or at **mygimme5.com** and earn Recyclebank points. They can also collect points by sending back Preserve products at the end of their use. Then those same Recyclebank points can be “recycled” to get discounts on new Preserve products. So if someone donates their yogurt cups, or sends back their toothbrush, they can get a discount on a new toothbrush. Consumers are rewarded directly for every responsible action they take and Preserve receives a steady supply of recyclables to make their products. Recycling made fun and meaningful.”

**Virginia:** CAPE CHARLES – “A company whose product is used to test pharmaceuticals will be expanding with the recent purchase of the building it is renting here -- the former Port of Cape Charles Sustainable Technologies Industrial Park structure... The facility opened in Cape Charles in 2002 in the former eco-industrial park, which was highly touted as a model for sustainable development. But by 2005 the industrial park idea had fizzled, and Northampton County Industrial Development Authority unanimously agreed to transfer the park, commonly called the STIP, back to county control and ownership.” Gloria Bradley, Eastern Shore News.

**COUNTRY: Thailand**

**COUNTRY: Malaysia**

**COUNTRY: United Kingdom** [Waste reduction experts to give advice at next Urbano Host event](#)

Experts from the National Industrial Symbiosis Programme (NISP) gave advice on how the hospitality industry can reduce waste at the February 2, 2012 Urbano Host networking event.

**Northern Ireland:** Excellent results are being reported for firms participating in the industrial symbiosis program delivered by Invest Northern Ireland. The Northern Ireland business collaboration has achieved £2.2m in cost savings and generated sales of more than £550,000.

**COUNTRY: Azerbaijan** BAKU, 18 April 2012 – “The role of a new generation of eco-industrial parks in the diversification of Eastern European and Central Asian economies was the focus of a conference, organized by the United Nations Industrial Development Organization (UNIDO), which ended in Baku today. Some 60 high-level government officials and experts discussed the potential of industrial parks - specific areas zoned and planned for industrial development - to become innovation hubs that promote new industries and technologies. They also looked at ways eco-industrial parks can contribute to sustainable development, and at their role in attracting financial resources, as well as the role of good governance in making such sites more effective.”

**COUNTRY: Australia**

**COUNTRY: China.**

**COUNTRY: Sweden** another example of an IS park project from Sweden:

[http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Eesymbiocity%2Ese%2Fen%2FCases%2Fenkopng-Municipality%2F&urlhash=A0Xg&t=tracking\\_disc](http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Eesymbiocity%2Ese%2Fen%2FCases%2Fenkopng-Municipality%2F&urlhash=A0Xg&t=tracking_disc)

Linköping University students Michael Martin, Mats Eklund, and Niclas Svensson gave a presentation at Technoport 2012 in Trondheim entitled "Industrial Symbiosis in the Biofuel Industry: Assessing the Environmental Performance" examining the eco-industrial area centered around the City of Norrköping, Sweden.

**COUNTRY: Nepal** A recent meeting of the Nepal Business Forum made recommendations to improve the business climate within the country. One of those recommendations is to initiate an eco-industrial park.

**COUNTRY: Philippines**

**COUNTRY: Vietnam**

**COUNTRY: Canada** Olds, Alberta. The Olds Institute for Community and Regional Development (OICRD) is requesting proposals for the development of an Eco-Industrial Park Master Plan and Business Plan.

The OICRD is seeking assistance from qualified and experienced individuals and



business capable of delivery cost effective and evidence based plans to explore the development of an eco-industrial park within the Town of Olds.

<http://vendor.purchasingconnection.ca/Opportunity.aspx?Guid=76310217-0638-44BB-A845-4463B1BF5783>

Johnstown, Ontario: Students from Queens University in Ottawa made a presentation to the developers of the Ontario East Wood Centre Eco Industrial Park suggesting that greenhouses and ethanol plants be explored as part of the parks continued development.

**COUNTRY: Switzerland**

**COUNTRY: Norway**

**COUNTRY: Denmark** There are new symbiosis projects in the pipeline, The Copenhagen Cleantech Park in St. Rørbæk:

[http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Efrederikssunderhverv%2Edk%2Fny-by-st-roerbaek%2E6&urlhash=y2vt&t=tracking\\_disc](http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Efrederikssunderhverv%2Edk%2Fny-by-st-roerbaek%2E6&urlhash=y2vt&t=tracking_disc)

**COUNTRY: Netherlands** William McDonnough and partners are working on Park 20/20 in the Netherlands:

[http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Emcdonoughpartners%2Ecom%2Fprojects%2Fview%2Fpark\\_2020\\_master\\_plan&urlhash=rjxG&t=tracking\\_disc](http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Emcdonoughpartners%2Ecom%2Fprojects%2Fview%2Fpark_2020_master_plan&urlhash=rjxG&t=tracking_disc)

**COUNTRY: Finland** links to an industrial Symbiosis project.

[http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Esybimar%2Efi%2Feng\\_closed\\_circulation%2Ehtml&urlhash=Fcp-&t=tracking\\_disc](http://www.linkedin.com/redirect?url=http%3A%2F%2Fwww%2Esybimar%2Efi%2Feng_closed_circulation%2Ehtml&urlhash=Fcp-&t=tracking_disc)

**Country: Bahamas** "BEC's ocean thermal energy partner yesterday revealed it plans to develop an eco-industrial park in the Bahamas, leveraging its project into technology and export spin-offs that would make this nation "a world leader in green technology and green energy". Jeremy Feakins, chairman and chief executive of Ocean Thermal Energy Corporation (OTEC), told Tribune Business that the company's "vision" was to emulate the National Energy Laboratory of Hawaii (NELHA), and its Ocean Science and Technology Park, in the Bahamas, having already assessed potential sites at Clifton Pier and in Grand Bahama. He explained that the deep sea water employed by OTEC's ocean thermal energy plants could be employed by a host of spin-off industries, such as bottled water producers, agriculture, mariculture and aquaculture, potentially creating a more diversified Bahamian economy and new job opportunities." By Neil Hartnett.

**COUNTRY: Brazil**

**COUNTRY: Japan**

**COUNTRY: Korea**

**COUNTRY: Nigeria**

**COUNTRY: Germany**

**COUNTRY: Hungary and Slovakia**

**COUNTRY: India**

**COUNTRY: Trinidad and Tobago**

**COUNTRY: Romania**

**COUNTRY: Singapore** 74 East Eco Industrial Park has a video on line showing off the park and its design.

**COUNTRY: South Africa.**

## **Professional Changes and Opportunities:**