Industrial Symbiosis Eco-Industrial Development Section Update
June 15, 2010- July 15, 2010
International Society for Industrial Ecology

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 Center for Industrial Ecology at Yale University's School of Forestry and Environmental Studies and the Section are co-sponsoring the 7th Annual Industrial Symbiosis Research Symposium entitled **Industrial Symbiosis -CONTRIBUTING TO CO-BENEFIT CITIES AND REGIONS-Kawasaki, JAPAN, November 5-6, 2010.** The event is held in cooperation with Tsinghua University and the Chinese Academy of Sciences in China, Ulsan University in Korea, and the National Institute for Environmental Studies of Japan. The event is being held in Kawasaki, Japan on the Friday and Saturday prior to the beginning of the ISIE Asia Pacific Conference in Tokyo and the MFA-ConAaccount ISIE Section meeting immediately following that event. Kawasaki City, known as an industrial frontier in the Tokyo Metropolitan Region, has experienced an on-going transition toward an environmentally friendly industrial city with industrial symbiosis due to the need in urban management for reducing environmental impact and promoting sustainable development and a low carbon society. Kawasaki Eco-Town is also identified as one of the frontier eco-towns or Japanese EIDs.The Symposium will begin from the reception party on November 4th (Thu.) and end on November 6th (Sat.), 2010. Professor Chertow of Yale and Mr. Lowitt wish to thank Professor Fujita and his team for agreeing to host the event for the section and for their work in pulling the program together. See the IS4IE.org web site for more details. A separate announcement will be sent to the email list with more details on this outstanding event. We hope many section members will be able to attend and participate.

Section member Megha Shenoy reports on her work in India since the ISIE Conference in Lisbon last year:
"After the conference in Portugal in 2009 I got back to India and have been working with the Resource Optimization Initiative (ROI). After Mr. Ramesh Ramaswamy's sudden demise in 2008 ROI had almost closed down. Since July 2009 we have restarted its activities and have been quite busy with various projects.

Yale and ROI did a comprehensive project on uncovering existing symbiotic connections in an industrial estate in south India. A paper on this work has just been published by Resources Conservation and Recycling. Here is the link
<http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VDX-506H0VV-1&_user=946187&_coverDate=05/31/2010&_rdoc=14&_fmt=high&_orig=browse&_srch=doc-info(%23toc%235994%239999%23999999999%2399999%23FLA%23display%23Articles)&_cdi=5994&_sort=d&_docanchor=&_ct=66&_acct=C000049005&_version=1&_urlVersion=0&_userid=946187&md5=e73313b1014fbd94502f0e061ca6b7f2>

I also urge people interested by this work to read the full report with news paper clippings of an awareness program and industrial symbiosis workshop organized by the Karnataka Pollution Control Board in collaboration with the Yale Center for Industrial Ecology and the Resource Optimization Initiative, Bangalore. This program was organized in Mysore on the National Pollution Prevention Day – 3rd December 2009. The full report is available on the ROI website <http://www.roi-online.org/ongoing_projects.htm>.

As a follow up from this industrial symbiosis project, ROI is currently working with the Karnataka Pollution Control Board and the Central Power Research Institute, India to develop strategies for reusing ash produced from burning biomass. This will be useful in reusing the 50,000 tons of this ash produced at the industrial symbiosis study site in south India. "

I think industrial symbiosis is beginning to go mainstream. (Hats off to Peter Layborne and the hard working NISP teams in the UK.) My proof, the fact that the British press has begun to parody it. In an article in The Spoof Thursday July 8, 2010 entitled "Dead Bodies to be Made into Bricks" a British funeral home director raves about the new and profitable symbiosis this creates.

News of interest is the launch of Industrial Symbiosis Capital LLC info@industrialsymbiosiscapital.com Financing, something every IS/EIP is on the look out for. *See below for a European Commission project announcement as well.*

Conferences, workshops, courses and other events

- ReUse Conex: the United States' First National Reuse Conference and Expo will be held October at the Hilton North Raleigh in Raleigh, North Carolina.

- COGENCanada Course/Seminar 31Aug 1Sept 2010 features a number of sessions on Eco-Industrial projects including a featured luncheon event with speakers from Eco-Industrial Solutions; Don Murray speaking about "Integrated ECO Industrial Networks in the Alberta Industrial Heartland "; and a presentation on **Enmax Bonnybrook** Presentation on Planned Cogeneration based Eco Industrial Network and Eco Business Zone ***Dennis Elias*** followed by tour of Enmax Calgary District Energy Centre in Downtown Calgary (now in operation) to be connected in the future to the Bonnybrook Cogeneration System.

- The Concordia University John Molson School of Business David O'Brien Center for Sustainable Enterprise in Montreal, Quebec, Canada is listing among its activities: Industrial Symbiosis Developments and Impacts.

- 14th ECOMONDO International Trade Fair on Material & Energy Recovery & Sustainable Development. November 3-6 at Rimini Fiera, Italy.

- A series of workshops, roundtables and eco-industrial courses are being conducted by GTZ, the Federation of Indian Chambers of Commerce and the

State of Andhra Pradesh India. http://www.hrdp-net.in/e18092/e21298/e25159/e25157/e17371/

- The Fifth International Congress on Innovation Systems for Competitiveness 2010. Converging Technologies for Competitiveness: Tribute for Peter Drucker to be held by The Council of Science and Technology of the State of Guanajuato, Guanajuato University Campus Celaya - Salvatierra and the Technological Institute of Celaya on August 25-27, 2010 has an entire track dedicated to industrial symbiosis. The State of Guanajuato recently worked with International Industrial Synergies, the folks who run NISP in the UK; to begin to educate industry in the state about eco-industrial development and industrial symbiosis.

Publications and presentations of interest:

The UNC Institute for the Environment published a report entitled Camden Country Green Industrial Park Feasibility Study dated 2008.

European Union ESPON 2013 publication entitled ReRisk Regions at Risk of Energy Poverty Applied Research Project 2013/1/5 Updated Interim Report with Case Studies includes a case study of Kalundborg and Landskrona.

European Commission Science for Environmental Policy DG Environment News Service Alert 17 June 2010 "Clear Identity Needed for Industrial Recycling Networks". "Recycling waste products between companies in industrial recycling networks can bring environmental and competitive benefits. A recent study on whether such networks can be used to advance sustainable development more broadly suggests companies first need a clear, shared network identity before other types of sustainability-oriented cooperation can take place."

Call for Papers for an upcoming special issue of the Journal of Cleaner Production "Urban and Landfill Mining: Emerging Global Perspectives and Approaches". Prospective authors are invited to discuss their research and possible contribution to the special issue during the Session Industrial Symbiosis, Eco-industrial Parks and Resource Recovery in the joint ERSCP/EMSU conference entitled **Knowledge collaboration and learning for sustainable innovation** that will be held in Delft, the Netherlands, October 25-29th, 2010.

All papers will be subjected to independent peer review. After the review and revision process is completed, all accepted papers will be published in a special issue of the JOURNAL OF CLEANER PRODUCTION in 2011.

Found on the web: a pdf highlighting the planned reuse of a brownfield as a new urban eco-district utilizing eco-industrial concepts in Norrkoping, Sweden, the Eco City Butangen District.

The European Commission has issued a tender for a contract on industrial competitiveness for a sustainable future.

The aim of this multiple framework service contract, with re-opening of competition, is to provide information, consultancy, technical assistance and research services on the interactions between the competitiveness of enterprises or industrial sectors and environment, climate change, energy and transport, eco-innovation, eco-design and sustainable product policies, in the EU and third countries.

The contract is divided into three lots. – lot number 3 will be of interest to our readers:

“ contribute to the evaluation of the cost-effectiveness of any new measures and initiatives in the field of eco-industries and pollution prevention and control, and, in particular, their contribution to enhance the competitiveness of the European industry sectors or enterprises, including both large companies and SMEs, in the global market, - make a comparative analysis of policies and measures in the EU, Member States and third countries, including Japan, the United States and other trade partners, in particular from Asia, India and Latin America.

For further information, please contact:

European Commission
Directorate-General for Enterprise and Industry
BREY 07/120
1049 Brussels
Belgium

E-mail: Contact

To see the full details of the call, please consult: “
OJ No S133 of 13 July 2010

Article: **Cleaner production via industrial symbiosis in glass and largescale solar photovoltaic manufacturing** by Nosrat, A.H. Jeswiet, J. Pearce, J.M. Dept. of Mech. & Mater. Eng., Queen's Univ., Kingston, ON, Canada **This paper appears in:** Science and Technology for Humanity (TIC-STH), 2009 IEEE Toronto International Conference **Issue Date:** 26-27 Sept. 2009 **On page(s):** 967 - 970

Article: **Eco-Industrial Parks and Application of Corporate Environmental Management Information System in China** by Juan Wen (Tianjin Academy of Environmental Sciences, China); Xueqiang Lu (Tianjin Academy of Environmental Sciences, China). Pages: **395-408 pp.**
Source Title: **Corporate Environmental Management Information Systems: Advancements and Trends** .Source Author(s)/Editor(s): **Frank Teuteberg (University of Osnabrueck, Germany); Jorge Marx Gomez (University of Oldenburg, Germany)**Copyright: **2010**

Article: **Industrial Symbiosis System Boundaries** by Suvi Pakarinen (SYKE), Tuomas Mattila (SYKE), Ari Nissinen (SYKE), Jouni Korhonen (ÅA), Rupert Baumgarter (ÅA), Kaisa Pihlatie (ÅA) of the Finnish Environment Institute and Abo Akademi 6/16/2010. For more information **Suvi Pakarinen, researcher, Finnish Environment Institute SYKE, firstname.surname@ymparisto.fi**

Article: **From Waste to Profit** by Rene Van Berkel in *Making It Issue 1 pg 40-41* 2010.

Article: **A method for controlling enterprises access to an eco-industrial park** by **Li Zhu[a, b], Jianren Zhou[a], Zhaojie Cui[a], and Lei Liu[a]** published in *Science and the Total Environment11 July 2010.*

Eco-Industrial Development and Industrial Symbiosis in Practice

Kalundborg, Denmark from the BioEnergy Weekly Dispatch July 12, 2010 courtesy of section member Michael Krause.

"A cellulosic ethanol initiated operations in Kalundborg, Denmark, last week to begin producing 1.4 million gallons of biofuel a year from wheat straw. Danish biofuel company Inbicon plans to integrate the Kalundborg Biomass Refinery with Denmark's largest power station to operate at efficiencies as high as 71%. The refinery will produce a lignin-based co-product that the coal-fired Asnaes Power Station can co-fire without further processing. Minnesota-based electric cooperative Great River Energy has plans to utilize Inbicon's biorefinery technology at its Dakota Spirit AgEnergy plant in North Dakota."

Singapore

"Jurong Town Corporation (JTC) has recently launched it's latest development – CleanTech Park. JTC has partnered with the Economic Development Board (EDB) to unveil the Master Plan for the park, which is set to be "Singapore's first eco-business park"."

Canada

The Colchester Redevelopment Agency (CoRDA) in Truro, Nova Scotia has revamped its web site to feature its Eco-Industrial efforts at the former Debert Air Force base and it Eco-Industrial business networking within the county. CoRDA is in a twining or sister base redevelopment with Devens, Massachusetts and its Eco-Industrial Park and representatives from CoRDA and its participating entities will be visiting Devens in August of 2010.

The 324 hectare Chester Eco Industrial Park, also in Nova Scotia received funding from the National Government to support its infrastructure and announced its first tenant, a company that cleans industrial fishing nets.

United Kingdom:

"TEESSIDE University has been handed a major grant to help the region lead the way in turning household and commercial waste into a resource.The £1.76m award for the Industrial Symbiosis team at the university's Clean Environment Management Centre

(CLEMANCE) will aid research into new uses for industrial waste and ways of re-using kerbside domestic waste collected by councils."

Scotland
Zero Waste Scotland –Industrial Symbiosis was among the co-sponsors of an early July meeting to support the Scotch Whiskey Research Institute discussion cutting costs and carbon through the use of vapour recompression and heat pumps.

Australia
Bruce Mitchell of the Mitchell Enviro Industrial Estate in Gold Coast City, has an impressive web site and story http://www.mitchellbuilders.com.au/projects.htm.

European Union:
First industrial application of eco-innovative biotechnological process and product, for recycling and re-use of food industrial waste to economically important and high added value farming products (PROTECTOR)

http://www.terrenum.net/ecoinnovation/results.html

Italy:

United States:
In Mecklenburg County North Carolina headlines appeared in local papers about environmentalists protesting an eco-friendly industrial park (667 acre ReVenture Park) which proposed a biomass trash to energy plant.

In Omaha, Nebraska a realtor is listing a property located near the largest materials recovery facility in Nebraska as a potential eco-industrial site.

The Camden, North Carolina Eco Industrial project (see feasibility study above), received a $2 million grant to assist with the park's development.

The State of North Carolina legislature this month passed legislation granting state tax incentives for eco-industrial parks. Congratulations to our colleagues in North Carolina for their foresight and intelligence. We hope to hear more of your efforts and successes as the development community takes notice of this singular and important event.

The Minnesota Pollution Control Agency has a web site with a list of 28 ways to create "Green Step Cities", number 28 being to facilitate business synergies. EIDC/IS member Tim Nolan works for the agency. Elsewhere in Minnesota the state Department of Employment and Economic Development awarded funding to support another EIP effort.

- "Grand Rapids EDA: Itasca Eco-Industrial Park, $56,250 in cleanup funding for this 223-acre former oriented strand board manufacturing facility contaminated by petroleum and other toxins. The site will be redeveloped into an Eco-Industrial Park, which is projected to create 70 new jobs and increase the tax base by $110,430. The Itasca Eco Industrial Park LLC will pay for remaining cleanup costs. "

Greece
Antonis Mavropoulos writes in his blog about the recent article in the Journal of Industrial Ecology regarding waste and recycling exchanges in Styria and Oldenburger Munsterland (Posch, A. (2010). Industrial Recycling Networks as Starting Points for Broader Sustainability-Oriented Cooperation? Journal of Industrial Ecology).

China

In a recent article on Green Industrial Zones Growing in China by Ben Paul dated 6-29-2010 on RightSite Asia there is a short discussion of the history of eco-industrial parks excerpted below.

“China began encouraging the first eco-industrial parks (EIPs) in 1999, when the State Environmental protection agency started a pilot program for a series of facilities, and expanded the movement in 2006 with the release of the Standard for Construction and Management of Eco-industrial Parks. Among one of the latest rounds of approvals have been parks in Fuzhou, Wuxi, Shaoxing, Riszhao, and were established as national demonstration facilities that other industrial zones could use as models for their own developments.”

“Such zones stand out from typical industrial parks in that they deliberately arrange clusters of business in hopes of encouraging cooperation between business that ultimately will encourage more efficient use of resources and less output of pollutants. The infrastructure and buildings themselves also are constructed to maximize energy efficiency, with some even using solar panels on top of businesses to provide a source of renewable power.”

“In the ten years since the EIP movement began, some developers have begun a second type of park, taking the trend of zones that seek to limit the environmental impact of factories a step further by fostering projects that intend to help improve the environment even after the goods leave the production facility. By December 2009 China had approved more than 30 eco-industrial parks, but no data were available for this newest type of development. RightSite examines parks in Jiaxing and Chongqing that promise to change the way people look at factories.”

Implementing Industrial Symbiosis and Environmental Management System inTjanjin Binhai New Area. According to the Switch Asia web site:

“China is still struggling to develop effective models of optimally utilizing the myriad of waste streams of SMEs which are responsible over 80% of industrial production in China. Industrial Symbiosis creates many synergistic effects for SMEs working together in for example waste management. This approach is applied by a SWITCH-Asia project in the Tianjin Binhai New Area (hereinafter TBNA) in China. TBNA is a 2270 km^2 cluster of industrial development zones with the highest concentration of industrial output in Northern China. With its rapid economic growth, TNBA is experiencing high levels of solid waste and pollution. In 2007, TBNA produced over 5 million tonnes of solid waste. It has over 400 companies that were identified as key polluting sources. Industrial Symbiosis involves sharing of information, services, utility, and by-product resources among one or more industrial actors in order to add value, reduce costs and improve environmental performance. Industrial symbiosis is a subset of industrial ecology, with a particular focus on material and energy exchange.

The SWITCH-Asia project „Implementing Industrial Symbiosis and Environmental Management Systems” promotes sustainable production among companies in the TBN Area. It facilitates industrial symbiosis by embedding Environmental Management Systems among SMEs and greening local SME suppliers of multinationals. The project

aims to create a favourable policy environment for sustainable production in TBNA, in Tianjin and across China. “