

EID/IS Section Update

November - March 2014/2015

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AWARDS, PUBLICATIONS AND PRESENTATIONS

The business case for a circular economy

Metro Vancouver held a webinar entitled *The Business Case for a Circular Economy – Profiling National Zero Waste Council Case Study Findings* in early January. [Click here for the website.](#)

ECO-INDUSTRIAL DEVELOPMENT AND INDUSTRIAL SYMBIOSIS NEWS FROM AROUND THE WORLD

Japan

Ajinomoto Co., one of Japan's leading food and amino acid manufacturers, announced on June 3, 2014, that it will start a joint research project with Saga City on the application of byproduct biomass generated during the amino-acid fermentation process of its manufacturing operations in Kyushu, the southernmost of Japan's four main islands. The plan is to study how byproduct biomass can improve fertilizers made from biosolids, or sludge, from the water treatment process at the Saga City Sewage Treatment Center, and scientifically evaluate its effectiveness in terms of crop quality (i.e., boost in amid acid content). They also hope to develop new applications for the biomass, including power generation. Furthermore, Saga City will assess the effectiveness of these new technologies on reducing waste and environmental impact. The firm and city have already joined forces to produce fertilizers using byproduct biomass, and the fertilizers produced at the city's sewage treatment center have been sold mainly to local farmers in Saga at low prices, setting a good model for local biomass recycling through public-private partnership. Saga City's work on biomass is the cornerstone of an effort to make the city more environmentally friendly and disaster-resilient. Ajinomoto's Kyushu operations, meanwhile, plan to continue cooperating with the Saga City Biomass Industry City Plan and contribute to the development of a biomass recycling industry.

Australia, Melbourne

The Brooklyn Industrial Precinct, which has "some of the worst air in Melbourne", has started undergoing a major clean-up, with Brimbank council planning its transformation into a world-class eco-industrial park. The 300-hectare site near Kororoit Creek has abattoirs, current and closed tips, heavy- recycling industries, container yards and light industrial, retail and manufacturing businesses.

"The environmental and social benefit in today's dollars of the new water system [being used at the site] and the resulting halving of dust levels are estimated to exceed \$340 million over 30 years," Brimbank council administrative chairman John Watson said. The pollution hotspot has

CONFERENCES, WORKSHOPS, COURSES AND OTHER EVENTS

Informal ISRS meeting during the 4th ISIE Asia-Pacific Conference

During the 4th ISIE Asia-Pacific conference members to the EID/IS-section organized an informal meeting with several people interested in the field of Industrial Symbiosis. [Check out the full report here.](#)

11th Industrial Symbiosis Research Symposium (ISRS)

July 5 and 6 2015, Lausanne, Switzerland

PlanetSave Blog

Piotr Jędrzejuk writes about the virtues of industrial symbiosis on the PlanetSave Blog. [Read more here.](#)

Sustainable Oriented Recycled Plastic

Sony Corporation announced on August 4, 2014, that it would start outside sales of SORPLAS (Sustainable Oriented Recycled Plastic) flame retardant recycled plastic from the beginning of October. [Read more here.](#)

Industrial symbiosis in the cement industry

The EPSRC (Engineering and Physical Sciences Research Council) and the National Natural Science Foundation of China (NSFC) are funding a research collaboration on potential pollutants in cement production and use. [Read more here.](#)

ISKawerau

Eight Kawerau students (New Zealand) were recognised for their

been creating some of the worst air in Melbourne, according to Victoria University research fellow Roger Jones.

The precinct is responsible for 350 tonnes of invisible dust particles being thrown into the air every year – over suburbs as far away as Footscray and Yarraville.

The particles have been associated with respiratory and heart problems. The health consequences and amenity loss are estimated to cost about \$750 million over 20 years.

“Although it’s an industrial site, it acts like a big construction site ... heavy vehicles throw up dust clouds from worksites and track dirt onto roads, where trucks and cars throw even more dust into the air,” Professor Jones said. “We are looking at plans to transform the site.”

E2Designlab and the Office of Living Victoria are also part of the Living Brooklyn clean-up project, which will use water as the catalyst to improve the precinct. More than 1650 megalitres of water fall on the site as rainfall each year, resulting in 150 tonnes of sediment being swept into the creek and other sediment being scattered over the site as mud, which later dries to dust.

The project includes a \$15 million strategy to capture and recycle stormwater, halving dust levels. The site will be revegetated and an alliance of businesses will promote pollution reduction.

Brimbank council corporate and community relations director Helen Morrissey said participants in a current Australasian industrial ecology conference in Melbourne will tour the site this week.

Israel

Former Toxic Dump wins Clean Tech Prize; Home to Israel’s most prominent hazardous waste site and once considered among the country’s most polluted regions, the Neot Hovav Regional Council earned a “Cleantech Prize” for its now clean technology at a ceremony in Airport City on Tuesday.

Neot Hovav, formerly known as Ramat Hovav, has been developing the Neot Hovav Eco Industrial Park, which the Cleantech judges described as “groundbreaking” for its environmental footprint- reduction principles. Factories located within the Eco Industrial Park, which promotes green growth in the Negev, cooperate toward making prudent use of resources, commit to increasing operational efficiency and to reduce effluents and environmental emissions.

“This is an honor for us that senior decision- makers from industry, local government, academia, and environmental organizations that made up the judging committee are aware of the big changes we have made here and are pointing them out,” said Andre Uzan, chairman of Neot Hovav Regional Council, in a statement prior to receiving the award. “I have no doubt that we will continue the renewal process that we are leading, the same process that has transformed the park into a significant and important economic anchor in the Negev, while protecting the environment.” (Jerusalem Post)

The Industrial Symbiosis Research Symbiosis is an annual event held by the ISIE section on eco-industrial development and industrial symbiosis (EID/IS section). [Click here for more information.](#)

Green Electronics Council's Emerging Green Conference

Takes place September 22-24, 2015 in Portland (USA). The deadline for presentation submissions is Friday, May 1. You can view our Call for Presentations [Guidelines online here.](#)

EcoDesign 2015

Takes place December 2-4, 2015 in Tokyo (Japan). Find [the website here.](#)

US Business Council for Sustainable Development

A meeting for the US Business Council for Sustainable Development takes place March 3rd and 4th in Houston, Texas at Rice University for our US BCSD Council Meeting. [Register today.](#)

diligence and achievements during their participation in the Industrial Symbiosis Kawerau (ISKawerau) work experience programme. [Read more here.](#)

LOCIMAP white paper

Industrial symbiosis and its importance to European industrial parks are the focus of the recently released White Paper by EU FP7-funded Low Carbon Industrial Manufacturing Parks Project (LOCIMAP). [Read more here.](#)

South African report on reuse of waste waters and chemicals

A report on ReUse of Eco Friendly Industrial Water and Waste Water and Chemicals in South Africa was released. [More information can be found here.](#)

Article: Benchmarking Eco-Industrial Park Development: The Case of Devens

Vesela Veleva, Peter Lowitt et al. wrote an article entitled "Benchmarking Eco-Industrial Park Development: The Case

EU

The European Commission decided to ditch the Circular Economy package of waste, recycling and incineration laws, was confirmed (22 January), despite the objections of the EU Parliament and national environment ministers.

United Kingdom

Sunderland University Hospital and Council are finalists in Circular Economy Cities Awards. Check out [this video on the Sunderland Partnership & Warp It](#). Read more and download a PDF about this project [here](#). In 2010, Sunderland City Council decommissioned buildings across the city. Large quantities of assets became redundant. " from a posting by Daniel Bede O'Connor on the IS Linked In web site.

United Kingdom, Northern Ireland

An Taoiseach Enda Kenny, TD, this week attended the national launch of Macroom-based environmental organisation SMILE Resource Exchange.

SMILE Resource Exchange is an innovative initiative, established in Cork in 2011, aimed at fostering economic development while adhering to best waste management practices. The launch also coincided with European Waste Reduction Week 2014. "I'm delighted to launch SMILE Resource Exchange and to lend my support to the bright idea of businesses coming together to reduce waste, save money and share resources," said An Taoiseach, Enda Kenny TD. "SMILE provides a great free service to businesses and allows them to network with other companies to find opportunities of mutual benefit and help the environment. I hope more Irish companies will be able to find new efficiencies and make new connections through the SMILE network."

Azerbaijan

Balakhani Eco-Industrial Park, designed for recycling plastic waste, tires, electrical appliances, batteries, non-ferrous metals, cables and other domestic waste, is being created in Baku.

Finland

Located just two hours northwest of the Finnish capital Helsinki, the Tampere region is perhaps best known for its associations with the once-storied mobile phone maker Nokia. The former phone maker traces its history in Tampere back to 1865 and employed large numbers of locals at its peak. Nokia aside, the main town and the region as a whole represent a vibrant hub, featuring industrial roots that run deep and a respected academic, technology and R&D tradition that attracts scholars from all over the world. It's also a great place to live, having repeatedly been voted Finland's best city in which to settle.

With all those credentials under their belt, city officials are now embarking on a bold plan to put Tampere on the map once more - as the home of Finland's first government-approved eco-industrial zone. "We would like to have the designation of being Finland's first national industrial clean tech pilot program," said Petri Nykanen, Director of Business Development and Investment for Tredea, an economic development unit owned by eight municipalities in the Tampere region. The city of Tampere will partner with two other local municipalities - Nokia and Ylojarvi - to develop Kolmenkulma, a 600-hectare eco-

South Africa Gauteng Industrial Symbiosis Programme Business Opportunity Workshop

Takes place
Wednesday, 4 March
2015. Venue:
Riverside Resort,
Vanderbiljpark. Time:
09:00 – 14:00. [Click here to register.](#)

The TINOS 2015 3rd International Conference on Sustainable Solid Waste Management

Will be held at the
Museum of Marble Crafts
in Tinos Island, Greece
from 2nd to 4th July
2015. Advanced
registration is strongly
recommended. [Click here to register.](#)

5th Low Carbon Earth Summit-2015 (LCES-2015)

In order to promote the development of the Silk Road Economic Belt, and advocate the new Economic Modeling based on the low emission, low energy consumption and low contamination, the 5th Low Carbon Earth Summit-2015 (LCES-2015) will be held as one of the crucial parallel meetings of the 6th Euro-Asia Economic Forum (EAFE-2015) during September 24-26, 2015 in Xi'an, China. [Click here for the website.](#)

of Devens", which is ready for publication in Benchmarking: an International Journal in early 2015.

Materials Management as Carbon Reduction Strategy

Andrew Mangan of the USBCSD and Marian Chertow of Yale University wrote an article on Materials Management as a Carbon Reduction Strategy. [Read more here.](#)

Industrial Symbiosis in Sweden

An interesting web page has been produced (and updated each Fall) from Linköping University, outlining IS networks in Sweden. The descriptions are produced by students from a course on industrial symbiosis at Linköping Univ. [Find the website here.](#)

LINKED-IN AND IS CASE STUDIES

check out [our Linked in page](#), where you can find discussions on topics such as [the Research report "Reuse Design": a Waste Flow Analysis of 2nd hand shops as material repositories available in every city, and the](#)

industrial park concept to help industrial companies benefit from active symbiosis with clean tech innovators. The concept envisions energy-efficient structures, smart energy grids, decentralized energy production and waste utilization in an industrial setting that's expected to create up to 10,000 jobs. "It means finding ways for companies working in close proximity to benefit from more efficient resource usage. In other words, one company's waste could be another's raw material," Nykanen explained. He noted that traditional business parks tend to focus on infrastructure such as office facilities, utilities and warehousing. While companies working in such environments may find ways to collaborate, Nykanen observed that these models "don't allow companies to pick their neighbors". "We need to go beyond the normal zoning practices and understand the nature of the businesses and allow the relationships (between companies) to determine the infrastructure," Nykanen added.

The project's foundation is a pre-study on different energy-producing models as well as reviews of various clean tech zones, potential R&D projects and possible candidates for what city officials call a "living lab". The three cities are awaiting a green light from the Tampere Regional Council, a joint municipal body that is the final decision-making authority on projects of this nature. Nykanen said that the key to creating a successful and sustainable real-life symbiosis between industrial players and the clean tech sector is finding between three and five of the right "anchor companies" around which a value network of complementary firms would be built. "So the role of the public sector is to act as matchmaker between the anchor companies and other complementary businesses. And to allow companies to expand their offering, whether it be by providing waste water or steam that could then be used for purposes such as district heating," Nykanen observed.

One such anchor company is the waste-to-energy plant Tammervoima in nearby Tarastenjarvi, which is also part of the proposed clean tech zone. The investment into that plant alone reached 105 million euros (130 million U.S. dollars). Similar investments are expected in Kolmenkulma. Local public officials are hoping that once they get approval from the supra-regional authority, they will be able to draw down on EU funding to bankroll basic infrastructure to provide an incubator environment for the proposed anchor companies. They estimate that this will happen by late 2016. They have also pitched the venture - which they have billed as the country's first authentic eco-industrial project - to the national government, in the hope of being designated a national pilot program as part of the government's strategy to develop and leverage the 26 billion-euro clean tech sector. Getting that "seal of approval" would help facilitate investment decisions by anchor companies, and provide an avenue to export the concept, Nykanen pointed out. "We can expand the concept of the eco-industrial park and the living lab and package the knowledge base for export. Finland is a small market so naturally we are keen to build a package for international application," the business development director said. (1 euro = 1.24 U.S. dollars) (Denise Wall)

India

The State government is promoting an "environmentally balancing" industrial park in Tuticorin. The Rs 250-crore cluster to promote industries will be complemented for growth by the nearby sea port and new power projects coming up along the coast in the district. Quite a heady mix of industries is proposed at the cluster. Apart from thermal

International Conference on Industrial Waste & Wastewater Treatment & Valorization

Will be held at President Hotel in Athens from 21st to 23rd May 2015. More information is available [here.](#)

The 29th International conference on Informatics for Environmental Protection.

Will be held from 7-9 September in Copenhagen, Denmark. This year's topic will be Building the knowledge base for environmental action and sustainability. submit papers, posters or workshop proposals [here](#). Registration for the conference is open [here](#).

3rd Annual Industrial Estates and Business Parks Conference

Will take place in Kuala Lumpur, Malaysia March 4-5, 2015. [Read more here.](#)

Sixth edition of the Seminar on Clean Technology

Will be held in Porto Alegre, Brazil from 15

plants, metallurgical, fertilizers, synthetic organic chemicals, isolated storage and handling of hazardous chemical industries – all of which require environmental clearance — could set up shops, say officials in State Industries Promotion Corporation of Tamil Nadu (SIPCOT), the promoter. The complex would come up in about 655 hectares of land falling in the revenue villages of Therkuveerapandiyapuram, Meelavittan and three other villages in Ottapidaram taluk of the district. It has been assessed that 2 MGD (million gallons per day) of water will be required to be made available from the Tamiraparani river.

'Zero disposal' scheme

The industries would be mandated to submit a 'zero disposal' scheme with a detailed effluent management plan, an official said, adding that the proposal was only in its initial stages. The Ministry of Environment and Forests has recommended for grant of Terms of Reference with the usual 30-odd specific points, including the mandated public hearing in accordance with the provisions of Environmental Impact Assessment Notification, 2006. (The Hindu Times)

Giving Indian sarees a 'green' touch, US-based technology giant Dupont has joined hands with Reliance Industries and Vipul Sarees for use of its renewable fibre product Sorona to make an 'environment-friendly' version of this ethnic ladie swear. On the Sarona-based 'green' sarees, he said: "By partnering with industry veterans Reliance and Vipul, Dupont is able to bring together all the elements necessary to offer a compelling product for today's evolved Indian consumers."

The saree collection is made using a yarn of Sorona fibre, which is developed from renewable plant based sources instead of traditional synthetic fibres which are sourced from fossil fuels. Under their partnership, while Reliance will produce yarns based out of Sorona fibres Vipul will be responsible for creating the sarees.

South Africa

WISP (Western Cape Industrial Symbiosis Programme) is a free facilitation service that helps companies gain value from underused resources. WISP links businesses with unused or residual resources (eg materials, energy, water, assets, logistics) with other companies that may be able to use them, and the resulting synergies have mutual economic, social and environmental benefits for all. A successful pilot year indicates that industrial symbiosis has great potential for businesses in the Western Cape.

Philippines

BATAAN GETS A PUSH - Clark Freeport, Pampanga – Attending the dinner reception for the delegates to the Asia Pacific Economic Cooperation 1st Senior Officials Meeting at the Oxford Hotel, Clark Freeport, the other night, Bataan Governor Abet S. Garcia took the opportunity to promote the potential of Bataan and nearby provinces in Central Luzon for tourism and eco-industrial investments, being strategically located near Metro Manila. The Bataan governor has always cited his province's vision that "by year 2020, Bataan will be the preferred location for Eco-Industrial Investment, leading to the highest Human Development Index in the Philippines." (Mar T Supnad)

to 17 June, 2015. The seminar is organized by the Federal University of RS-UFRGS and the Brazilian Association of Sanitary Engineering (ABES). This year the event will have as the main topic the issue of Industrial Symbiosis and Eco-parks and address energy issues, biomass and biofuels.

The Massachusetts Sustainable Communities & Campuses Conference

Will be held on Thursday, April 16, 2015 at the Devens Common (Conference) Center and will feature tours and sessions on Devens Sustainability initiatives.

Thailand

A JOINT research study by the Industrial Estate Authority of Thailand (IEAT) and the Thailand Research Fund (TRF) is underway in an attempt to improve conditions at various industrial estates in Lamphun while also tackling environmental issues. At a recent press conference, TRF director Prof Suthipun Jitpimolmard said the research would deliver an ecologically friendly development plan titled "Eco Industrial Town in Lamphun a Role Model for Other Provinces to Follow".

Unlike surrounding provinces where stricter regulations against unfriendly industrial operations were in place, the regulations in Lamphun were less strict although most factories there were not overly hazardous. Employing locals at the factories in the province has changed their way of life culturally as well as economically and ecologically.

There are three minor projects under the TRF-funded research: a development plan to transform industrial towns in the North into so-called eco-industrial towns; a capacity-building scheme for communities, local administrative bodies and small-time industrial estates; and a scheme to further balance ecological and economical needs in the North by turning destinations into eco-industrial towns. The research is being conducted with the help of four tambon municipalities in Lamphun: Ban Klang, Makhue Jae, Wing Yong and Muang Nga.

IEAT governor Veerapong Chaiperm said the research was expected to meet a set of improved IEAT criteria that included the estates being located in appropriate areas with regard to the welfare of nearby communities, and delivering a higher safety and ecological standard. Also included, Veerapong said, were better economic aspects for communities from the tambon to province level; better welfare and living conditions for factory staff and nearby residents; and clearer problem-solving patterns for the staff and nearby communities. He said the research's key objectives also included enabling the estates to better understand residents and to grant greater and easier access to them when it comes to joint problem-solving as a result of those estates causing problems to the residents on economic, ecological and environmental grounds (The Sunday Nation January 25, 2015)

United States

Georgia

"Japanese rice vinegar producer Marukan is to set up its second U.S. plant in Georgia, hiring 15 people becoming the third Japanese company to locate in what's being positioned as an ecologically industrial park in Griffin. The \$13 million plant will come on line in 2017, producing, packaging and shipping vinegar to customers throughout the Southeast region, supplementing an existing California plant. Students at the University of Georgia's Griffin campus will have a chance to work with the company on developing new products, but its staple recipe isn't likely to change too much: Based in Kobe, the family company has been around since 1649 and has refined its rice vinegar production methods over four centuries. Japanese firms Toppan Printing and Otsuka Chemical have already committed to set up factories in The Lakes at Green Valley, an industrial park whose "green" design concept was

jointly developed by the Griffin-Spalding County Industrial Development Authority and Georgia Institute of Technology.

Industrial land is only part of the 570-acre park, with 12 industrial sites encompassing a maximum of 2.5 million square feet set aside on 360 acres. Plans also call for a 43-acre hotel and conference center, a 15-acre retail center and 30 acres of dedicated green space anchored by an existing cabin overlooking a lake that will be converted to a nature. All buildings within the park will have to get LEED certification in sustainable design, and special water filtration systems will be put in place to minimize sediment loss, according to the development authority's website. "[Global Atlanta website](#)."

Detroit, Michigan

General Motors, [ROC Detroit](#) project champion and US BCSD member, is repurposing Chevy Volt battery covers into Scaly-sided merganser nest boxes. The Scaly-sided merganser is endangered, and General Motors is working through the US BCSD and Wetlands International to help these beautiful waterfowl. John Bradburn, chairman of the US BCSD Executive Committee, designed and built the boxes after discussing the requirements with Wetlands International. John based his design on similar nest boxes built for the North American Wood Duck, however the size is scaled up to nearly three feet tall since the Scaly-sided merganser is larger. 10 boxes have been sent to China so far.

Austin, Texas

[Great BPS Work Coming Out of the Austin Materials Marketplace](#)

We've been especially busy over the last few weeks with our project in Austin – [the Austin Materials Marketplace](#). We're currently up to [27 participating businesses and organizations](#), ranging from large corporations like 3M and Spansion, down to local nonprofits like Any Baby Can. On 11/12, we hosted a live Google Hangout to look specifically at brewery by-products and waste, and talk about some good reuse solutions we're itching to help facilitate in Austin. Watch the recording below, and get in touch with us if it inspires any creative thinking. (Andy Mangan). [Also see this website](#).

EID/IS Section of the International Society of Industrial Ecology News

The Section board consists of the following members: Peter Lowitt, FAICP (USA) chair, Shi Han (China), Guillaume Massard (Switzerland), Gemma Cervantes (Mexico), Ines Costa (Portugal), Robin Branson (Australia), Wouter Spekkink is our student representative (Holland), Jooyoung Park (Korea), and Toyushi Fujita (Japan) are your EID/IS Section board members.

ISIE Election Results

The ISIE election results are as follows:

President-elect:

- Edgar Hertwich, Norwegian University of Science and Technology,

Norway

Treasurer:

- Lei Shi, Tsinghua University, China

Secretary:

- Barbara Reck, Yale University, USA

Council:

- Xuemei Bai, Australian National University, Australia
- Eric Williams, Rochester Institute of Technology, USA

Nominating Committee:

- Gemma Cervantes,UPIBI, Instituto Politécnico Nacional, Mexico
- Callie Babbitt, Rochester Institute of Technology, USA

Please join us in congratulating these new Council and Committee members.

Comings and goings

Melanie Quigley, announces her departure from the Center for Industrial Ecology and the International Society for Industrial Ecology effective February 16th. to take on a newly formed position at the Yale School of Forestry & Environmental Studies as the Director of Strategic Initiatives under the Dean. Judy Crocker, who has served as the Program Assistant since February 2014, will be taking over the helm at the Center and the Society. Please join me in welcoming her!

Wouter Spekkink started as a postdoctoral researcher at Delft University of Technology, working in a FP7 funded project on transitions to sustainable lifestyles in Europe. You can now reach him through W.A.H.Spekkink@tudelft.nl.

IS Data Update

With the addition of a PhD student from TU Delft for the last year, the IS data project is making progress. The aim of the project is to integrate open industrial and environmental data with IS specific data to allow for the development of diverse resource and data management tools (i.e. websites, facilitation assistance tools, research tools, etc). One of the current tasks is the integration of open data-sets in Europe, in particular **E-PRTR**. In another activity, researchers from Linköping University are working on expanding and standardizing the available information from worldwide IS case studies. If you have ideas, discussions or documentation regarding IS cases, industrial process data, or industrial waste and pollution data, please send an email to b.zhu@tudelft.nl.

Awards, Publications and Presentations

Industrial Symbiosis on PlanetSave blog

Piotr Jędrzejuk writes on the PlanetSave Blog “Did you know that McKinsey & Co. has estimated that the world could save \$2.9 trillion annually just by eliminating wasted energy?” He goes on to extoll the virtues of Eco-Industrial parks citing Kalundborg and other parks (some of whom are no longer functioning). He refers to a free e book The Sustainable Business, 2nd edition which includes such tidbits as “DuPont Corporation reduced its energy use by 6% and increased production by 40%, thereby saving the firm over \$6 billion. It also created revenues of \$2.2 billion from the sale of waste products at a cost savings of \$400,000. Further sustainability-based activities at other DuPont subsidiaries generated over \$1.6 billion in revenue. Closed-looped practices need less energy, less waste and pollution is created, and more people are employed. Materials recapture employees from 9 to 60 times more people per ton than the landfill site.” Sierra Nevada Brewing Company in Chico, California, has purchased solar panels that produce 203 kilowatts of electricity, in addition to four 250-kilowatt fuel cells. Thanks to rebates, tax credits, and other financial incentives, a 100% return on investment (ROI) is expected in six to seven years. Additionally, the company has saved \$1 million in landfill fees and \$2 million in waste haulage fees by finding ways to reuse or recycle what it used to throw away. [Read the full blog here.](#)

Sustainable Oriented Recycled Plastic

Sony Corporation announced on August 4, 2014, that it would start outside sales of SORPLAS (Sustainable Oriented Recycled Plastic) flame retardant recycled plastic from the beginning of October. SORPLAS features up to 99% recycled material and high durability and heat-resistance. Through SORPLAS sales, SONY aims to increase resource recycling and reduce its environmental impact. Conventional recycled polycarbonate resin requires the addition of large amounts of flame retardant and new polycarbonate resin. According to the company, SORPLAS employs a unique sulfur flame retardant and reduces added flame retardant to less than 10% of the conventional amount. This allows the product to achieve high durability and heat-resistance even when up to 99% recycled materials are used. The small amount of new polycarbonate resin also dramatically reduces CO2 emissions. SORPLAS will be available in three lineups--high moldability type, high impact-resistance type, and thin-walled flame retardant type--suiting the specific requirements of a variety of products. Sony will widely offer SORPLAS to household appliance manufacturers and others in and outside of Japan at approximately the same price as conventional flame-retardant plastic. Sony Releases Flame-Retardant Plastic Made of up to 99 Percent Recycled Materials. [Read more here.](#)

Industrial symbiosis in the Cement Industry

Industrial Symbiosis in the Cement Industry: On a global scale, cement production is responsible for about 7% of the CO2 emissions that we suspect of causing climate change and consumes more than 5,000,000,000 tonnes of non-fuel raw materials. In recent years, there has been an increasing trend towards conserving both the fuels and

minerals used in cement production by replacing them with industrial wastes. Since some wastes proposed for use in cement kilns contain toxic metals, we need to know more about what happens to these potential pollutants during cement production and use. The EPSRC (Engineering and Physical Sciences Research Council) and the National Natural Science Foundation of China (NSFC) are thus funding a research collaboration in this area between the UCL Centre for Resource Efficiency & the Environment (CREE), the China Building Materials Academy (CBMA) and South China University of Technology (SCUT). The project is led by Dr Julia Stegemann, Reader in CECE and Director of CREE, Professor Wensheng Zhang, Chief Scientist of the CBMA Key Laboratory of Cement-based Materials Science in the Building Materials Industry, and Professor Jiangxiong Wei, Head of the Department of Inorganic Non-metallic Materials at SCUT. The project team will use advanced techniques for chemical analysis and materials characterisation, including x-ray absorption spectroscopy with high energy x-rays from the UK's Diamond Light Source, and the Beijing Synchrotron, to see how the forms of metals change as they pass through the kiln and when water is added to the cement, and to understand how much metal-bearing waste can safely be added before undesirable effects occur. The project industrial advisors include the Environment Agency, the Mineral Products Association, Yuebao Cement and the Chinese Ceramic Society-Cement Branch.

ISKAWERAU

On 28 November 2014 eight Kawerau students in New Zealand were recognised for their diligence and achievements during their participation in the Industrial Symbiosis Kawerau (ISKawerau) work experience programme. The ceremony was attended by participating employers and students, plus their families, school careers advisors and mentors. Deanne Butler, Chairperson, ISKawerau Workforce Development Group, said "The work experience programme was the first step in bridging the gap between employers and potential employees and was designed to give students a taste of what types of jobs industry had to offer. " Ms Butler went on to say "most young people in Kawerau don't have the opportunity to visit mills and other industrial workplaces now as access is restricted for health and safety reasons.. " The programme was designed to be as realistic as possible with students responding to an advertisement, completing an application form, undertaking an interview and agreeing a contract before starting. Most had to undertake a health and safety course as part of their induction. Each student was presented with a Certificate of Achievement and reference by their employer who spoke about each student's willingness, maturity and positive attitude towards the work environment. They also reinforced their commitment to the programme and to provide a more real experience will offer students a full week experience during three of the four holiday periods in the 2015 programme. The programme was supported by Faylene Tunui from the Kawerau Social Sector Trials who provided mentors to support both the student and their families. It was acknowledged by all parties that the interest and encouragement shown by whanau was invaluable in helping the student adapt to the work environment and they were thanked for their support. Ms Butler also thanked Robyn Cannell and Jo-Anne Stuart from the Tarawera and Whakatane High Schools respectively who had worked with ISKawerau to select students and work with them during their work experience. At the completion of the formal ceremony each student was presented with the opportunity to

attend a three week Outward Bound Course in Anikiwa. The cost of these courses have been sponsored by Outward Bound and New Zealand Community Trust however the student will have to cover the cost of travel to and from the Marlborough Sounds. An 'ex Outward Bound' group led by JJ Rika, Youth Co-ordinator Kawerau District Council, will assist students prepare for the course.

Participating students, schools and associated businesses were:

- Keaghan Hartshorne attending Tarawera High School sponsored by SLH Contracting
- Rihari Masters attending Tarawera High School sponsored by SLH Contracting
- Maria McKenzie attending Whakatane High School sponsored by Mighty River Power
- Taine Enright attending Whakatane High School sponsored by Mighty River Power
- Asa Wimutu attending Tarawera High School sponsored by Might River Power
- Heremaia Karaitiana attending Tarawera High School sponsored by Kajavala Forestry Ltd
- Kelly Te Riini attending Tarawera High School sponsored by Sequel Lumber
- Shawn Ross attending Tarawera High School sponsored by Sequel Lumber.

LOCIMAP white paper

LOCIMAP issues white paper on Industrial Symbiosis. The Hague, Netherlands, January 24, 2015 Industrial symbiosis and its importance to European industrial parks are the focus of the recently released White Paper by EU FP7-funded Low Carbon Industrial Manufacturing Parks Project (LOCIMAP). The potent term 'industrial symbiosis' with its conscious parallel with symbiotic relationships in the natural eco-system has gained widespread recognition as the best practice delivering win-win solutions for business and the environment. It is defined as collaboration between two or more companies where to exploit each other's surplus materials and energy which often go unused. At its core, the paper argues, industrial symbiosis not so much depends on technology and innovation, as it does on a particular business mind-set: leadership and a willingness to explore mutual benefits through collaborative business processes. This way of thinking can be catalysed by company needs, legislation and/or financial instruments. To actually establish a new industrial symbiosis, confidence in and confidentiality of partners are the most significant factors identified by the project, followed by the economic benefits. LOCIMAP analysis shows that extended cross-sector integration can save well over the target 21% of energy use compared to 2005 set by EU and SPIRE for the energy

intensive industries. Additional benefits include reduction of CO₂ emissions and landfilling, as well as creation of new business and jobs and increased profitability. Although currently only developed systematically in a few places, industrial symbiosis can be a key factor in the realization of a low carbon economy, prevention of carbon leakage from Europe and the development of a circular economy. The full White Paper can be downloaded on the [LOCIMAP website](#).

Materials Management as Carbon Reduction Strategy

Let's make materials management a recognized and rewarded carbon reduction strategy of the proposed UN Climate Change Agreement

By Andrew Mangan, US BCSD and Marian Chertow, Yale University

Modern society has an intense thirst for physical resources to meet daily human needs, wants, and desires, which, in turn, is supported by the businesses and industries that collectively service these requests. The processes that provide physical resources generate significant quantities of waste at every step of the way, exposing us all to vast environmental, energy, and resource availability challenges. Once again much of the world is focusing on global climate with the upcoming meetings in 2015 in Paris following another year of bewildering weather and readily apparent land change. Years of research have shown that waste reduction is repeatedly associated with lowering greenhouse gases (GHGs) that exacerbate climate change. It is time we recognize the good actors and reward them by making waste reduction a recognized carbon reduction strategy in the upcoming UN climate negotiations.

While waste and materials management have not been on the front line of climate solutions, current emphasis on lifecycle approaches reveals that it is time to reconsider their role. If we break the climate problem down into different economic sectors, we see that energy and transport are nearly 2/3 of where GHG emissions originate – based primarily on fossil fuels burned to generate electricity and also to power vehicles (Figure 1). Yet, a recent US EPA report suggests that we slice the pie chart a bit differently to increase understanding of what EPA now calls “materials management” described as “serving human needs by using and reusing resources most productively and sustainably throughout their lifecycles.” (source) From a materials management perspective, the second chart below, based on a systems rather than sectoral approach, becomes quite relevant (Figure 2). As seen here, materials management systems for providing food and other goods accounts for 42% of GHG emissions. This figure embraces a lifecycle perspective that considers the extraction of natural resources, production, transport and disposal of food and other goods.

Great work is going on in industry toward materials management that not only creates new revenues and saves on landfill, but also reduces climate impacts when virgin materials can be avoided and efficiency can be increased. Some interesting ways that industries we work with are having success fall into three categories: internal reuse and recycling within a firm or facility, online material trading with other firms, and trading across unrelated facilities in the same geographical area. These are discussed below:

- Trading across unrelated facilities in the same geographical area –

While geographic concentrations of industry are often heavy generators of GHGs associated with global climate change, impacts can be modulated through collaborative approaches. Emerging from industrial ecology is the notion of “industrial symbiosis” – where a cluster of geographically proximate firms exchange material by-products, energy, and water in a mutually beneficial manner such that waste from one industrial process becomes the feedstock for another. Through such systems, transportation costs and emissions are minimized and materials and energy already embedded in products is conserved, enabling GHG emissions to be greatly reduced at the industrial scale. For example, in Austin, Texas, the Austin Materials Marketplace is bringing together businesses of all sizes and entrepreneurs in the City of Austin and Travis County to create closed-loop systems in which one company’s waste is another company’s raw material. Other networked clusters have been found across the world from the mineral processing region in Kwinana, Australia to China’s enormous Tianjin Economic – Technological Development Area to Kalundborg Denmark, and the industrial cluster of Ulsan, Korea. And the Reuse Opportunity Collaboratory began in Detroit, Michigan, USA to bring together urban entrepreneurs and community economic development organizations to find ways of reusing materials such as deconstructing old buildings rather than demolishing them to repurpose resources for alley repaving and to construct new sidewalks.

- Andrew Mangan presents materials reuse in Lima, Peru on 12/4/14. Internal reuse and recycling within a firm or facility – In addition to traditional materials management that has gone on as long as there has been industry, the US Business Council for Sustainable Development is seeing an upsurge in members paying careful attention to by-product reuse. General Motors and Nike, for example, both operate with the mindset that waste is merely a resource out of place, and both have set billion dollar goals based on material reuse. They emphasize improving material yields, reusing remaining scrap in a closed loop back into their own products and maximizing recycling of the rest.
 - Online materials trading – old fashioned “waste exchanges” once served the purpose of letting one firm know that another had a discarded resource to offer for sale. Today most of this happens on line and systems are getting more sophisticated. An outpouring of interest at the business organization level this year indicates that this collaborative big data approach may be getting ready for primetime. This summer, the US BCSD joined with companies from the Corporate Eco Forum in launching a new online Materials Marketplace aimed at scaling reuse across hundreds or potentially thousands of companies. In November, the World Business Council for Sustainable Development expressed its interest in the marketplace through its newly formed Safe and Sustainable Materials Cluster. The new software takes advantage of user-centric design and standardized and accessible data templates, to make it possible for companies to share information about the materials flowing through their operations in a confidential, safe environment. Having access to this kind of information has led to material reuse opportunities such as reusing fibrous wastes in ceiling tiles, waste

heat from cement kilns drying brewery grain for bricking and shipping; and converting ephemeral packaging products into a range of cascading product forms as companies recognize there is value in what they used to think of as waste.

Recognizing and rewarding the climate benefits of material reuse is needed now to provide a positive path for decarbonized economic progress. Characterizing the values, both direct life cycle benefits and broader societal advancements, achievable through this frugal, inclusive approach will be necessary. But related systems exist and can be applied, tailored for materials management. Devising such a system is not a simple matter and would take a ramp up in our understanding of GHG accounting and the most recent climate models. This move would also require taking on the types of issues that have been difficult to resolve with, for example, the Clean Development Mechanism regarding additionality – so that waste managers would not be rewarded for “business as usual” but rather for innovative development. By adopting materials management as a core strategy of the climate agreement, governments will be empowering companies, communities and countries to move toward a more circular economy where wastes become resources that can be used over and over again as they are in the natural world. At the same time, adopting rewards for carbon reductions in materials management would bring a whole new community into the realm of climate solutions.

Andrew Mangan is Co-Founder and Executive Director of the United States Business Council for Sustainable Development and Marian Chertow is Associate Professor of Industrial Environmental Management at the Yale School of Forestry & Environmental Studies.

Conferences, Workshops, Courses and Other Events

Informal ISRS meeting at the 4th ISIE Asia-Pacific Conference

Time: 2014/11/18, 12:30-13:30

Place: Melbourne Exhibition Center, Clarendon Room D

Participants:

- Prof. Tsuyoshi Fujita, NIES, Japan
- Prof. Hung-Suck Park, university of Ulsan, Korea
- Mr. Graham Aid, Linköping University, Sweden
- Mr. Wouter Spekkink, Erasmus University Rotterdam, The Netherlands
- Dr. Sarah King, CSIRO, Australia
- Dr. Glen Corder, Sustainable Mineral Institute, University of Queensland, Australia
- Dr. Minoru Fujii, NIES, Japan
- Prof. Tian Jinping, School of Environment, Tsinghua University,

China

- Dr. Biji Kurup, Environmental Engineers International Pty Ltd, Australia
- Dr. Jose Carlos Lázaro da Silva Filho, University Federal do Ceará (UFC), Brazil
- Ms. Amanda Hill, Aalborg University, Denmark
- Dr. Magnus Fröhling, Karlsruhe Institute of Technology, Germany
- Dr. Takuya Togawa, NIES, Japan
- Dr. Satoshi Ohnishi, NIES, Japan
- Dr. Huijuan Dong, NIES, Japan
- Dr. Liang Dong, NIES, Japan
- Mr. Mohommad Taskhin, Georg-August-University Göttingen, Germany

Introduction

During the 4th ISIE Asia-Pacific conference members to the EID/IS-section organized an informal meeting with several people interested in the field of Industrial Symbiosis. After an introductory round, the 17 attendees of the meeting (from 9 countries) discussed the themes to be addressed during 11th Industrial Symbiosis Research Symposium (ISRS), and how we can stimulate more collaboration between IS scholars from different regions of the world. In relation to the latter point, the attendees also discussed opportunities to promote our work beyond academic circles. This brief report was compiled by Dong Liang, Graham Aid, Wouter Spekkink and Ohnishi Satoshi.

11th ISRS in Switzerland

The 11th ISRS will take place in July 2015 in Switzerland and is already being prepared by Guillaume Massard and Suren Erkman. It was announced that Guillaume has suggested two main themes to be discussed during the symposium, namely (1) facilitation and networking to bring together businesses and identify bankable IS opportunities, and (2) how to finance shared business models. Please note that both themes are still tentative. Site visits to IS projects in Switzerland will also be included in the program. During the informal IS meeting it was also suggested that we might dedicate some time to the stimulation of collaboration between IS scholars from different regions of the world. The possibilities for this will be discussed with the organizers of the next ISRS. To support the ISRS organization some telecommuting will probably be required.

Collaboration between IS scholars from different regions of the world

A major topic of discussion was the lack of collaboration between IS scholars from different regions of the world. For example, although collaboration already takes place between China, Japan and Korea on the one hand, and several European countries on the other hand, collaboration between these two major groups is still lacking. Concretely,

three main avenues for increased collaboration were mentioned.

The first avenue concerns the possibility to perform comparative studies of IS in different regions of the world. The discussants recognized that the research and practice of IS is approached quite differently across the world, and that it would be important to acknowledge that diversity in comparative studies. The different approaches that we take to studying IS provides challenges for collaborative research activities, such as the difficulty of developing common frameworks and reconciling our different methodological approaches. However, it also offers great opportunities, such as the possibility to complement each other's work and making use of each other's strengths.

A second avenue for stronger collaboration between IS scholars is writing joint papers. Concretely, this may take the form of a special issue in a journal that publishes regularly on IS. It could be helpful to have an extended meeting where we discuss the contents of the special issue. It may be possible to organize such a meeting before or after the next ISIE Asia-Pacific Conference (2016) in Nagoya, Japan. This may be combined with a site visit to Fukushima, where interesting projects aimed at the revitalization of the area are currently taking place.

A third avenue would be to jointly promote IS at international organizations, such as the World Bank, UNIDO, and UN-ESCAP. In this context it was mentioned that in many international and political platforms people are talking about topics that are within the domain of Industrial Ecology, but that Industrial Ecologists are still rarely involved. To change this situation, we need to promote our activities more proactively and highlight what we are doing in various political circles. It was recognized that achieving this requires our combined efforts. One concrete activity that was suggested is to write a joint declaration as input for the COP21 meeting in Paris.

Other concrete opportunities for increased interaction between IS scholars are to organize excursions to IS practices around the world, to organize workshops for intensive discussion on various specific topics, and to simply exchange experiences on IS stimulation programs of various countries on a more formal basis.

Other issues

Besides the main topics for discussion mentioned above, the attendees to the IS meeting exchanged several experiences and ideas on IS in their countries. It was also observed that the section hasn't been able to get policy makers and business representatives actively involved in the community. Some of the avenues for stronger collaboration among IS scholars that are mentioned in the foregoing may also offer opportunities to get policy makers and business representatives involved.

11th Industrial Symbiosis Research Symposium (ISRS)

July 5 and 6 2015, Lausanne, Switzerland

The Industrial Symbiosis Research Symposium is an annual event held by the ISIE section on eco-industrial development and industrial symbiosis (EID/IS section). The symposium aims at bringing together researchers to exchange on current research activities and trends as well as to identify future research needs. The symposium is a unique opportunity to

share recent information on field projects development in relation with research activities worldwide. After each symposium, a publication or a concept note is written as a summary of all discussion and share with all participants to stimulate collaboration and the emergence of new research.

Venue

The Industrial Ecology Group of the University of Lausanne (IDYST Institute: <http://unil.ch/idyst/home.html>) hosts the workshop in collaboration with ISIE and the Swiss Federal Office of the Environment (FOEN: <http://www.bafu.admin.ch/?lang=en>). The workshop will take place at the University of Lausanne campus: Amphimax Building, room 410.

General program

Day 1 - Sunday July 5

- 10:00 to 17:00 - Field trip to industrial symbiosis and eco-industrial park projects in Switzerland, focusing on innovation and new technologies material and energy exchanges
- 18:00 to 21:00 - Welcome and networking dinner in Lausanne

Day 2 - Monday July 6

- 08:30 to 09:00 - Introduction and last international development in the field
- 09:00 to 09:30 - Keynote speech: Facilitation and networking for IS
- 09:30 to 12:00 - Group discussion and identification of research needs focusing on facilitation techniques, networking and project development methods to bring together businesses and identify project opportunities: best practices and trends worldwide
- 12:00 to 14:00 - Lunch break
- 14:00 to 14:30 - Keynote speech: Supporting IS innovation
- 14:00 to 17:30 - Group discussion and identification of research needs focusing on Turning ideas into Reality: financial instruments and the investor's perspective, a research perspective for IS
- 18:00 - Departure to ISIE in Surrey. Train to Geneva Airport then Easyjet to London Gatwick at 19:10 or 21:45 or Swiss to London Heathrow at 20.35.

Travel details and fees

The workshop is free of charge. Each participant has to take in charge its travel to the venue and accommodation in Lausanne. More information will be added soon about hotel reservations in Lausanne with special prices provided by the University of Lausanne.

Contact for registration

Dr. Guillaume Massard
Université de Lausanne - IDYST

guillaume.massard@unil.ch

3rd Annual Industrial Estates and Business Parks Conference

Will take place in Kuala Lumpur, Malaysia, March 4-5, 2015 - LIMITED SEATS LEFT

Industrial estates and business parks plays a very important role in promoting inclusive and sustainable development. Under the umbrella of economic zones, industrial parks have successfully been used as a testing ground for new reforms, policies, and approaches to improve the business environment, as demonstrated in many East Asian countries. When these countries had limited resources, industrial parks helped solve business infrastructure problems in particular geographical areas and were used to overcome barriers to firm entry, attract foreign direct investment, foster skilled manpower, and facilitate the growth of local SME clusters. Some of the challenges the market is facing right now is industrial property leasing, recognising the difference in leasing space for warehousing and logistics vs. Manufacturing. The program features several session on Eco Industrial Parks.