

A BIBLIOMETRIC ANALYSIS OF CONTEMPORARY RESEARCH REGARDING INDUSTRIAL SYMBIOSIS: A PATH TOWARDS URBAN ENVIRONMENTAL RESILIENCE

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Abstract. The conceptual framework of industrial symbiosis (IS) is gaining recognition for ensuring the conservation of natural resources and resilience of socio-ecological surroundings. Significant scholastic strides have been made for explaining the conceptual paradigm of IS. The current study relied upon the Bibliometric mapping technique to decipher the contemporary orientations in the recent publications (2007-2017). The findings revealed that China, UK and the USA are the pivot for promoting research interests in the field. The loci of IS research was observed more skewed in favour of economically developed and industrialized countries. The findings of this study also acknowledge a growing propensity towards research collaboration between and among nations.

Keywords: *industrial ecology, bibliometric analysis, ecological sustainability, environmental resilience, applied ecology*

Introduction

Industrial symbiosis (IS) initially emerged as a branch of the industrial ecology (IE). Laybourn and Lombardi (2012) opined that the theoretical framework of IS is based on engaging diverse production activities, through an integrated network to foster eco-innovation and long term cultural changes. This emerging branch of knowledge tries to elaborate the interconnectedness of natural environment and human society (Chertow, 2008). Therefore, an understanding regarding mutualistic relationships among organism help to re-design the process of industrial production for the sustainability of natural resources (Desrochers, 2001; Zhang et al., 2015a). The conceptual framework is gaining acceptance as a pragmatic strategy to improve efficiency in production activities (Laybourn and Lombardi, 2012). These strategies are obligatory and incumbent for ensuring the conservation of natural resources and achieving the goals of social, economic and environmental sustainability.

The paradigm of IS envisaged a framework to engage traditionally disparate industrial activities in a synchronized manner for maximizing advantages. Thus, it emphasizes on physical exchange of materials, energy, water and byproducts through integrated linkages (Chertow, 2000). The traditional *modus operandi* in this regard was through collaboration and exploring the synergistic possibilities that transpire through

preconceived integrations in a limited geographic proximity. However, with the advancements in theory and practice, the scope of IS now transcends the limitations of physical proximity (Laybourn and Lombardi, 2012).

Significant scholastic efforts have been made for explaining the concept of IS, defining its boundaries, its evolution, progression, practices and different strategies adopted to implement it during the last two decades (Chertow, 2000; Mirata and Pearce, 2006; Baas, 2011; Martin and Eklund, 2011; Laybourn and Lombardi, 2012; Lombardi et al., 2012; Maclachlan, 2013; Marinos-Kouris and Mourtsiadis, 2013; Alfaro and Miller, 2014; Chertow and Park, 2016; Mauthoor, 2017). During this period, the focus of IS research witnessed a number of evolutionary transformations. Chertow and Park (2016) substantiated that the conceptual frameworks of inquiry in IS are changing in response to socio-economic and technological changes. They also perceived that such propensities are quite evident in case studies, mechanism adopted for investigations, proposals designed for investigations and modelling techniques relied upon for analysis in IS studies. In this connection, Paquin and Howard-Grenville (2013) pronounced another aspect of such evolutionary tendencies and termed it a shift from “blind dates” to “arranged marriages”. Elaborating on this, they maintained that many of contemporary developments in the domain of IS research are now being facilitated by either governmental or non-governmental factors. The growing research inclinations in China towards IS are often cited to corroborate such assertions. In this country, the availability of large networks of eco-industrial parks (EIP) facilitated by the China National Demonstration Eco-Industrial Park Program are encouraging scientific publications in the field of IS. The other notable initiatives of similar objectives are National Industrial Symbiosis Program in the United Kingdom (UK) and Resource Efficiency Flagship Initiative in Europe (Laybourn and Lombardi, 2012; Paquin and Howard-Grenville, 2013).

Despite increasing importance and interest in IS, focus on recalling earlier advances in the domain appeared a less explored arena of research. Two important review papers authored by Yu et al. (2014) and Chertow and Park (2016) attempted to comprehensively review the orientations of research in this domain. The former researcher tried to quantitatively map and mention the noticeable strides in this domain from 1997 to 2012, while, the latter focused on the time period from 1997 to 2014. These researchers not only identified the seminal articles but also identified key themes, researchers and journals in this branch of knowledge. These researchers concluded that the field of IS stemmed from and was rooted in IE. Yu et al. (2014) identified five distinctive topical areas in the contemporary IS research i.e. wastewater treatment and management, solid waste management, energy efficiency, self-organization of IS systems, and policy making and evaluation of IS and EIP projects. Whereas, Chertow and Park (2016) sub-divided their assertions into seven categories based on the nature of study: Foundation, Performance, Mechanism, Modeling, Structure, Case Study, and Proposal.

However, both of these studies deployed bibliometric analysis technique for assessments. The Bibliometric or Scientometric mapping (Cobo et al., 2011) approach is a visual technique of informatics. This assessment approach quantitatively displays structural and dynamic aspects of scientific research proclivities for the specified temporal duration (Liu and Gui, 2016). The technique also offers replicable opportunities for quantitative estimations and visual mapping in the domain of ecology (Neff and Corley, 2009; Govindaradjou and John, 2014). These features enable to

understand the noticeable progressions in the field of interest for systematic review and assessments. It empowers the researchers to decipher the impacts of inter-disciplinary imprints on the prevailing mode of investigations. The bibliometric analysis is also considered helpful for postulating about the emerging trajectories in research orientations (Yu et al., 2014). The similar nature of methodologies have been relied upon for analyzing evolutionary developments and contemporary advances in diversified fields of knowledge (Eito-Brun and Rodríguez, 2016; Liu and Gui, 2016; Mishra et al., 2016; Atif et al., 2018).

The current research was designed to assess the contemporary trends regarding IS research by evaluating the recent publications (2012-2017). The study was designed to identify the salient features of the recent research concerning IS. Besides identifying research inclinations, the study will also attempt to provide a snapshot of key research networks and subject areas of recent publications. Thus, the present study will provide an opportunity to synchronize the efforts for environmental sustainability in the present phase of rapid population growth, urbanization and looming industrialization in the developing world.

Material and methods

The Bibliometric or Scientometric mapping technique was relied upon to decipher the contemporary research orientations in the domain of IS. This study deployed co-occurrence analysis technique to identify networks of collaborating organizations, countries, citations and co-authorships. The technique facilitates the representation of the related items with the help of networks maps through nodes and links (Liu and Gui, 2016). The size of the node is a measure of centrality and thus depicts the importance of the impacts (Wasserman and Faust, 1994). The larger nodes served as hubs in the analysis thereby depicting the significance of articles, keywords, and authors.

The technique is considered reliable (Yu et al., 2014) and was deployed to analyse the spatio-temporal trends and to identify intellectual communities engaged with research concerning IS. It was subsequently relied upon for the “keyword co-occurrence analysis test” to understand the emerging developments in the domain of IS studies. *Table 1* succinctly describes the nature and scope of study, data sources and the methodology implemented for data retrieval and assessments of facts.

Data collection and preparation

The current study is a meta-analysis, based upon the bibliographic information, retrieved from Scopus. The study focused on the research published between January 2012 till March 2017 against the search term “industrial symbiosis”. Ostensibly, it seems that the use of a single keyword may compromise the authenticity of findings by excluding the related studies with different nomenclatures but at the same time avoiding digressions. The study carried out by Atif et al. (2018) has successfully experimented this technique. The query returned 398 records, which were further scrutinized for relevance. On this criteria, a total of 395 records (*Appendix-I*) were selected for further processing. The data was refined using Notepad ++ to standardize the variants used in keywords, authors, journals, organizations and country names.

Table 1. Study approach adopted for exploring research productivity trends in IS (2012-17)

Objectives	Questions	Indicators
Spatio-temporal distribution of IS research productivity	How many documents are published annually? Which are the most productive countries? Key institutions involved in IS research	Number of documents published per year Number of publications per country Ranking of key organizations and collaboration network
Identify most productive research communities	Who are the most productive authors? Who are the authors that collaborate? Who are authors that share a common interest?	Ranking of most productive authors by complete count method Co-authorship Analysis Co-citation analysis
Key lines of research	Which are the key subject areas under which IS research is being carried out? What are the key themes of IS research?	Contribution by subject based on Scopus classification Keyword Co-occurrences

Data Analysis

The data for current study was analyzed with the help of Bibexcel (Persson et al., 2009) and bibliographic networks developed in VOS Viewer (Van Eck and Waltman, 2011). Bibexcel was used due to its flexibility, ability to handle a large amount of data and its compatibility with other softwares like Excel, Pajek and VOS Viewer (Mishra et al., 2016). The network data obtained from Bibexcel was further processed in VOS Viewer to develop network maps. The findings were subsequently relied upon for depicting salient characteristics of the selected studies. The bibliometric indicators like annually published articles, country wise publication, top authors, top journals and subject categories were directly obtained from Scopus. The content analysis of the selected publications was carried out to scrutinise the causations responsible for reported orientations in contemporary research regarding IS.

Results

Since the study aims, primarily, to cover all aspects of research concerning IS for the time period from 2012 to 2017, therefore all documents, from all countries and languages available have been thoroughly scrutinized. For this purpose 395 publications, specifically related to “industrial symbiosis” were retrieved from the Scopus database for the selected time interval. These studies were carried out by the authors from 24 countries related with 20 different disciplinary areas. The data retrieved included: articles (262), other documents included conference papers (59), book chapters (28), articles in press (22), review articles (15), conference reviews (4), books (2), editorials (2) and the solitary available note. These articles were published in three languages: English (383), Chinese (10) and German (2).

In this connection, the following top five journals were observed in the forefront i.e. Journal of Cleaner Production (92), Journal of Industrial Ecology (JIE) (43), Resources, Conservation and Recycling (13), Computer Aided Chemical Engineering (11) and Shentai Xuebo Acta Ecologica Sinica (11). These five journals account for 42.7% of the total published documents.

Spatio-temporal distribution of research

The spatio-temporal connotations of these scholastic linkages were also magnified with the help of distribution maps and statistical diagrams. The approach is considered helpful for depicting the scholastic collaborations between and among nations (Liu and Gui, 2016). The topic of IS appeared in literature around 1997, afterward, it grew exponentially with correlation coefficient $r^2 = 0.88$ (Figure 1). The findings in Figure 1 also depicting the research productivity of the previous five years (2012-17) in relation to overall research published since 1997.

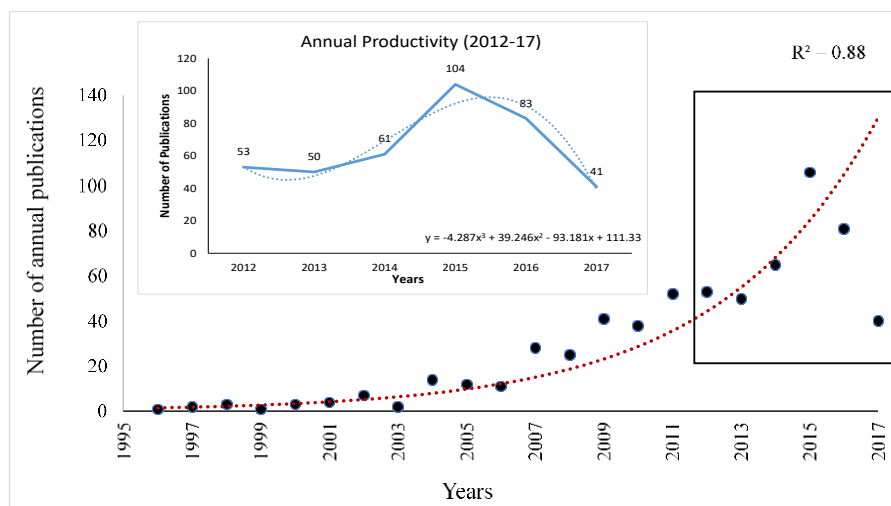


Figure 1. Annual productivity in IS research (1997-2017), while recent fluctuations encompassing the time period (2012-17) have been condensed in the inset

Spatial scope of IS has expanded to 24 countries (Figure 2) during this period and research hubs are mainly located in industrialized contextual settings (Appendix-II) such as China (85), United Kingdom (49) and United States (49). The other countries with significant contributions are Italy (34), Japan (27), Netherlands (21), Philippines (21), Australia (19), Canada (19), and France (19). The findings revealed that about 363 organizations from these countries are involved in IS research. In this connection De-La-Salle University, Manila (22), National Institute for Environmental Studies for Japan (21), University of Surrey, United Kingdom (19), University of Tokyo, Japan (11), Tsinghua University, China (11) and the University of Nottingham, Malaysia (11) are the most prominent contributors towards IS research.

The subsequent co-occurrence frequency analysis depicted a growing tendency towards collaboration between and among different nations. In this regard, the highest scientific collaboration was observed between China and Japan in (17) cases. The participating organizations in these collaborations are the Chinese Academy of Sciences, the National Institute of Environmental Studies (NIES), Japan and Nagoya University, Japan. The researchers such as Liang Dong, Tsuyoshi Fujita affiliated with NIES, Japan and Yong Geng, chief researcher in Chinese Academy of Sciences are, apparently, the most active contributors in this collaboration network. Most of these scientific research collaborations in this network were funded through various programs of Natural Science Foundation of China (11) and Ministry of Environment, Japan (8).

Research Communities

The current study also attempted to identify the most productive authors with respect to a number of publications during the similar time period (2012-2017). The ranking is based on the complete count method. In this scheme of assessments every occurrence of the author is counted provided his name has been mentioned in the list of co-authors in a publication selected for this study. Total citations and h-index were subsequently calculated using the Bibexcel and presented in *Figure 3*.

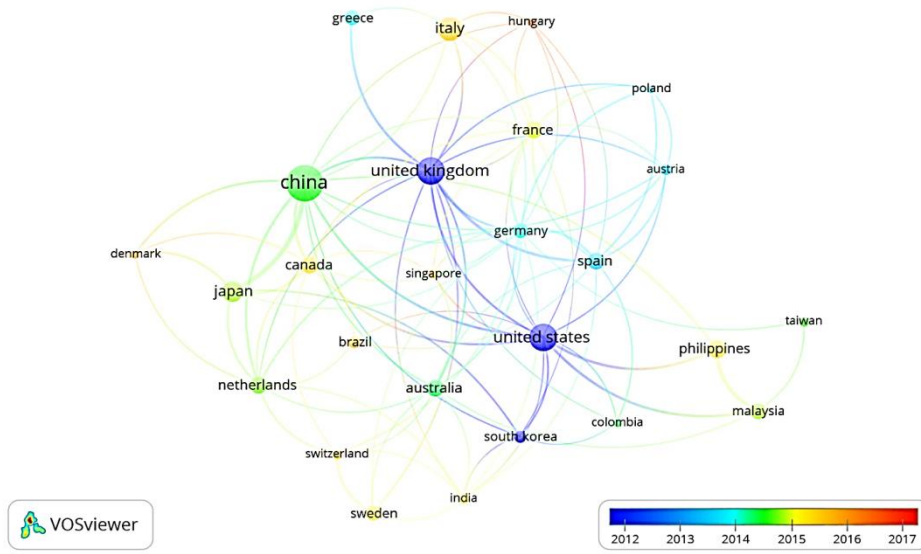


Figure 2. Geographical network of IS research productivity retrieved from corresponding author addresses (2012-17)

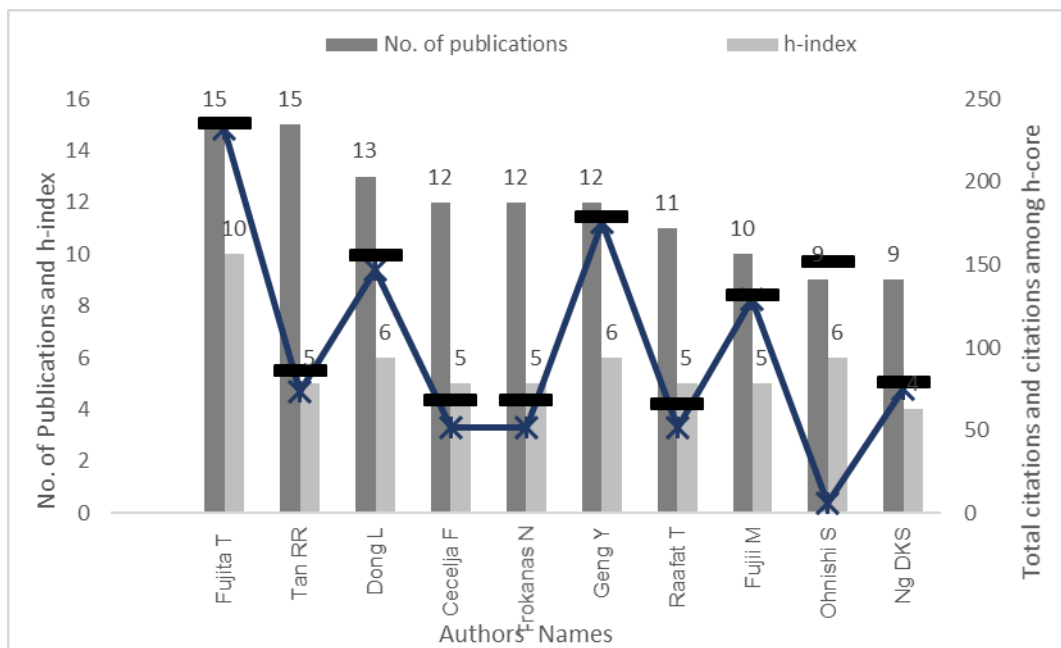


Figure 3. Ten most productive authors based on number of publications and h-index (N=395)

Tsuyoshi Fujita from NIES, Japan and Raymond R. Tan from De La Salle University Philippines were observed as the two most proficient and productive authors with 15 publications apiece. It is pertinent to mention that NIES, Japan (20) and De La Salle University (33) also emerged as the most productive organizations. However, scientific contributions by Tsuyoshi Fujita has received more acknowledgments in terms of citations (235), than Raymond R. Tan (86).

Clusters in research collaborations

The selected publications were analyzed to find out the scale and orientation of contemporary research collaborations. To identify the most productive collaborating authors, a co-authorship network map was developed using VOS viewer (*Figure 4*). The findings have been condensed in *Table 2*. The findings in the table explicitly convey the affiliations of authors, the focus of research and published studies ensuing from these research collaborations.

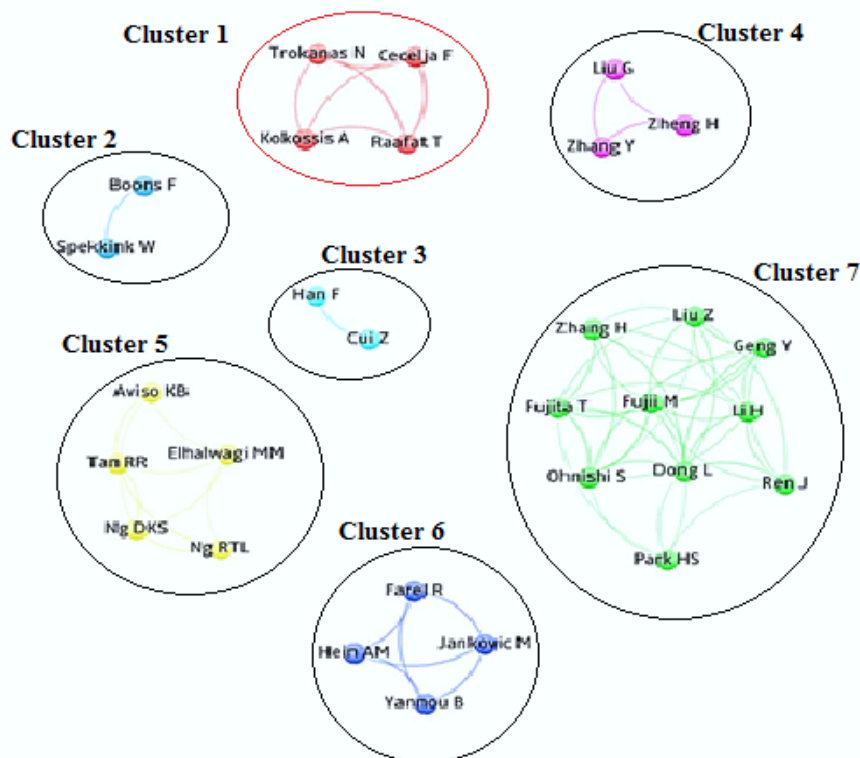


Figure 4. Co-authorship network with seven clusters working on IS

Co-citation analysis

Co-citation analysis technique is also relied upon to understand the conceptual orientations and imprints of contemporary research. The findings of current study in (*Figure 5*) portrayed that Marian Chertow, Yong Geng and Raymond Tan have the significant bearings and followings in the domain of IS research.

Table 2. Co-authorship cluster classification with affiliations and research areas

Cluster Number	Scholars Affiliation	Research Area	Reference Literature
Cluster 1	Center for Process and Information Science, Faculty of Engineering and Physical Science, University of Surrey, UK National Technical University, Athens, Greece	Semantic and ontological approaches for IS	(Trokanas et al., 2012; Trokanas et al., 2014b; Trokanas et al., 2014a; Trokanas et al., 2014c; Trokanas et al., 2015a; Trokanas et al., 2015b)
Cluster 2	Sustainable Consumption Institute, University of Manchester, UK University de los Andes, Bogota, Columbia	IS dynamics and influence of different factors	(Boons et al., 2011; Boons and Spekkink, 2012; Boons et al., 2014; Boons et al., 2015; Boons et al., 2017)
Cluster 3	School of Environmental Science and Engineering, Shandong University, China	IS application in China	(Yu et al., 2015b; Yu et al., 2015c; Yu et al., 2015a)
Cluster 4	State Key Joint Laboratory of Environmental Simulation and Pollution Control, School of Environment, Beijing Normal University, China	Network analysis of IS Systems	(Zhang et al., 2013a; Zhang et al., 2013b; Zhang et al., 2013c; Zhang et al., 2015a; Zhang et al., 2015b; Zhang et al., 2015c; Zhang et al., 2016)
Cluster 5	Center for Engineering and Sustainable Development Research, De La Salle University, Manila, Philippines Department of Chemical and Environmental Engineering, Centre of Excellence for Green Technologies, University of Nottingham, Malaysia Campus. Department of Chemical and Biological Engineering, University of Wisconsin, United States	Fuzzy programming and optimization based IS system and EIP designs	(Ng et al., 2014a; Ng et al., 2014b; Ng et al., 2014c; Tan et al., 2016)
Cluster 6	Laboratoire Genie Industriel, CentraleSupélec, Université Paris-Saclay, France, Paris-Saclay Energy Efficiency (PS2E), France	EIP design architecture and modelling for IS	(Hein et al., 2015a; Hein et al., 2015b; Hein et al., 2016; Hein et al., 2017a; Hein et al., 2017b)
Cluster 7	National Institute for Environmental Studies, Japan National Engineering Laboratory for Hydrometallurgical Cleaner Production Technology, Institute of Process Engineering, Chinese Academy of Sciences, China. Center for Social and Environmental Systems Research, National Institute for Environmental Studies (NIES), Japan Centre for Engineering Operations Management, Department of Technology and Innovation, University of Southern Denmark. School of Environmental Science and Engineering, Shanghai Jiao Tong University, China University of Ulsan, South Korea	Low carbon IS options, environmental and economic benefits of IS for China	(Geng et al., 2009; Dong et al., 2013; Zhang et al., 2013a; Zhang et al., 2013b; Zhang et al., 2013c; Zhang et al., 2015a; Zhang et al., 2015b; Zhang et al., 2015c; Zhang et al., 2016)

Keyword analysis

Keyword co-occurrence maps represent the cognitive structure of a discipline. Atif et al. (2018) opined that the selection of keywords depicts the focus and orientation of the scientific research. For this purpose, the keywords from the publications were retrieved

and processed for analysis. The findings have been illustrated in *Figure 6*. Only such terms as the ones recurring at least five times were mentioned. The strategy was deployed to overcome the excessive noise. *Figure 6* displays an overlay visualization of the keyword co-occurrences. The size of the node reflects frequency, while, the color of the node represents the publishing time period.

The central nodes represent the keywords such as “industrial symbiosis” (277), “industrial ecology” (123), “sustainable development” (77), “industry” (76), and “eco-industrial park” (67). Whereas, the keywords like “waste management” (43), “environmental impacts” (42) “recycling” (41), “economics” (39), “Life cycle assessment” (33) and “carbon” (25) also appeared significantly in the analysis (*Figure 6*).

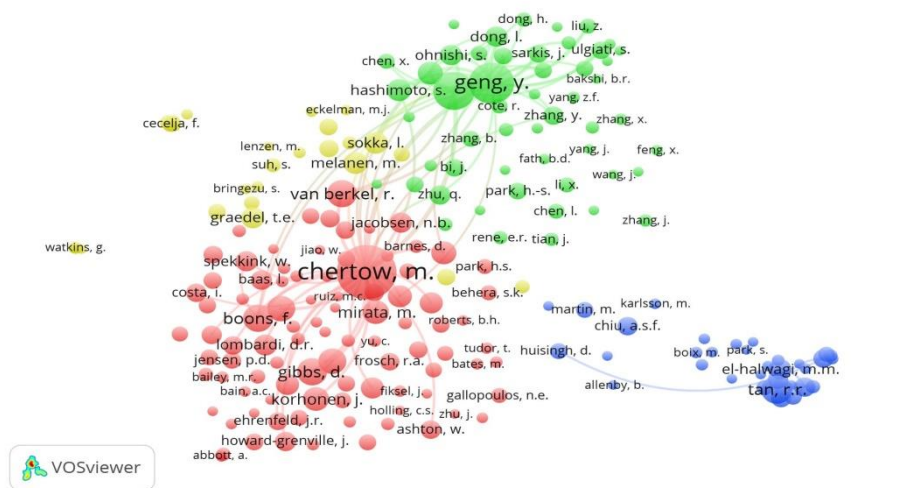


Figure 5. Co-citation network map of cited authors in documents retrieved from Scopus database

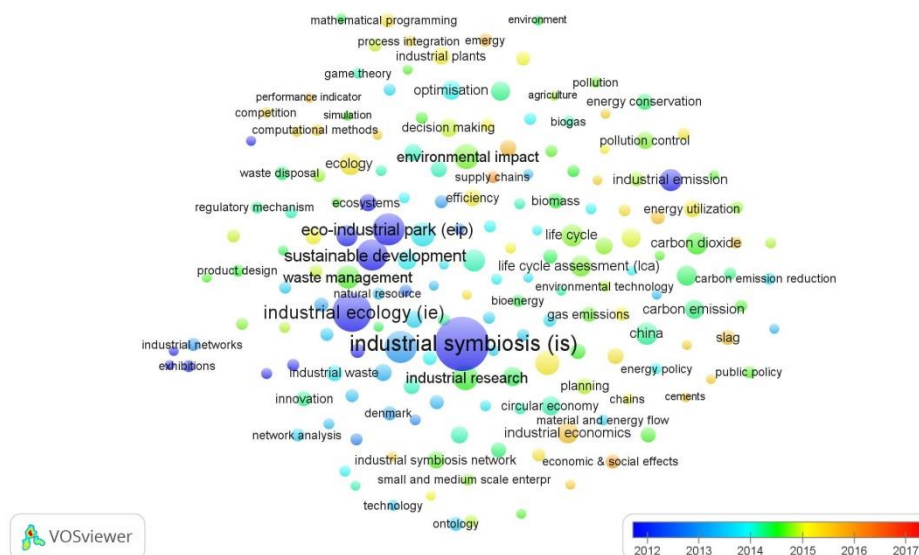


Figure 6. Keyword occurrences in IS related literature for the period 2012-17

Discussion

The resource depletion, accelerating demands for goods and services are compelling the human conscience to strive for environmental and ecological sustainability. The researchers and policy makers are striving to postulate doable measures to achieve these goals. Chertow (2000) proclaimed that in response to these demands the research inclinations towards IS started to gain acceptability from 1997 onwards. The findings of the study in *Figure 1* corroborate and substantiate these assertions. During the span of two decades (1997-2017), IS has evolved from a “signature topic” (Lifset, 2012) in IE to a more systematic, promising and advancing research discipline. As a result, the IS studies are gaining significant attention.

The findings of the study revealed that a large share (34%) of the publications were contributed by two journals, namely Journal of Cleaner Production and Journal of Industrial Ecology (JIE); similar findings were reported by Yu et al. (2014).

The findings in the *Figure 2* also pointed towards growing research collaboration between and among nations, ranging from regional to inter-continental engagements. These findings are in line with the assertions of previous investigations. In this connection, Chertow and Park (2016) and Yu et al. (2014) opined that IS is an advancing interdisciplinary field and rapidly attracting the attention of the research community. In this regard, China from Asia, UK from Europe and USA from the North America were identified as the hub and stimulator for promoting research interests in the field. Whereas, the findings of this study also portrayed that the majority of collaborations are being carried out by developed industrial economies. While the orientation towards IS research was observed in fomenting stages in the southern hemisphere. However, a growing penchant for such cross-country collaborations was also noticed, such as India (7) which is shifting from an agricultural to an industrial economic base.

The research collaborations are needed and encouraged (Iglić et al., 2017) for postulating pragmatic strategies to address the issues from divergent contextual settings. The findings based upon co-authorship analysis help to identify major research groups/collaborations in the field of IS. The findings in *Figure 1* and *Table 2* portrayed the emergence of seven distinctive streams of investigations as an outcome of these research collaborations. The most frequent research collaborations were observed among the researchers from China, Japan, Phillipines and UK. The most productive cluster (07) published (09) papers. This collaboration was observed among researcher from NIES, Japan, Chinese Academy of Sciences, China, University of Southern Denmark and University of Ulsan South Korea. This cluster is also the biggest in terms of number of researchers (10) engaged in collaboration.

The findings of the study (*Figure 5*) substantiate the previous assertions of Yu et al. (2014) that the scholastic contributions of Marian Chertow have more acknowledgment than any other scholar in the domain. The scholar is credited for defining the scope and sphere of this emerging research domain. In this context, Geng et al. (2009) and Tan et al. (2016) were observed as the next most influential scholars, having significant bearings on the emerging paradigm shifts in the field of IS.

The emerging dimensions of industrial symbiosis research were observed more focused on minimizing the impacts of industrial production on environmental, social and economic capitals. These initiatives are incumbent for ensuring the conservation of natural resources and the resilience of socio-ecological surroundings.

Conclusion

The field of Industrial Symbiosis (IS) is gaining acceptance for achieving the objectives through the integration of industrial production systems and collaborative research efforts. The current study revealed growing inclinations towards IS research. The findings portrayed that field is diversifying in scope and gaining acceptance from across the globe.

The outcomes of the study also depicted that industrial economies such as China, UK and USA are spearheading the domain of IS research. The plausible explanation for the growing orientations towards IS research in China can be the premise that the industrial growth remained steadier in this region. The research paradigm in IS are mainly conceived to ensure low carbon emission through research collaboration. The policy makers and researchers in China are stressing and promoting cross-country collaborations. The research paradigms in IS are mainly conceived to ensure low carbon emissions through research collaborations. More focused efforts will be required in the domain of IS to achieve the ultimate goal of clean and green industrial production in the face of mounting pressures from consumer-oriented life-style changes.

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APPENDIX

Appendix-I. 395 selected and reviewed articles

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Zhou X., Zhang H.	Research on industrial symbiosis mode logistics industrial cluster in Shenyang Economic Zone	Proceeding of 2012 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2012	2012	2		489	492	
Romero D., Molina A.	Green virtual enterprise breeding environments: A sustainable industrial development model for a circular economy	IFIP Advances in Information and Communication Technology	2012	380	AICT	427	436	10.1007/978-3-642-32775-9_43
Kopacek B., Schadlbauer S.	Introduction to zero WIN	Electronics Goes Green 2012+, ECG 2012 - Joint International Conference and Exhibition, Proceedings	2012					
Schadlbauer S., Kopacek B., Gallo M., Arnaiz S.	The ZeroWIN production model	Electronics Goes Green 2012+, ECG 2012 - Joint International Conference and Exhibition, Proceedings	2012					
Arranz P., Tarragó J., Vallvé X., Marwede M., Den Boer E., Rothe M., Wüst F., Middendorf A., Cocciantelli J.-M., Lippert M.	Practical demonstrator 'Design for recycling photovoltaic system'	Electronics Goes Green 2012+, ECG 2012 - Joint International Conference and Exhibition, Proceedings	2012					

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Marwede M., Schischke K., Arranz P., Hickey S., Fitzpatrick C., Ospina J., Yang M., Nissen N.F., Lang K.-D.	Methodology to identify design for recycling measures for high-tech sectors	Electronics Goes Green 2012+, ECG 2012 - Joint International Conference and Exhibition, Proceedings	2012					
Nesbit S., Stano J., Atwater J.W., Casavant T.	Cascading water: Combining GIS and system analysis to maximize water reuse	Canadian Journal of Civil Engineering	2012	39	12	1321	1327	10.1139/cjce-2012-0251
Den Boer E., Williams I., Fitzpatrick C., Arranz P., Dietrich J., Kent A., Tischer A., Durao V., Perthes H., Peagam R., Kopacek B.	Bringing all industrial networks together and next steps	Electronics Goes Green 2012+, ECG 2012 - Joint International Conference and Exhibition, Proceedings	2012					
Li G.	A paradigm of constructing industrial symbiosis and coupling in China's county- region economic sustainable development	Green Technologies and Business Practices: An IT Approach	2012			1	14	10.4018/978-1-4666-1972-2.ch001
Watts C., Binder C.R.	Simulating shocks with the hypercycles model of economic production	iEMSs 2012 - Managing Resources of a Limited Planet: Proceedings of the 6th Biennial Meeting of the International Environmental Modelling and Software Society	2012			2651	2659	
Diwekar U.	Green engineering and sustainability: A systems analysis perspective	Sustainability: Multi- Disciplinary Perspectives	2012			273	309	10.2174/978160805103811201010273

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Karkanias C., Karagiannidis A., Antonopoulos I.S., Samaras P.	Adopting rational waste management schemes: The case of Preveza municipality	Economics and Policy of Energy and the Environment	2012		3	65	79	
Hiete M., Ludwig J., Schultmann F.	Intercompany Energy Integration: Adaptation of Thermal Pinch Analysis and Allocation of Savings	Journal of Industrial Ecology	2012	16	5	689	698	10.1111/j.1530-9290.2012.00462.x
Wells P., Zapata C.	Renewable Eco-industrial Development: A New Frontier for Industrial Ecology?	Journal of Industrial Ecology	2012	16	5	665	668	10.1111/j.1530-9290.2012.00487.x
Chopra S.S., Khanna V.	Toward a network perspective for understanding resilience and sustainability in industrial symbiotic networks	IEEE International Symposium on Sustainable Systems and Technology	2012					10.1109/ISSST.2012.6227987
Lin K.-N.	Cradle to cradle at CSC: Through integrated recycling system and industrial symbiosis	AISTech - Iron and Steel Technology Conference Proceedings	2012			217	224	
Usón S., Valero A., Agudelo A.	Thermoeconomics and Industrial Symbiosis. Effect of by-product integration in cost assessment	Energy	2012	45	1	43	51	10.1016/j.energy.2012.04.016
Ohnishi S., Fujita T., Chen X., Fujii M.	Econometric analysis of the performance of recycling projects in Japanese Eco-Towns	Journal of Cleaner Production	2012	33		217	225	10.1016/j.jclepro.2012.03.027
Clark J.H., Pfaltzgraff L.	Industrial symbiosis using green chemistry	Technical Proceedings of the 2012 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2012	2012			706	707	
Raafat T., Trokanas N., Cecelja F., Kokossis A., Yang A.	Semantically-enabled Formalisation to Support and Automate the Application of Industrial Symbiosis	Computer Aided Chemical Engineering	2012	31		1055	1059	10.1016/B978-0-444-59506-5.50042-0

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Shi L., Liu G., Guo S.	International comparison and policy recommendation on the development model of industrial symbiosis in China	Shengtai Xuebao/ Acta Ecologica Sinica	2012	32	12	3950	3957	10.5846/stxb201111131724
Shi X., Yang J., Wang R., Zhao L.	An approach for analyzing resources metabolism of industrial ecosystems	Shengtai Xuebao/ Acta Ecologica Sinica	2012	32	7	2012	2024	10.5846/stxb201104180505
Meneghetti A., Nardin G.	Enabling industrial symbiosis by a facilities management optimization approach	Journal of Cleaner Production	2012	35		263	273	10.1016/j.jclepro.2012.06.002
Raafat T., Cecelja F., Yang A., Trokanas N.	Semantic support for industrial symbiosis process	Computer Aided Chemical Engineering	2012	30		452	456	10.1016/B978-0-444-59519-5.50091-5
Trokanas N., Raafat T., Cecelja F., Kokossis A., Yang A.	Semantic Formalism for Waste and Processing Technology Classifications Using Ontology Models	Computer Aided Chemical Engineering	2012	30		167	171	10.1016/B978-0-444-59519-5.50034-4
Behera S.K., Kim J.-H., Lee S.-Y., Suh S., Park H.-S.	Evolution of 'designed' industrial symbiosis networks in the Ulsan Eco-industrial Park: 'Research and development into business' as the enabling framework	Journal of Cleaner Production	2012	29-30		103	112	10.1016/j.jclepro.2012.02.009
Liu L., Zhang B., Bi J., Wei Q., He P.	The greenhouse gas mitigation of industrial parks in China: A case study of Suzhou Industrial Park	Energy Policy	2012	46		301	307	10.1016/j.enpol.2012.03.064
Geißen S.-U., Bennemann H., Horn H., Krull R., Neumann S.	Industrial wastewater treatment and recycling - Potentials and prospects [Industrieabwasserbehandlung und -recycling - Potenziale und Perspektiven]	Chemie-Ingenieur-Technik	2012	84	7	1005	1017	10.1002/cite.201200006
Andrade L.C., Míguez C.G., Gómez M.C.T., Bugallo P.M.B.	Management strategy for hazardous waste from atomised SME: Application to the printing industry	Journal of Cleaner Production	2012	35		214	229	10.1016/j.jclepro.2012.05.014

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Geng D., Li J., Liu J., Song X.	System analysis of circular economy development in coal mining area	Advanced Materials Research	2012	524-527		2735	2740	10.4028/www.scientific.net/AMR.524-527.2735
Blengini G.A., Busto M., Fantoni M., Fino D.	Eco-efficient waste glass recycling: Integrated waste management and green product development through LCA	Waste Management	2012	32	5	1000	1008	10.1016/j.wasman.2011.10.018
Golev A., Corder G.D.	Developing a classification system for regional resource synergies	Minerals Engineering	2012	29		58	64	10.1016/j.mineng.2011.10.018
Geng Y., Fu J., Sarkis J., Xue B.	Towards a national circular economy indicator system in China: An evaluation and critical analysis	Journal of Cleaner Production	2012	23	1	216	224	10.1016/j.jclepro.2011.07.005
Laybourn P., Lombardi D.R.	Industrial Symbiosis in European Policy: Overview of Recent Progress	Journal of Industrial Ecology	2012	16	1	11	12	10.1111/j.1530-9290.2011.00451.x
Lombardi D.R., Lyons D., Shi H., Agarwal A.	Industrial Symbiosis: Testing the Boundaries and Advancing Knowledge	Journal of Industrial Ecology	2012	16	1	2	7	10.1111/j.1530-9290.2012.00455.x
Paquin R.L., Howard-Grenville J.	The Evolution of Facilitated Industrial Symbiosis	Journal of Industrial Ecology	2012	16	1	83	93	10.1111/j.1530-9290.2011.00437.x
Jensen P.D., Basson L., Hellowell E.E., Leach M.	'Habitat' Suitability Index Mapping for Industrial Symbiosis Planning	Journal of Industrial Ecology	2012	16	1	38	50	10.1111/j.1530-9290.2011.00438.x
Salmi O., Hukkinen J., Heino J., Pajunen N., Wierink M.	Governing the Interplay between Industrial Ecosystems and Environmental Regulation: Heavy Industries in the Gulf of Bothnia in Finland and Sweden	Journal of Industrial Ecology	2012	16	1	119	128	10.1111/j.1530-9290.2011.00403.x
Chertow M., Ehrenfeld J.	Organizing Self-Organizing Systems: Toward a Theory of Industrial Symbiosis	Journal of Industrial Ecology	2012	16	1	13	27	10.1111/j.1530-9290.2011.00450.x
Lombardi D.R., Laybourn P.	Redefining Industrial Symbiosis: Crossing Academic-Practitioner Boundaries	Journal of Industrial Ecology	2012	16	1	28	37	10.1111/j.1530-9290.2011.00444.x

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Chen X., Fujita T., Ohnishi S., Fujii M., Geng Y.	The Impact of Scale, Recycling Boundary, and Type of Waste on Symbiosis and Recycling: An Empirical Study of Japanese Eco-Towns	Journal of Industrial Ecology	2012	16	1	129	141	10.1111/j.1530-9290.2011.00422.x
Mattila T., Lehtoranta S., Sokka L., Melanen M., Nissinen A.	Methodological Aspects of Applying Life Cycle Assessment to Industrial Symbioses	Journal of Industrial Ecology	2012	16	1	51	60	10.1111/j.1530-9290.2011.00443.x
Ashton W.S., Bain A.C.	Assessing the "Short Mental Distance" in Eco-Industrial Networks	Journal of Industrial Ecology	2012	16	1	70	82	10.1111/j.1530-9290.2011.00453.x
Boons F., Spekkink W.	Levels of Institutional Capacity and Actor Expectations about Industrial Symbiosis: Evidence from the Dutch Stimulation Program 1999-2004	Journal of Industrial Ecology	2012	16	1	61	69	10.1111/j.1530-9290.2011.00432.x
Zhou L., Hu S.-Y., Li Y., Jin Y., Zhang X.	Modeling and Optimization of a Coal-Chemical Eco-industrial System in China	Journal of Industrial Ecology	2012	16	1	105	118	10.1111/j.1530-9290.2012.00447.x
Ferrer G., Cortezia S., Neumann J.M.	Green City: Environmental and Social Responsibility in an Industrial Cluster	Journal of Industrial Ecology	2012	16	1	142	152	10.1111/j.1530-9290.2011.00442.x
Brent G.F., Allen D.J., Eichler B.R., Petrie J.G., Mann J.P., Haynes B.S.	Mineral Carbonation as the Core of an Industrial Symbiosis for Energy-Intensive Minerals Conversion	Journal of Industrial Ecology	2012	16	1	94	104	10.1111/j.1530-9290.2011.00368.x
Liu C., Ma C., Zhang K.	Going beyond the sectoral boundary: A key stage in the development of a regional industrial ecosystem	Journal of Cleaner Production	2012	22	1	42	49	10.1016/j.jclepro.2011.09.022

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Usón S., Valero A., Valero A., Costa J.	Thermoeconomic fuel impact approach for assessing resources savings in industrial symbiosis: Application to kalundborg ecoindustrial park	Proceedings of the 25th International Conference on Efficiency, Cost, Optimization and Simulation of Energy Conversion Systems and Processes, ECOS 2012	2012	3		346	356	
Valero A., Usón S., Costa J.	Exergy analysis of the industrial symbiosis model in Kalundborg	Proceedings of the 25th International Conference on Efficiency, Cost, Optimization and Simulation of Energy Conversion Systems and Processes, ECOS 2012	2012	1		406	416	
Gregson N., Crang M., Ahamed F.U., Akter N., Ferdous R., Foisal S., Hudson R.	Territorial agglomeration and industrial symbiosis: Sitakunda-Bhatiary, Bangladesh, as a secondary processing complex	Economic Geography	2012	88	1	37	58	10.1111/j.1944-8287.2011.01138.x
Li J., Wang Y., Zhou M.	Application of emergy theory in industrial ecosystem analysis	Advanced Materials Research	2012	361-363		1249	1254	10.4028/www.scientific.net/AMR.361-363.1249
Yang L., Tong L.	Research of typical EIPs based on the social network analysis	Shengtai Xuebao/ Acta Ecologica Sinica	2012	32	13	4236	4245	
Martin M., Svensson N., Fonseca J., Eklund M.	Quantifying the environmental performance of integrated bioethanol and biogas production	Renewable Energy	2013	61		109	116	10.1016/j.renene.2012.09.058
Li G.	A paradigm of constructing industrial symbiosis and coupling in China's county-region economic sustainable development	Sustainable Practices: Concepts, Methodologies, Tools, and Applications	2013	3		1218	1231	10.4018/978-1-4666-4852-4.ch068

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
MacLachlan I.	Kwinana Industrial Area: Agglomeration economies and industrial symbiosis on Western Australia's Cockburn Sound	Australian Geographer	2013	44	4	383	400	10.1080/00049182.2013.852505
Raafat T., Trokanas N., Cecelja F., Bimi X.	An ontological approach towards enabling processing technologies participation in industrial symbiosis	Computers and Chemical Engineering	2013	59		33	46	10.1016/j.compchemeng.2013.03.022
Li J., Gao Y.	Research on eco-industry symbiosis system based on complex network	Proceedings of 2012 3rd International Asia Conference on Industrial Engineering and Management Innovation, IEMI 2012	2013			759	769	10.1007/978-3-642-33012-4-76
Marinos-Kouris D., Mourtsiadis A.	Environmental limits of industrial symbiosis: The case of aluminium eco-industrial network	Fresenius Environmental Bulletin	2013	22	12	3549	3557	
Valero A., Usón S., Torres C., Valero A., Agudelo A., Costa J.	Thermoeconomic tools for the analysis of eco-industrial parks	Energy	2013	62		62	72	10.1016/j.energy.2013.07.014
[No author name available]	IFIP WG 5.7 International Conference on Advances in Production Management Systems, APMS 2012	IFIP Advances in Information and Communication Technology	2013	397	PART 1			
Dong L., Zhang H., Fujita T., Ohnishi S., Li H., Fujii M., Dong H.	Environmental and economic gains of industrial symbiosis for Chinese iron/steel industry: Kawasaki's experience and practice in Liuzhou and Jinan	Journal of Cleaner Production	2013	59		226	238	10.1016/j.jclepro.2013.06.048
Paquin R.L., Howard-Grenville J.	Blind Dates and Arranged Marriages: Longitudinal Processes of Network Orchestration	Organization Studies	2013	34	11	1623	1653	10.1177/0170840612470230

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Liu G.-F., Chen F.-D.	NISP-based research on the system structure of urban symbiosis network in China	Applied Mechanics and Materials	2013	427-429		2923	2927	10.4028/www.scientific.net/AMM.427-429.2923
Gao X.L., Li R.Q., Li R.	Study on byproducts recycling in eco-industrial parks	Advanced Materials Research	2013	788		288	292	10.4028/www.scientific.net/AMR.788.288
Liao M.-I., Ma H.-W.	The potential environmental gains from industrial symbiosis: Evaluation of CO2 reduction through a crucial by-product	International Journal of Applied Environmental Sciences	2013	8	2	129	136	
Shi X.Q., Li X.N., Yang J.X.	Eco-management benefit analysis of industrial resources from life cycle perspective: A case study of a virtual symbiosis network	Shengtai Xuebao/ Acta Ecologica Sinica	2013	33	19	6398	6410	10.5846/stxb201304180738
Dong L., Fujita T., Zhang H., Dai M., Fujii M., Ohnishi S., Geng Y., Liu Z.	Promoting low-carbon city through industrial symbiosis: A case in China by applying HPIMO model	Energy Policy	2013	61		864	873	10.1016/j.enpol.2013.06.084
Marinos-Kouris D., Mourtsiadis A.	Industrial symbiosis in Greece: A study of spatial allocation patterns	Fresenius Environmental Bulletin	2013	22	7 B	2174	2181	
Zhang H., Dong L., Li H., Fujita T., Ohnishi S., Tang Q.	Analysis of low-carbon industrial symbiosis technology for carbon mitigation in a Chinese iron/steel industrial park: A case study with carbon flow analysis	Energy Policy	2013	61		1400	1411	10.1016/j.enpol.2013.05.066
Gu C., Leveneur S., Estel L., Yassine A.	Industrial symbiosis optimization control model for the exchanges of the material/energy flows in an industrial production park	IFAC Proceedings Volumes (IFAC-PapersOnline)	2013			1015	1020	10.3182/20130619-3-RU-3018.00182
Liu G.-S., Xu S.-Q., Sun Y.-W., Han J.-Y.	Eco-industrial symbiosis network equilibrium model	Beijing Keji Daxue Xuebao/Journal of University of Science and Technology Beijing	2013	35	9	1221	1229	

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Eckelman M.J., Chertow M.R.	Life cycle energy and environmental benefits of a US industrial symbiosis	International Journal of Life Cycle Assessment	2013	18	8	1524	1532	10.1007/s11367-013-0601-5
Ng R.T.L., Ng D.K.S., Tan R.R.	Systematic approach for synthesis of integrated palm oil processing complex. Part 2: Multiple owners	Industrial and Engineering Chemistry Research	2013	52	30	10221	10235	10.1021/ie400846g
Ng R.T.L., Ng D.K.S.	Systematic approach for synthesis of integrated palm oil processing complex. Part 1: Single owner	Industrial and Engineering Chemistry Research	2013	52	30	10206	10220	10.1021/ie302926q
Xiong W., Wang J., Tang W., Kong W., Zeng Z., Ouyang J., Liu M., Wang G., Huang M., Xiong D.	Establishment of integrative circular agro-ecology system for multiple agricultural industries in Three Gorges Reservoir Area	Nongye Gongcheng Xuebao/Transactions of the Chinese Society of Agricultural Engineering	2013	29	14	203	209	10.3969/j.issn.1002-6819.2013.14.026
Trokanas N., Raafat T., Cecelja F., Kokossis A.	OFIS - Ontological Framework for Industrial Symbiosis	Computer Aided Chemical Engineering	2013	32		523	528	10.1016/B978-0-444-63234-0.50088-9
Zhu J., Ruth M.	Exploring the resilience of industrial ecosystems	Journal of Environmental Management	2013	122		65	75	10.1016/j.jenvman.2013.02.052
Zhang Y., Zheng H., Chen B., Yang N.	Social network analysis and network connectedness analysis for industrial symbiotic systems: Model development and case study	Frontiers of Earth Science	2013	7	2	169	181	10.1007/s11707-012-0349-4
Zhang H., Dong L., Li H.-Q., Chen B., Tang Q., Fujita T.	Investigation of the residual heat recovery and carbon emission mitigation potential in a Chinese steelmaking plant: A hybrid material/energy flow analysis case study	Sustainable Energy Technologies and Assessments	2013	2	1	67	80	10.1016/j.seta.2013.03.003

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Husgafvel R., Watkins G., Linkosalmi L., Dahl O.	Review of sustainability management initiatives within Finnish forest products industry companies - Translating Eu level steering into proactive initiatives	Resources, Conservation and Recycling	2013	76		1	11	10.1016/j.resconrec.2013.04.006
Pajunen N., Watkins G., Husgafvel R., Heiskanen K., Dahl O.	The challenge to overcome institutional barriers in the development of industrial residue based novel symbiosis products - Experiences from Finnish process industry	Minerals Engineering	2013	46-47		144	156	10.1016/j.mineng.2013.03.008
Hara K., Uwasu M., Yabar H., Zhang H.	Urban development and its impacts on energy and resource consumptions in the Yangtze river delta: Trends and future prospects	Yangtze River: Geography, Pollution and Environmental Implications	2013			121	127	
Boons F.	Ecological Modernization and Industrial Ecology	The Handbook of Global Companies	2013			388	402	10.1002/9781118326152.ch23
Feng L., Di J.H.	A new model of industrial symbiosis optimization	Hydraulic Engineering - Proceedings of the 2012 SREE Conference on Hydraulic Engineering, CHE 2012 and 2nd SREE Workshop on Environment and Safety Engineering, WESE 2012	2013			365	370	
Spekkink W.	Institutional capacity building for industrial symbiosis in the Canal Zone of Zeeland in the Netherlands: A process analysis	Journal of Cleaner Production	2013	52		342	355	10.1016/j.jclepro.2013.02.025

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Boons F.	Industrial Symbiosis and the Chemical Industry: Between Exploration and Exploitation	Management Principles of Sustainable Industrial Chemistry: Theories, Concepts and Industrial Examples for Achieving Sustainable Chemical Products and Processes from a Non-Technological Viewpoint	2013			131	145	10.1002/9783527649488.ch9
Montastruc L., Boix M., Pibouleau L., Azzaro-Pantel C., Domenech S.	On the flexibility of an eco-industrial park (EIP) for managing industrial water	Journal of Cleaner Production	2013	43		1	11	10.1016/j.jclepro.2012.12.039
Watkins G., Husgafvel R., Pajunen N., Dahl O., Heiskanen K.	Overcoming institutional barriers in the development of novel process industry residue based symbiosis products - Case study at the EU level	Minerals Engineering	2013	41		31	40	10.1016/j.mineng.2012.10.003
Termsinvanich P., Thadaniti S., Wiwattanadate D.	Conceptual model for effective implementation of industrial symbiosis: A case study of Mab-Ta-Phut industrial estate	Mediterranean Journal of Social Sciences	2013	4	1	133	139	10.5901/mjss.2013.v4n1p133
Albino V., Garavelli A.C., Romano V.A.	A Classification of industrial symbiosis networks: A focus on materials and energy recovery	IFIP Advances in Information and Communication Technology	2013	397	PART 1	216	223	10.1007/978-3-642-40352-1_28
Wang G., Feng X., Chu K.H.	A novel approach for stability analysis of industrial symbiosis systems	Journal of Cleaner Production	2013	39		9	16	10.1016/j.jclepro.2012.08.031
Antonopoulos I.S., Zouboulis A.I., Karagiannidis A., Samaras P.	Applying dpsir analysis as a decision support tool for fostering industrial symbiosis concept	Fresenius Environmental Bulletin	2013	22	12 C	3830	3839	

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Ng W.P.Q., Lam H.L.	Sustainable supply network design through optimisation with clustering technique integration	Chemical Engineering Transactions	2013	35		661	666	10.3303/CET1335110
Rankin W.J.	Towards zero waste production in the minerals and metals sector	TMS Annual Meeting	2013			392	403	
Gu C., Leveneur S., Estel L., Yassine A.	Modeling and optimization of material/energy flow exchanges in an eco-industrial park	Energy Procedia	2013	36		243	252	10.1016/j.egypro.2013.07.028
Mohammed F.A., Yao H.M., OludayoTadé M., Biswas W.	A framework for synergy evaluation and development in heavy industries	Re-Engineering Manufacturing for Sustainability - Proceedings of the 20th CIRP International Conference on Life Cycle Engineering	2013			591	595	
Gu C., Estel L., Yassine A., Leveneur S.	A multiobjective optimization model for designing and optimizing an ecological industrial park	Proceedings - International Conference on Natural Computation	2013			595	600	10.1109/ICNC.2013.6818046
Wood B.M., Jader L.R., Schendel F.J., Hahn N.J., Valentas K.J., Mcnamara P.J., Novak P.M., Heilmann S.M.	Industrial symbiosis: Corn ethanol fermentation, hydrothermal carbonization, and anaerobic digestion	Biotechnology and Bioengineering	2013	110	10	2624	2632	10.1002/bit.24924
Kreiger M.A., Shonnard D.R., Pearce J.M.	Life cycle analysis of silane recycling in amorphous silicon-based solar photovoltaic manufacturing	Resources, Conservation and Recycling	2013	70		44	49	10.1016/j.resconrec.2012.10.002
Jung S., Dodbiba G., Chae S.H., Fujita T.	A novel approach for evaluating the performance of eco-industrial park pilot projects	Journal of Cleaner Production	2013	39		50	59	10.1016/j.jclepro.2012.08.030

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Mohammed F.A., Biswas W.K., Yao H.M., Tadó M.O.	Assessment of industrial by-product synergies from process engineering and sustainability principles	Progress in Industrial Ecology	2013	8	3	156	165	10.1504/PIE.2013.060663
Romero E., Ruiz M.C.	Framework for applying a complex adaptive system approach to model the operation of eco-industrial parks	Journal of Industrial Ecology	2013	17	5	731	741	10.1111/jiec.12032
Patala S., Hämäläinen S., Jalkala A., Pesonen H.-L.	Towards a broader perspective on the forms of eco-industrial networks	Journal of Cleaner Production	2014	82		166	178	10.1016/j.jclepro.2014.06.059
Giurco D., Prior J., Boydell S.	Industrial ecology and carbon property rights	Journal of Cleaner Production	2014	80		211	223	10.1016/j.jclepro.2014.05.079
Short S.W., Bocken N.M., Barlow C.Y., Chertow M.R.	From refining sugar to growing tomatoes: Industrial ecology and business model evolution short et al. from refining sugar to growing tomatoes	Journal of Industrial Ecology	2014					10.1111/jiec.12171
Yu B., Li X., Shi L., Qian Y.	Quantifying CO2 emission reduction from industrial symbiosis in integrated steel mills in China	Journal of Cleaner Production	2014					10.1016/j.jclepro.2014.08.015
Chopra S.S., Khanna V.	Understanding resilience in industrial symbiosis networks: Insights from network analysis	Journal of Environmental Management	2014	141		86	94	10.1016/j.jenvman.2013.12.038
Schiller F., Penn A.S., Basson L.	Analyzing networks in industrial ecology - A review of Social-Material Network Analyses	Journal of Cleaner Production	2014	76		1	11	10.1016/j.jclepro.2014.03.029
Li W., Cui Z., Han F.	Methods for assessing the energy-saving efficiency of industrial symbiosis in industrial parks	Environmental Science and Pollution Research	2014					10.1007/s11356-014-3327-4
Li W., Cui Z., Han F.	Methods for assessing the energy-saving efficiency of industrial symbiosis in industrial parks	Environmental Science and Pollution Research	2014	22	1	275	285	10.1007/s11356-014-3327-4

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Trokanas N., Cecelja F., Raafat T.	Semantic input/output matching for waste processing in industrial symbiosis	Computers and Chemical Engineering	2014	66		259	268	10.1016/j.compchemeng.2014.02.010
Cerceau J., Mat N., Junqua G., Lin L., Laforest V., Gonzalez C.	Implementing industrial ecology in port cities: International overview of case studies and cross-case analysis	Journal of Cleaner Production	2014	74		1	16	10.1016/j.jclepro.2014.03.050
Harmsen J.	Novel sustainable industrial processes: From idea to commercial scale implementation	Green Processing and Synthesis	2014	3	3	189	193	10.1515/gps-2013-0102
Jiao W., Boons F.	Toward a research agenda for policy intervention and facilitation to enhance industrial symbiosis based on a comprehensive literature review	Journal of Cleaner Production	2014	67		14	25	10.1016/j.jclepro.2013.12.050
Simboli A., Taddeo R., Morgante A.	Analysing the development of Industrial Symbiosis in a motorcycle local industrial network: The role of contextual factors	Journal of Cleaner Production	2014	66		372	383	10.1016/j.jclepro.2013.11.045
Aviso K.B.	Design of robust water exchange networks for eco- industrial symbiosis	Process Safety and Environmental Protection	2014	92	2	160	170	10.1016/j.psep.2012.12.001
Zhu J., Ruth M.	The development of regional collaboration for resource efficiency: A network perspective on industrial symbiosis	Computers, Environment and Urban Systems	2014	44		37	46	10.1016/j.compenvurbsys.2013.11.001
Zhang B., Wang Z.	Inter-firm collaborations on carbon emission reduction within industrial chains in China: Practices, drivers and effects on firms' performances	Energy Economics	2014	42		115	131	10.1016/j.eneco.2013.12.006
Mirabella N., Castellani V., Sala S.	Current options for the valorization of food manufacturing waste: A review	Journal of Cleaner Production	2014	65		28	41	10.1016/j.jclepro.2013.10.051

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Gonela V., Zhang J.	Design of the optimal industrial symbiosis system to improve bioethanol production	Journal of Cleaner Production	2014	64		513	534	10.1016/j.jclepro.2013.07.059
Dong L., Gu F., Fujita T., Hayashi Y., Gao J.	Uncovering opportunity of low-carbon city promotion with industrial system innovation: Case study on industrial symbiosis projects in China	Energy Policy	2014	65		388	397	10.1016/j.enpol.2013.10.019
Park H.-S., Behera S.K.	Methodological aspects of applying eco-efficiency indicators to industrial symbiosis networks	Journal of Cleaner Production	2014	64		478	485	10.1016/j.jclepro.2013.08.032
Yu C., De Jong M., Dijkema G.P.J.	Process analysis of eco-industrial park development - The case of Tianjin, China	Journal of Cleaner Production	2014	64		464	477	10.1016/j.jclepro.2013.09.002
Tian J., Liu W., Lai B., Li X., Chen L.	Study of the performance of eco-industrial park development in China	Journal of Cleaner Production	2014	64		486	494	10.1016/j.jclepro.2013.08.005
Liu G.F., Ma Y.T.	Study on by-product synergy and eco-industrial parks in China based on american experience	Applied Mechanics and Materials	2014	472		884	888	10.4028/www.scientific.net/AMM.472.884
Romero E., Ruiz M.C.	Proposal of an agent-based analytical model to convert industrial areas in industrial eco-systems	Science of the Total Environment	2014	468-469		394	405	10.1016/j.scitotenv.2013.08.049
Notarnicola B., Tassielli G., Renzulli P.A.	Potential developments of industrial symbiosis in the Taranto productive district	Pathways to Environmental Sustainability: Methodologies and Experiences	2014			215	224	10.1007/978-3-319-03826-1_21
Teh B.T., Ho C.S., Matsuoka Y., Chau L.W., Gomi K.	Determinant factors of industrial symbiosis: Greening Pasir Gudang industrial park	IOP Conference Series: Earth and Environmental Science	2014	18	1			10.1088/1755-1315/18/1/012162

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Park J.Y., Park H.-S.	Securing a competitive advantage through industrial symbiosis development: The case of steam networking practices in Ulsan park and park competitive advantage and industrial symbiosis	Journal of Industrial Ecology	2014	18	5	677	683	10.1111/jiec.12158
Deutz P.	Food for thought: Seeking the essence of industrial symbiosis	Pathways to Environmental Sustainability: Methodologies and Experiences	2014			3	11	10.1007/978-3-319-03826-1_1
Trokanas N., Cecelja F., Yu M., Raafat T.	Optimising environmental performance of symbiotic networks using semantics	Computer Aided Chemical Engineering	2014	33		847	852	10.1016/B978-0-444-63456-6.50142-3
Zhang Y., Zheng H., Chen B., Su M., Liu G.	A review of industrial symbiosis research: theory and methodology	Frontiers of Earth Science	2014	9	1	91	104	10.1007/s11707-014-0445-8
Geng Y., Liu Z., Xue B., Dong H., Fujita T., Chiu A.	Emergy-based assessment on industrial symbiosis: a case of Shenyang Economic and Technological Development Zone	Environmental Science and Pollution Research	2014	21	23	13572	13587	10.1007/s11356-014-3287-8
Paquin R.L., Tilleman S.G., Howard-Grenville J.	Is there cash in that trash?: Factors influencing industrial symbiosis exchange initiation and completion	Journal of Industrial Ecology	2014	18	2	268	279	10.1111/jiec.12120
Xu S., Liu G., Lv W., Liu Y.	The nonlinear complementarity model of industrial symbiosis network equilibrium problem	RAIRO - Operations Research	2014	48	4	559	594	10.1051/ro/2014024
Boons F., Spekink W., Jiao W.	A Process Perspective on Industrial Symbiosis: Theory, Methodology, and Application Boons et al. A Process Perspective on Industrial Symbiosis	Journal of Industrial Ecology	2014	18	3	341	355	10.1111/jiec.12116
Trokanas N., Cecelja F., Raafat T.	Towards a re-usable ontology for waste processing	Computer Aided Chemical Engineering	2014	33		841	846	10.1016/B978-0-444-63456-6.50141-1

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Cutaia L., Morabito R., Barberio G., Mancuso E., Brunori C., Spezzano P., Mione A., Mungiguerra C., Li Rosi O., Cappello F.	The project for the implementation of the industrial symbiosis platform in sicily: The progress after the first year of operation	Pathways to Environmental Sustainability: Methodologies and Experiences	2014			205	214	10.1007/978-3-319-03826-1_20
Golev A., Corder G.D., Giurco D.P.	Industrial symbiosis in gladstone: A decade of progress and future development	Journal of Cleaner Production	2014	84	1	421	429	10.1016/j.jclepro.2013.06.054
Ng R.T.L., Ng D.K.S., Tan R.R., El-Halwagi M.M.	Disjunctive fuzzy optimisation for planning and synthesis of bioenergy-based industrial symbiosis system	Journal of Environmental Chemical Engineering	2014	2	1	652	664	10.1016/j.jece.2013.11.003
Schiller F., Penn A., Druckman A., Basson L., Royston K.	Exploring Space, Exploiting Opportunities: The Case for Analyzing Space in Industrial Ecology Schiller et al. Exploring Space, Exploiting Opportunities	Journal of Industrial Ecology	2014	18	6	792	798	10.1111/jiec.12140
Yu C., Davis C., Dijkema G.P.J.	Understanding the evolution of industrial symbiosis research: A bibliometric and network analysis (1997-2012)	Journal of Industrial Ecology	2014	18	2	280	293	10.1111/jiec.12073
Alfaro J., Miller S.	Applying Industrial Symbiosis to Smallholder Farms: Modeling a Case Study in Liberia, West Africa	Journal of Industrial Ecology	2014	18	1	145	154	10.1111/jiec.12077
Zou Y.-L., Li C.-F., Yao Z.-D., Cao Y.-Y.	AN research on energy management and cooperation performance in eco-industrial symbiosis network	Advanced Materials Research	2014	986-987		211	214	10.4028/www.scientific.net/AMR.986-987.211

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Ng R.T.L., Hassim M.H., Ng D.K.S., Tan R.R., El-Halwagi M.M.	Multi-objective design of industrial symbiosis in palm oil industry	Computer Aided Chemical Engineering	2014	34		579	584	10.1016/B978-0-444-63433-7.50081-X
Li C., Feng L.	Evolutionary game analysis of the eco-industrial symbiosis network considering externality	Complex Systems and Complexity Science	2014	11	3	58	64	10.13306/j.1672-3813.2014.03.009
Ng R.T.L., Wan Y.K., Ng D.K.S., Tan R.R.	Stability analysis of symbiotic bioenergy parks	Chemical Engineering Transactions	2014	39		859	864	10.3303/CET1439144
Noureldin M.B., Farooq Z., Al-Owaidh M., Al-Saed H.	New systematic approach using combined constraints logic propagation and mathematical programming techniques for energy efficient synthesis of eco-industrial parks	Process Development Division 2014 - Core Programming Area at the 2014 AIChE Annual Meeting	2014			305	307	
Benjamin M.F.D., Tan R.R., Razon L.F.	A methodology for criticality analysis in symbiotic bioenergy parks	Energy Procedia	2014	61		41	44	10.1016/j.egypro.2014.11.901
Ramli A., Mokhtar M., Aziz B.A., Ngah N.A.	The cooperative approach in managing safety issues for Halal industrial parks in Malaysia: Embracing opportunity	Progress in Industrial Ecology	2014	8	4	295	318	10.1504/PIE.2014.066805
Carmen Lenuta T.	Contributions to the foundation of a waste management plan on an area level	International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM	2014	3	5	95	101	
Short S.W., Bocken N.M.P., Barlow C.Y., Chertow M.R.	From refining sugar to growing tomatoes: Industrial ecology and business model evolution	Journal of Industrial Ecology	2014	18	5	603	618	10.1111/jiec.12171

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Arranz P., Anzizu M., Pineau A., Marwede M., Den Boer E., Den Boer J., Cocciantelli J.-M., Williams I.D., Obersteiner G., Scherhauser S., Vallvé X.	The development of a resourceefficient photovoltaic system	Proceedings of Institution of Civil Engineers: Waste and Resource Management	2014	167	3	109	122	10.1680/warm.13.00027
Steingrímsson J.G., Seliger G.	Conceptual framework for near-to-site waste cycle design	Procedia CIRP	2014	15		272	277	10.1016/j.procir.2014.06.014
Obersteiner G., Pertl A.	Waste Avoidance Through Industrial Symbiosis [Abfallvermeidung durch industrielle Symbiose]	Osterreichische Wasser- und Abfallwirtschaft	2014	66		417	423	10.1007/s00506-014-0191-x
Dong H., Ohnishi S., Fujita T., Geng Y., Fujii M., Dong L.	Achieving carbon emission reduction through industrial & urban symbiosis: A case of Kawasaki	Energy	2014	64		277	286	10.1016/j.energy.2013.11.005
Noureldin M.B., Farooq Z., Al-Owaidh M., Al-Saed H.	New systematic approach using combined constraints logic propagation and mathematical programming techniques for energy efficient synthesis of eco-industrial parks	Sustainable Engineering Forum 2014 - Core Programming Area at the 2014 AIChE Annual Meeting	2014			351	353	
Li X., Xiao R., Zeng Y., Yao Z.	Vulnerability analysis of symbiotic network in eco-industrial parks	Shengtai Xuebao/ Acta Ecologica Sinica	2014	34	16	4746	4755	10.5846/stxb201212191820
Eckelman M.J., Ashton W., Arakaki Y., Hanaki K., Nagashima S., Malone-Lee L.C.	Island waste management systems: Statistics, challenges, and opportunities for applied industrial ecology	Journal of Industrial Ecology	2014	18	2	306	317	10.1111/jiec.12113
Stubbs W.	Exploration of barriers to mainstreaming industrial ecosystems in Australia	Progress in Industrial Ecology	2014	8	4	319	335	10.1504/PIE.2014.066814

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Rosano M., Schianetz K.	Measuring sustainability performance in industrial parks: A case study of the Kwinana industrial area	International Journal of Sustainable Development	2014	17	3	261	280	10.1504/IJSD.2014.064181
Wang G., Feng X., Khim Hoong C.	Symbiosis analysis on industrial ecological system	Chinese Journal of Chemical Engineering	2014	22	6	690	698	10.1016/S1004-9541(14)60084-7
Dean C.A., Fath B.D., Chen B.	Indicators for an expanded business operations model to evaluate eco-smart corporate communities	Ecological Indicators	2014	47		137	148	10.1016/j.ecolind.2014.07.010
Campos T.R.T., Fonseca M.V.A., Morais R.M.N.	Reverse logistics: A route that only makes sense when adopting a systemic vision	WIT Transactions on Ecology and the Environment	2014	180		41	52	10.2495/WM140041
Kikuchi Y., Kimura S., Okamoto Y., Koyama M.	A scenario analysis of future energy systems based on an energy flow model represented as functionals of technology options	Applied Energy	2014	132		586	601	10.1016/j.apenergy.2014.07.005
Spekkink W.	Building capacity for sustainable regional industrial systems: An event sequence analysis of developments in the Sloe Area and Canal Zone	Journal of Cleaner Production	2014					10.1016/j.jclepro.2014.08.028
Cecelja F., Trokanas N., Raafat T., Yu M.	Semantic algorithm for Industrial Symbiosis network synthesis	Computers and Chemical Engineering	2015	83		248	266	10.1016/j.compchemeng.2015.04.031
Chen P.-C., Ma H.-W.	Using an Industrial Waste Account to Facilitate National Level Industrial Symbioses by Uncovering the Waste Exchange Potential	Journal of Industrial Ecology	2015	19	6	950	962	10.1111/jiec.12236
Meylan F.D., Moreau V., Erkman S.	CO2 utilization in the perspective of industrial ecology, an overview	Journal of CO2 Utilization	2015	12		101	108	10.1016/j.jcou.2015.05.003
Patrício J., Costa I., Niza S.	Urban material cycle closing - Assessment of industrial waste management in Lisbon region	Journal of Cleaner Production	2015	106		389	399	10.1016/j.jclepro.2014.08.069

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Kwon G.-R., Woo S.H., Lim S.-R.	Industrial ecology-based strategies to reduce the embodied CO2 of magnesium metal	Resources, Conservation and Recycling	2015	104		206	212	10.1016/j.resconrec.2015.08.008
Spekkink W.	Varieties of industrial symbiosis	International Perspectives on Industrial Ecology	2015			142	156	10.4337/9781781003572.00017
Patchell J.	Intersection of industrial symbiosis and product-based industrial ecologies: Considerations from the Japanese home appliance industry	International Perspectives on Industrial Ecology	2015			175	190	10.4337/9781781003572.00019
Wang Q., Deutz P., Gibbs D.	UK-China collaboration for industrial symbiosis: A multi-level approach to policy transfer analysis	International Perspectives on Industrial Ecology	2015			89	107	10.4337/9781781003572.00014
Olayide O.E.	Industrial ecology, industrial symbiosis and eco-industrial parks in Africa: Issues for sustainable development	International Perspectives on Industrial Ecology	2015			30	45	10.4337/9781781003572.00011
Boons F., Spekkink W., Isenmann R., Baas L., Eklund M., Brullot S., Deutz P., Gibbs D., Massard G., Arozamena E.R., Puente C.R., Verguts V., Davis C., Korevaar G., Costa I., Baumann H.	Comparing industrial symbiosis in Europe: Towards a conceptual framework and research methodology	International Perspectives on Industrial Ecology	2015			69	88	10.4337/9781781003572.00013
Deutz P., Lyons D.I., Bi J.	International perspectives on industrial ecology	International Perspectives on Industrial Ecology	2015			1	249	10.4337/9781781003572

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Iacondini A., Mencherini U., Passarini F., Vassura I., Fanelli A., Cibotti P.	Feasibility of Industrial Symbiosis in Italy as an Opportunity for Economic Development: Critical Success Factor Analysis, Impact and Constrains of the Specific Italian Regulations	Waste and Biomass Valorization	2015	6	5	865	874	10.1007/s12649-015-9380-5
Madsen J.K., Boisen N., Nielsen L.U., Tackmann L.H.	Industrial Symbiosis Exchanges: Developing a Guideline to Companies	Waste and Biomass Valorization	2015	6	5	855	864	10.1007/s12649-015-9417-9
Zoccola M., Montarsolo A., Mossotti R., Patrucco A., Tonin C.	Green Hydrolysis as an Emerging Technology to Turn Wool Waste into Organic Nitrogen Fertilizer	Waste and Biomass Valorization	2015	6	5	891	897	10.1007/s12649-015-9393-0
Lombardi L., Carnevale E., Baciocchi R., Costa G.	Biogas Upgrading by a Combination of Innovative Treatments Based on Carbonation of Waste Incineration Residues	Waste and Biomass Valorization	2015	6	5	791	803	10.1007/s12649-015-9413-0
Earley K.	Industrial symbiosis: Harnessing waste energy and materials for mutual benefit	Renewable Energy Focus	2015	16	4	75	77	10.1016/j.ref.2015.09.011
Atkins M.J., Walmsley M.R.W., Walmsley T.G., Neale J.R.	Integration of biomass conversion technologies and geothermal heat into a model wood processing cluster	Chemical Engineering Transactions	2015	45		169	174	10.3303/CET1545029
Gonela V., Zhang J., Osmani A.	Stochastic optimization of sustainable industrial symbiosis based hybrid generation bioethanol supply chains	Computers and Industrial Engineering	2015	87		40	65	10.1016/j.cie.2015.04.025
Abate S., Lanzafame P., Perathoner S., Centi G.	New Sustainable Model of Biorefineries: Biofactories and Challenges of Integrating Bio- and Solar Refineries	ChemSusChem	2015	8	17	2854	2866	10.1002/cssc.201500277

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Benjamin M.F.D., Ubando A.T., Razon L.F., Tan R.R.	Analyzing the disruption resilience of bioenergy parks using dynamic inoperability input–output modeling	Environment Systems and Decisions	2015	35	3	351	362	10.1007/s10669-015-9562-5
Zhang Y., Zheng H., Fath B.D.	Ecological network analysis of an industrial symbiosis system: A case study of the Shandong Lubei eco-industrial park	Ecological Modelling	2015	306		174	184	10.1016/j.ecolmodel.2014.05.005
Beloborodko A., Rosa M.	The Use of Performance Indicators for Analysis of Resource Efficiency Measures	Energy Procedia	2015	72		337	344	10.1016/j.egypro.2015.06.049
Yu C., Dijkema G.P.J., de Jong M.	What Makes Eco-Transformation of Industrial Parks Take Off in China?	Journal of Industrial Ecology	2015	19	3	441	456	10.1111/jiec.12185
Lopes M.S.G.	Engineering biological systems toward a sustainable bioeconomy	Journal of Industrial Microbiology and Biotechnology	2015	42	6	813	838	10.1007/s10295-015-1606-9
Rončević B., Fric U.	Researching industrial symbiosis: Challenges and dilemmas	Applied Modelling and Computing in Social Sciences	2015			35	49	10.3726/978-3-653-05821-5
Päivärinne S., Hjelm O., Gustafsson S.	Excess heat supply collaborations within the district heating sector: Drivers and barriers	Journal of Renewable and Sustainable Energy	2015	7	3			10.1063/1.4921759
Li Y., Shi L.	The Resilience of Interdependent Industrial Symbiosis Networks: A Case of Yixing Economic and Technological Development Zone	Journal of Industrial Ecology	2015	19	2	264	273	10.1111/jiec.12267
Chandra-Putra H., Chen J., Andrews C.J.	Eco-Evolutionary Pathways Toward Industrial Cities	Journal of Industrial Ecology	2015	19	2	274	284	10.1111/jiec.12234
Strazza C., Magrassi F., Gallo M., Del Borghi A.	Life Cycle Assessment from food to food: A case study of circular economy from cruise ships to aquaculture	Sustainable Production and Consumption	2015	2		40	51	10.1016/j.spc.2015.06.004

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Simboli A., Taddeo R., Morgante A.	The potential of Industrial Ecology in agri-food clusters (AFCs): A case study based on valorisation of auxiliary materials	Ecological Economics	2015	111		65	75	10.1016/j.ecolecon.2015.01.005
Bakshi B.R., Ziv G., Lepech M.D.	Techno-ecological synergy: A framework for sustainable engineering	Environmental Science and Technology	2015	49	3	1752	1760	10.1021/es5041442
Lam H.L., How B.S., Hong B.H.	Green supply chain toward sustainable industry development	Assessing and Measuring Environmental Impact and Sustainability	2015			409	449	10.1016/B978-0-12-799968-5.00012-9
Yu F., Han F., Cui Z.	Evolution of industrial symbiosis in an eco-industrial park in China	Journal of Cleaner Production	2015	87	C	339	347	10.1016/j.jclepro.2014.10.058
Chertow M., Park J.	Scholarship and practice in industrial symbiosis: 1989–2014	Taking Stock of Industrial Ecology	2015			87	116	10.1007/978-3-319-20571-7_5
Cecelja F., Raafat T., Trokanas N., Innes S., Smith M., Yang A., Zorgios Y., Korkofygas A., Kokossis A.	E-Symbiosis: Technology-enabled support for Industrial Symbiosis targeting Small and Medium Enterprises and innovation	Journal of Cleaner Production	2015	98		336	352	10.1016/j.jclepro.2014.08.051
Martin M., Svensson N., Eklund M.	Who gets the benefits? An approach for assessing the environmental performance of industrial symbiosis	Journal of Cleaner Production	2015	98		263	271	10.1016/j.jclepro.2013.06.024
Hein A.M., Jankovic M., Farel R., Sam Lei I., Yannou B.	Modeling industrial symbiosis using design structure matrices	Modeling and Managing Complex Systems - Proceedings of the 17th International DSM Conference	2015			209	219	
Paquin R.L., Busch T., Tilleman S.G.	Creating economic and environmental value through industrial symbiosis	Long Range Planning	2015	48	2	95	107	10.1016/j.lrp.2013.11.002

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Martin M.	Quantifying the environmental performance of an industrial symbiosis network of biofuel producers	Journal of Cleaner Production	2015	102		202	212	10.1016/j.jclepro.2015.04.063
Gaidajis G., Kakanis I.	Examination of industrial symbiosis potential interactions in an industrial area of NE greece	Journal of Engineering Science and Technology Review	2015	8	3	130	135	
Bertels S., Bowen F.	Taking Stock, Looking Ahead: Editors' Introduction to the Inaugural Organization & Environment Review Issue	Organization and Environment	2015	28	1	3	7	10.1177/1086026615576798
Liu C., Côté R.P., Zhang K.	Implementing a three-level approach in industrial symbiosis	Journal of Cleaner Production	2015	87	1	318	327	10.1016/j.jclepro.2014.09.067
Spekkink W.	Building capacity for sustainable regional industrial systems: An event sequence analysis of developments in the Sloe Area and Canal Zone	Journal of Cleaner Production	2015	98		133	144	10.1016/j.jclepro.2014.08.028
Bin S., Zhiquan Y., Jonathan L.S.C., Jiewei D.K., Kurle D., Cerdas F., Herrmann C.	A big data analytics approach to develop industrial symbioses in large cities	Procedia CIRP	2015	29		450	455	10.1016/j.procir.2015.01.066
Aid G., Brandt N., Lysenkova M., Smedberg N.	Looplocal - A heuristic visualization tool to support the strategic facilitation of industrial symbiosis	Journal of Cleaner Production	2015	98		328	335	10.1016/j.jclepro.2014.08.012
Trokanas N., Cecelja F., Raafat T.	Semantic approach for pre-assessment of environmental indicators in Industrial Symbiosis	Journal of Cleaner Production	2015	96		349	361	10.1016/j.jclepro.2013.12.046
Rosa M., Beloborodko A.	A decision support method for development of industrial synergies: Case studies of Latvian brewery and wood-processing industries	Journal of Cleaner Production	2015	105		461	470	10.1016/j.jclepro.2014.09.061

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Leigh M., Li X.	Industrial ecology, industrial symbiosis and supply chain environmental sustainability: A case study of a large UK distributor	Journal of Cleaner Production	2015	106		632	643	10.1016/j.jclepro.2014.09.022
Trokanas N., Bussemaker M., Velliou E., Tokos H., Cecelja F.	BiOnto: An Ontology for Biomass and Biorefining Technologies	Computer Aided Chemical Engineering	2015	37		959	964	10.1016/B978-0-444-63577-8.50005-X
Chudobiecki J., Wanat L.	Industrial symbiosis and green business parks in the wood-based sector in Poland	Wood Processing and Furniture Manufacturing Challenges on the World Market and Wood-Based Energy Goes Global - Proceedings of Scientific Papers	2015			221	228	
Albino V., Fraccascia L., Savino T.	Industrial Symbiosis for a Sustainable City: Technical, Economical and Organizational Issues	Procedia Engineering	2015	118		950	957	10.1016/j.proeng.2015.08.536
Bailey M., Gadd A.	Quantifying the potential of industrial symbiosis: The LOCIMAP project, with applications in the humber region	Taking Stock of Industrial Ecology	2015			343	357	10.1007/978-3-319-20571-7_19
Yu B., Li X., Shi L., Qian Y.	Quantifying CO2 emission reduction from industrial symbiosis in integrated steel mills in China	Journal of Cleaner Production	2015	103		801	810	10.1016/j.jclepro.2014.08.015
Wu J., Li C., Yang F.	The disposition of chromite ore processing residue (COPR) incorporating industrial symbiosis	Journal of Cleaner Production	2015	95		156	162	10.1016/j.jclepro.2015.02.041
Walls J.L., Paquin R.L.	Organizational Perspectives of Industrial Symbiosis: A Review and Synthesis	Organization and Environment	2015	28	1	32	53	10.1177/1086026615575333

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Golev A., Corder G.D., Giurco D.P.	Barriers to Industrial Symbiosis: Insights from the Use of a Maturity Grid	Journal of Industrial Ecology	2015	19	1	141	153	10.1111/jiec.12159
Puente M.C.R., Arozamena E.R., Evans S.	Industrial symbiosis opportunities for small and medium sized enterprises: Preliminary study in the Besaya Region (Cantabria, Northern Spain)	Journal of Cleaner Production	2015	87	C	357	374	10.1016/j.jclepro.2014.10.046
Hein A.M., Jankovic M., Farel R., Yannou B.	A conceptual framework for eco-industrial parks	Proceedings of the ASME Design Engineering Technical Conference	2015	4				10.1115/DETC2015-46322
Yu F., Han F., Cui Z.	Reducing carbon emissions through industrial symbiosis: A case study of a large enterprise group in China	Journal of Cleaner Production	2015	103		811	818	10.1016/j.jclepro.2014.05.038
Yu F., Han F., Cui Z.	Assessment of life cycle environmental benefits of an industrial symbiosis cluster in China	Environmental Science and Pollution Research	2015	22	7	5511	5518	10.1007/s11356-014-3712-z
Tsvetkova A., Hellström M., Gustafsson M., Sjöblom J.	Replication of industrial ecosystems: The case of a sustainable biogas-for-traffic solution	Journal of Cleaner Production	2015	98		123	132	10.1016/j.jclepro.2014.08.089
Päivärinne S., Lindahl M.	Exploratory study of combining Integrated Product and Services Offerings with Industrial Symbiosis in order to improve Excess Heat utilization	Procedia CIRP	2015	30		167	172	10.1016/j.procir.2015.02.101
Ammenberg J., Baas L., Eklund M., Feiz R., Helgstrand A., Marshall R.	Improving the CO ₂ performance of cement, part III: The relevance of industrial symbiosis and how to measure its impact	Journal of Cleaner Production	2015	98		145	155	10.1016/j.jclepro.2014.01.086

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Wen Z., Meng X.	Quantitative assessment of industrial symbiosis for the promotion of circular economy: A case study of the printed circuit boards industry in China's Suzhou New District	Journal of Cleaner Production	2015	90		211	219	10.1016/j.jclepro.2014.03.041
Li H., Dong L., Ren J.	Industrial symbiosis as a countermeasure for resource dependent city: A case study of Guiyang, China	Journal of Cleaner Production	2015	107		252	266	10.1016/j.jclepro.2015.04.089
Kennedy C.A.	Industrial ecology and cities	Taking Stock of Industrial Ecology	2015			69	86	10.1007/978-3-319-20571-7_4
Dong L., Fujita T.	Promotion of low-carbon city through industrial and urban system innovation: Japanese experience and China's practice	World Scientific Reference on Asia and the World Economy	2015			257	279	10.1142/9789814578622_0033
Puente M.C.R., Arozamena E.R., Evans S.	Industrial symbiosis opportunities for small and medium sized enterprises: Preliminary study in the Besaya region (Cantabria, Northern Spain)	Journal of Cleaner Production	2015	87	1	357	374	10.1016/j.jclepro.2014.09.046
Cutaia L., Luciano A., Barberio G., Scaffoni S., Mancuso E., Scagliarino C., La Monica M.	The experience of the first industrial symbiosis platform in Italy	Environmental Engineering and Management Journal	2015	14	7	1521	1533	
Aviso K.B., Chiu A.S.F., Yu K.D.S., Promentilla M.A.B., Razon L.F., Ubando A.T., Sy C.L., Tan R.R.	P-graph for optimising industrial symbiotic networks	Chemical Engineering Transactions	2015	45		1345	1350	10.3303/CET1545225

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Vardanega R., Prado J.M., Meireles M.A.A.	Adding value to agri-food residues by means of supercritical technology	Journal of Supercritical Fluids	2015	96		217	227	10.1016/j.supflu.2014.09.029
Cerdas F., Kurle D., Andrew S., Thiede S., Herrmann C., Zhiquan Y., Jonathan L.S.C., Bin S., Kara S.	Defining circulation factories - A pathway towards factories of the future	Procedia CIRP	2015	29		627	632	10.1016/j.procir.2015.02.032
Wang H., Xu X., Zhu G.	Landscape changes and a salt production sustainable approach in the state of salt pan area decreasing on the coast of Tianjin, China	Sustainability (Switzerland)	2015	7	8	10078	10097	10.3390/su70810078
Daddi T., Tessitore S., Testa F.	Industrial ecology and eco-industrial development: Case studies from Italy	Progress in Industrial Ecology	2015	9	3	217	233	10.1504/PIE.2015.073414
Deutz P., Ioppolo G.	From theory to practice: Enhancing the potential policy impact of industrial ecology	Sustainability (Switzerland)	2015	7	2	2259	2273	10.3390/su7022259
[No author name available]	Modeling and Managing Complex Systems - Proceedings of the 17th International DSM Conference	Modeling and Managing Complex Systems - Proceedings of the 17th International DSM Conference	2015					
Liu J., Nie X., Zhou C., Shi Y., Liu R.	The design of agri-industrial ecological park: A case study of Zhengzhou national economic-technological development area	Shengtai Xuebao/ Acta Ecologica Sinica	2015	35	14	4891	4896	10.5846/stxb201311242804
Graedel T.E., Lifset R.J.	Industrial ecology's first decade	Taking Stock of Industrial Ecology	2015			3	20	10.1007/978-3-319-20571-7_1
Adiansyah J.S., Rosano M., Vink S., Keir G.	A framework for a sustainable approach to mine tailings management: Disposal strategies	Journal of Cleaner Production	2015	108		1	13	10.1016/j.jclepro.2015.07.139

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Benjamin M.F., Ubando A., Razon L., Tan R.R.	Analyzing the disruption resilience of microalgal multi- functional Bioenergy systems using dynamic inoperability input-output modeling	Chemical Engineering Transactions	2015	45		1579	1584	10.3303/CET1545264
Johnson J.A.	Dilemmas of 19th-century liberalism among German academic chemists: Shaping a national science policy from Hofmann to Fischer, 1865- 1919	Annals of Science	2015	72	2	224	241	10.1080/00033790.2015.1007525
Mannino I., Ninka E., Turvani M., Chertow M.	The decline of eco-industrial development in Porto Marghera, Italy	Journal of Cleaner Production	2015	100		286	296	10.1016/j.jclepro.2015.03.054
Qu Y., Liu Y., Nayak R.R., Li M.	Sustainable development of eco-industrial parks in China: Effects of managers' environmental awareness on the relationships between practice and performance	Journal of Cleaner Production	2015	87	1	328	338	10.1016/j.jclepro.2014.09.015
Ubando A.T., Culaba A.B., Aviso K.B., Tan R.R., Cuello J.L., Ng D.K.S., El- Halwagi M.M.	Fuzzy mathematical programming approach in the optimal design of an algal bioenergy park	Chemical Engineering Transactions	2015	45		355	360	10.3303/CET1545060
Olsson L., Wetterlund E., Söderström M.	Assessing the climate impact of district heating systems with combined heat and power production and industrial excess heat	Resources, Conservation and Recycling	2015	96		31	39	10.1016/j.resconrec.2015.01.006
Li W., Cui Z., Han F.	Methods for assessing the energy-saving efficiency of industrial symbiosis in industrial parks	Environmental science and pollution research international	2015	22	1	275	285	10.1007/s11356-014-3327-4

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Feiz R., Ammenberg J., Baas L., Eklund M., Helgstrand A., Marshall R.	Improving the CO ₂ performance of cement, part II: Framework for assessing CO ₂ improvement measures in the cement industry	Journal of Cleaner Production	2015	98		282	291	10.1016/j.jclepro.2014.01.103
Tan R.R., Ng R.T.L., Andiappan V., Wan Y.K., Ng D.K.S.	An optimization-based cooperative game approach for allocation of costs and benefits in interplant process integration	Chemical Engineering Transactions	2015	45		403	408	10.3303/CET1545068
Ferrão P., Lorena A., Ribeiro P.	Industrial ecology and portugal's national waste plans	Taking Stock of Industrial Ecology	2015			275	289	10.1007/978-3-319-20571-7_14
Boix M., Montastruc L., Azzaro-Pantel C., Domenech S.	Optimization methods applied to the design of eco-industrial parks: A literature review	Journal of Cleaner Production	2015	87	1	303	317	10.1016/j.jclepro.2014.09.032
Gregson N., Crang M., Fuller S., Holmes H.	Interrogating the circular economy: the moral economy of resource recovery in the EU	Economy and Society	2015	44	2	218	243	10.1080/03085147.2015.1013353
Noureldin M.M.B., El- Halwagi M.M.	Synthesis of C-H-O Symbiosis Networks	AIChE Journal	2015	61	4	1242	1262	10.1002/aic.14714
Duraccio V., Gnoni M.G., Elia V.	Carbon capture and reuse in an industrial district: A technical and economic feasibility study	Journal of CO ₂ Utilization	2015	10		23	29	10.1016/j.jcou.2015.02.004
Schieb P.-A., Lescieux-Katir H., Thénot M., Clément- Larosière B.	Biorefinery 2030: Future prospects for the bioeconomy	Biorefinery 2030: Future Prospects for the Bioeconomy	2015			1	123	10.1007/978-3-662-47374-0
Ferrell J.C., Shahbazi A.	County government led EIP development using municipal biomass resources for clean energy production, a case study of the Catawba County North Carolina ecocomplex	Progress in Industrial Ecology	2015	9	1	69	81	10.1504/PIE.2015.069835

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Silva C.M.A., Nielsen C.V., Alves L.M., Martins P.A.F.	Environmentally friendly joining of tubes by their ends	Journal of Cleaner Production	2015	87	1	777	786	10.1016/j.jclepro.2014.09.022
Rao P., Patil Y.	Climate resilience in natural ecosystems in india: Technology adoption and the use of local knowledge processes and systems	Handbook of Climate Change Adaptation	2015			2063	2077	10.1007/978-3-642-38670-1_95
Marinos-Kouris D., Mourtsiadis A.	Environment and recycling: Some comments on the entropy limits	Fresenius Environmental Bulletin	2015	24	3B	1158	1163	
Baas L., Hjelm O.	Support your future today: Enhancing sustainable transitions by experimenting at academic conferences	Journal of Cleaner Production	2015	98		1	7	10.1016/j.jclepro.2015.02.059
Røyne F., Berlin J., Ringström E.	Life cycle perspective in environmental strategy development on the industry cluster level: A case study of five chemical companies	Journal of Cleaner Production	2015	86		125	131	10.1016/j.jclepro.2014.08.016
Lenhart J., Van Vliet B., Mol A.P.J.	New roles for local authorities in a time of climate change: The Rotterdam Energy Approach and Planning as a case of urban symbiosis	Journal of Cleaner Production	2015	107		593	601	10.1016/j.jclepro.2015.05.026
Zhang Y., Zheng H., Yang Z., Liu G., Su M.	Analysis of the industrial metabolic processes for sulfur in the Lubei (Shandong Province, China) eco-industrial park	Journal of Cleaner Production	2015	96		127	138	10.1016/j.jclepro.2014.01.096
Sahakian M.	The social and solidarity economy: Why is it relevant to industrial ecology?	Taking Stock of Industrial Ecology	2015			205	227	10.1007/978-3-319-20571-7_10
Benjamin M.F.D., Tan R.R., Razon L.F.	A methodology for criticality analysis in integrated energy systems	Clean Technologies and Environmental Policy	2015	17	4	935	946	10.1007/s10098-014-0846-0
Maillé M., Frayret J.-M.	Industrial Waste Reuse and By-product Synergy Optimization	Journal of Industrial Ecology	2016	20	6	1284	1294	10.1111/jiec.12403

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Papathanasoglou A., Panagiotidou M., Valta K., Loizidou M.	RESEARCH ARTICLE: Institutional Barriers and Opportunities for the Implementation of Industrial Symbiosis in Greece	Environmental Practice	2016	18	4	253	259	10.1017/S1466046616000454
Wu J., Wang R., Pu G., Qi H.	Integrated assessment of exergy, energy and carbon dioxide emissions in an iron and steel industrial network	Applied Energy	2016	183		430	444	10.1016/j.apenergy.2016.08.192
Zhang B., Wang Z., Lai K.-H.	Does Industrial Waste Reuse Bring Dual Benefits of Economic Growth and Carbon Emission Reduction?: Evidence of Incorporating the Indirect Effect of Economic Growth in China	Journal of Industrial Ecology	2016	20	6	1306	1319	10.1111/jiec.12375
Ubando A.T., Culaba A.B., Aviso K.B., Tan R.R., Cuello J.L., Ng D.K.S., El-Halwagi M.M.	Fuzzy mixed integer non-linear programming model for the design of an algae-based eco-industrial park with prospective selection of support tenants under product price variability	Journal of Cleaner Production	2016	136		183	196	10.1016/j.jclepro.2016.04.143
Peter Sahay S.S., Dash S.N., Joga Rao H.	Economical benefit through industrial symbiosis: Trash to treasure: A case study in an Indian industrial area	Research Journal of Pharmaceutical, Biological and Chemical Sciences	2016	7	6	932	937	
Wu J., Qi H., Wang R.	Insight into industrial symbiosis and carbon metabolism from the evolution of iron and steel industrial network	Journal of Cleaner Production	2016	135		251	262	10.1016/j.jclepro.2016.06.103
Guo B., Geng Y., Sterr T., Dong L., Liu Y.	Evaluation of promoting industrial symbiosis in a chemical industrial park: A case of Midong	Journal of Cleaner Production	2016	135		995	1008	10.1016/j.jclepro.2016.07.006

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Pan H., Zhang X., Wang Y., Qi Y., Wu J., Lin L., Peng H., Qi H., Yu X., Zhang Y.	Emergy evaluation of an industrial park in Sichuan Province, China: A modified emergy approach and its application	Journal of Cleaner Production	2016	135		105	118	10.1016/j.jclepro.2016.06.102
Álvarez R., Ruiz-Puente C.	Development of the Tool SymbioSyS to Support the Transition Towards a Circular Economy Based on Industrial Symbiosis Strategies	Waste and Biomass Valorization	2016			1	10	10.1007/s12649-016-9748-1
Taylor C.D., Gully B., Sánchez A.N., Rode E., Agarwal A.S.	Towards materials sustainability through materials stewardship	Sustainability (Switzerland)	2016	8	10			10.3390/su8101001
Atkins M.J., Walmsley M.R.W., Walmsley T.G.	Integration of new processes and geothermal heat into a wood processing cluster	Clean Technologies and Environmental Policy	2016	18	7	2077	2085	10.1007/s10098-016-1171-6
Taddeo R.	Local industrial systems towards the eco-industrial parks: The model of the ecologically equipped industrial areas	Journal of Cleaner Production	2016	131		189	197	10.1016/j.jclepro.2016.05.051
Hodgson E., Ruiz-Molina M.-E., Marazza D., Pogrebnyakova E., Burns C., Higson A., Rehberger M., Hiete M., Gyalai-Korpos M., Lucia L.D., Noël Y., Woods J., Gallagher J.	Horizon scanning the European bio-based economy: a novel approach to the identification of barriers and key policy interventions from stakeholders in multiple sectors and regions	Biofuels, Bioproducts and Biorefining	2016	10	5	508	522	10.1002/bbb.1665
Ren J., Liang H., Dong L., Sun L., Gao Z.	Design for sustainability of industrial symbiosis based on emergy and multi-objective particle swarm optimization	Science of the Total Environment	2016	562		789	801	10.1016/j.scitotenv.2016.04.092

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Secchi M., Castellani V., Collina E., Mirabella N., Sala S.	Assessing eco-innovations in green chemistry: Life Cycle Assessment (LCA) of a cosmetic product with a bio-based ingredient	Journal of Cleaner Production	2016	129		269	281	10.1016/j.jclepro.2016.04.073
Velenturf A.P.M.	Promoting industrial symbiosis: empirical observations of low-carbon innovations in the Humber region, UK	Journal of Cleaner Production	2016	128		116	130	10.1016/j.jclepro.2015.06.027
Luciano A., Barberio G., Mancuso E., Sbaffoni S., La Monica M., Scagliarino C., Cutaia L.	Potential Improvement of the Methodology for Industrial Symbiosis Implementation at Regional Scale	Waste and Biomass Valorization	2016	7	4	1007	1015	10.1007/s12649-016-9625-y
Velenturf A.P.M., Jensen P.D.	Promoting Industrial Symbiosis: Using the Concept of Proximity to Explore Social Network Development	Journal of Industrial Ecology	2016	20	4	700	709	10.1111/jiec.12315
Renzulli P.A., Notarnicola B., Tassielli G., Arcese G., Di Capua R.	Life cycle assessment of steel produced in an Italian integrated steel mill	Sustainability (Switzerland)	2016	8	8			10.3390/su8080719
Liu Z.-Y., Varbanov P.S., Klemeš J.J., Yong J.Y.	Recent developments in applied thermal engineering: Process integration, heat exchangers, enhanced heat transfer, solar thermal energy, combustion and high temperature processes and thermal process modelling	Applied Thermal Engineering	2016	105		755	762	10.1016/j.applthermaleng.2016.06.183
Päivärinne S., Lindahl M.	Combining Integrated Product and Service Offerings with Industrial Symbiosis – a study of opportunities and challenges	Journal of Cleaner Production	2016	127		240	248	10.1016/j.jclepro.2016.04.026

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Bacudio L.R., Benjamin M.F.D., Eusebio R.C.P., Holaysan S.A.K., Promentilla M.A.B., Yu K.D.S., Aviso K.B.	Analyzing barriers to implementing industrial symbiosis networks using DEMATEL	Sustainable Production and Consumption	2016	7		57	65	10.1016/j.spc.2016.03.001
Hu Y., Lin J., Cui S., Khanna N.Z.	Measuring Urban Carbon Footprint from Carbon Flows in the Global Supply Chain	Environmental Science and Technology	2016	50	12	6154	6163	10.1021/acs.est.6b00985
Zhang Y., Zheng H., Shi H., Yu X., Liu G., Su M., Li Y., Chai Y.	Network analysis of eight industrial symbiosis systems	Frontiers of Earth Science	2016	10	2	352	365	10.1007/s11707-015-0520-9
Felicio M., Amaral D., Esposto K., Gabarrell Durany X.	Industrial symbiosis indicators to manage eco-industrial parks as dynamic systems	Journal of Cleaner Production	2016	118		54	64	10.1016/j.jclepro.2016.01.031
Kikuchi Y., Kanematsu Y., Ugo M., Hamada Y., Okubo T.	Industrial Symbiosis Centered on a Regional Cogeneration Power Plant Utilizing Available Local Resources: A Case Study of Tanegashima	Journal of Industrial Ecology	2016	20	2	276	288	10.1111/jiec.12347
Kikuchi Y., Kanematsu Y., Sato R., Nakagaki T.	Distributed Cogeneration of Power and Heat within an Energy Management Strategy for Mitigating Fossil Fuel Consumption	Journal of Industrial Ecology	2016	20	2	289	303	10.1111/jiec.12374
Ohnishi S., Fujii M., Ohata M., Rokuta I., Fujita T.	Efficient energy recovery through a combination of waste-to-energy systems for a low-carbon city	Resources, Conservation and Recycling	2016					10.1016/j.resconrec.2016.11.018

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Liu Z., Adams M., Cote R.P., Geng Y., Li Y.	Comparative study on the pathways of industrial parks towards sustainable development between China and Canada	Resources, Conservation and Recycling	2016					10.1016/j.resconrec.2016.06.012
Kliopova I., Baranauskaite-Fedorova I., Malinauskiene M., Staniškis J.K.	Possibilities of increasing resource efficiency in nitrogen fertilizer production	Clean Technologies and Environmental Policy	2016	18	3	901	914	10.1007/s10098-015-1068-9
Liu G., Hao Y., Zhou Y., Yang Z., Zhang Y., Su M.	China's low-carbon industrial transformation assessment based on Logarithmic Mean Divisia Index model	Resources, Conservation and Recycling	2016	108		156	170	10.1016/j.resconrec.2016.02.002
Ghali M.R., Frayret J.-M., Robert J.-M.	Green social networking: Concept and potential applications to initiate industrial synergies	Journal of Cleaner Production	2016	115		23	35	10.1016/j.jclepro.2015.12.028
Sun L., Li H., Dong L., Fang K., Ren J., Geng Y., Fujii M., Zhang W., Zhang N., Liu Z.	Eco-benefits assessment on urban industrial symbiosis based on material flows analysis and emergy evaluation approach: A case of Liuzhou city, China	Resources, Conservation and Recycling	2016					10.1016/j.resconrec.2016.06.007
Zhe L., Yong G., Hung-Suck P., Huijuan D., Liang D., Tsuyoshi F.	An emergy-based hybrid method for assessing industrial symbiosis of an industrial park	Journal of Cleaner Production	2016	114		132	140	10.1016/j.jclepro.2015.04.132
Shiraki H., Ashina S., Kameyama Y., Hashimoto S., Fujita T.	Analysis of optimal locations for power stations and their impact on industrial symbiosis planning under transition toward low-carbon power sector in Japan	Journal of Cleaner Production	2016	114		81	94	10.1016/j.jclepro.2015.09.079
Park J.M., Park J.Y., Park H.-S.	A review of the National Eco-Industrial Park Development Program in Korea: Progress and achievements in the first phase, 2005-2010	Journal of Cleaner Production	2016	114		33	44	10.1016/j.jclepro.2015.08.115

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Horváth G.Á., Harazin P.	A framework for an industrial ecological decision support system to foster partnerships between businesses and governments for sustainable development	Journal of Cleaner Production	2016	114		214	223	10.1016/j.jclepro.2015.05.018
Mat N., Cerceau J., Shi L., Park H.-S., Junqua G., Lopez-Ferber M.	Socio-ecological transitions toward low-carbon port cities: Trends, changes and adaptation processes in Asia and Europe	Journal of Cleaner Production	2016	114		362	375	10.1016/j.jclepro.2015.04.058
Sumabat A.K., Lopez N.S., Yu K.D., Hao H., Li R., Geng Y., Chiu A.S.F.	Decomposition analysis of Philippine CO2 emissions from fuel combustion and electricity generation	Applied Energy	2016	164		795	804	10.1016/j.apenergy.2015.12.023
Daddi T., Iraldo F., Frey M., Gallo P., Gianfrate V.	Regional policies and eco-industrial development: The voluntary environmental certification scheme of the eco-industrial parks in Tuscany (Italy)	Journal of Cleaner Production	2016	114		62	70	10.1016/j.jclepro.2015.04.060
Jensen P.D.	The role of geospatial industrial diversity in the facilitation of regional industrial symbiosis	Resources, Conservation and Recycling	2016	107		92	103	10.1016/j.resconrec.2015.11.018
Manara P., Zabaniotou A.	Co-valorization of Crude Glycerol Waste Streams with Conventional and/or Renewable Fuels for Power Generation and Industrial Symbiosis Perspectives	Waste and Biomass Valorization	2016	7	1	135	150	10.1007/s12649-015-9439-3
Tan R.R., Andiappan V., Wan Y.K., Ng R.T.L., Ng D.K.S.	An optimization-based cooperative game approach for systematic allocation of costs and benefits in interplant process integration	Chemical Engineering Research and Design	2016	106		43	58	10.1016/j.cherd.2015.11.009

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Budzianowski W.M.	A review of potential innovations for production, conditioning and utilization of biogas with multiple-criteria assessment	Renewable and Sustainable Energy Reviews	2016	54		1148	1171	10.1016/j.rser.2015.10.054
Fernandez-Mena H., Nesme T., Pellerin S.	Towards an Agro-Industrial Ecology: A review of nutrient flow modelling and assessment tools in agro-food systems at the local scale	Science of the Total Environment	2016	543		467	479	10.1016/j.scitotenv.2015.11.032
Tiu B.T.C., Cruz D.E.	An MILP model for optimizing water exchanges in eco-industrial parks considering water quality	Resources, Conservation and Recycling	2016					10.1016/j.resconrec.2016.06.005
Iacobescu R.I., Angelopoulos G.N., Jones P.T., Blanpain B., Pontikes Y.	Ladle metallurgy stainless steel slag as a raw material in Ordinary Portland Cement production: A possibility for industrial symbiosis	Journal of Cleaner Production	2016	112		872	881	10.1016/j.jclepro.2015.06.006
Leong Y.T., Lee J.-Y., Chew I.M.L.	Incorporating Timesharing Scheme in Ecoindustrial Multiperiod Chilled and Cooling Water Network Design	Industrial and Engineering Chemistry Research	2016	55	1	197	209	10.1021/acs.iecr.5b02722
Zhao Q., Shi X.Q., Shi L.	A review of the industrial symbiosis network	Shengtai Xuebao/ Acta Ecologica Sinica	2016	36	22	7288	7301	10.5846/stxb201507301598
Albino V., Fraccascia L., Giannoccaro I.	Exploring the role of contracts to support the emergence of self-organized industrial symbiosis networks: An agent-based simulation study	Journal of Cleaner Production	2016	112		4353	4366	10.1016/j.jclepro.2015.06.070
Mantese G.C., De Piere B.A., Amaral D.C.	A procedure to validate industrial symbiosis indicators combining conceptual and empirical validation methods	Advances in Transdisciplinary Engineering	2016	4		166	175	10.3233/978-1-61499-703-0-166
Branson R.	Re-constructing Kalundborg: The reality of bilateral symbiosis and other insights	Journal of Cleaner Production	2016	112		4344	4352	10.1016/j.jclepro.2015.07.069

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Stratigaki C., Loucopoulos P., Migiakis A., Zorgios Y.	Combining model-driven and capability-driven developments: A case study of industrial symbiosis	CEUR Workshop Proceedings	2016	1753		12	22	
Liu J.R., Yan Y.T., Nie X.R., Yan L.	The application of life cycle assessments to the evaluation of the environmental benefits of industrial symbioses: Research progress and challenges	Shengtai Xuebao/ Acta Ecologica Sinica	2016	36	22	7202	7207	10.5846/stxb201411032156
Boons F., Chertow M., Park J., Spekkink W., Shi H.	Industrial Symbiosis Dynamics and the Problem of Equivalence: Proposal for a Comparative Framework	Journal of Industrial Ecology	2016					10.1111/jiec.12468
Chattopadhyay S., Kumar N., Fine C., Olivetti E.	Industrial symbiosis among small and medium scale enterprises: Case of Muzaffarnagar, India	TMS Annual Meeting	2016			173	177	
Dumoulin F., Wassenaar T., Avadí A., Paillat J.-M.	A Framework for Accurately Informing Facilitated Regional Industrial Symbioses on Environmental Consequences	Journal of Industrial Ecology	2016					10.1111/jiec.12495
[No author name available]	CEUR Workshop Proceedings	CEUR Workshop Proceedings	2016	1753				
Verguts V., Dessein J., Dewulf A., Lauwers L., Werkman R., Termeer C.J.A.M.	Industrial symbiosis as sustainable development strategy: Adding a change perspective	International Journal of Sustainable Development	2016	19	1	15	35	10.1504/IJSD.2016.073650
Lignos G., Stancari S., Bikos S., Kokossis A.	Structural and economic analysis of Industrial Symbiosis networks: a hybrid approach to assess investment opportunities	Computer Aided Chemical Engineering	2016	38		1617	1622	10.1016/B978-0-444-63428-3.50274-5
Holgado M., Morgan D., Evans S.	Exploring the scope of industrial symbiosis: Implications for practitioners	Smart Innovation, Systems and Technologies	2016	52		169	178	10.1007/978-3-319-32098-4_15

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Hein A.M., Jankovic M., Farel R., Yannou B.	A data- and knowledge-driven methodology for generating ecoindustrial park architectures	Proceedings of the ASME Design Engineering Technical Conference	2016	4				10.1115/DETC2016-59171.pdf
Henkel M., Stratigaki C., Stirna J., Loucopoulos P., Zorgios Y., Migiakis A.	Extending capabilities with context awareness	Lecture Notes in Business Information Processing	2016	249		40	51	10.1007/978-3-319-39564-7_4
Holgado M., Benedetti M., Evans S., Introna V.	Contextualisation in industrial energy symbiosis: Design process for a knowledge repository	Proceedings of the Summer School Francesco Turco	2016			139	144	
Afshari H., Gourlia J.-P., Farel R., Peng Q.	Energy symbioses in eco-industrial parks: Models and perspectives	Proceedings of the ASME Design Engineering Technical Conference	2016	4				10.1115/DETC2016-59965.pdf
Stirna J., Zdravkovic J., Henkel M., Loucopoulos P., Stratigaki C.	Modeling organizational capabilities on a strategic level	Lecture Notes in Business Information Processing	2016	267		257	271	10.1007/978-3-319-48393-1_18
Siskos I., Van Wassenhove L.N.	Synergy Management Services Companies: A New Business Model for Industrial Park Operators	Journal of Industrial Ecology	2016					10.1111/jiec.12472
Afshari H., Farel R., Peng Q.	Need for optimization under uncertainty: Designing flow exchanges in eco-industrial parks	Proceedings of the ASME Design Engineering Technical Conference	2016	4				10.1115/DETC2016-59974.pdf
Mohammed F., Biswas W.K., Yao H., Tadó M.	Identification of an environmentally friendly symbiotic process for the reuse of industrial byproduct - An LCA perspective	Journal of Cleaner Production	2016	112		3376	3387	10.1016/j.jclepro.2015.09.104

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Husgafvel R., Nordlund H., Heino J., Mäkelä M., Watkins G., Dahl O., Paavola I.-L.	Use of Symbiosis Products from Integrated Pulp and Paper and Carbon Steel Mills: Legal Status and Environmental Burdens	Journal of Industrial Ecology	2016	20	5	1187	1198	10.1111/jiec.12348
Qi Y., Zhu T., Gao S., Wang J.F., Ji Y.J., Zhang M., Bu X.X.	Preliminary exploration of the Chinese industrial park's circularization reform using key material flow analysis	Shengtai Xuebao/ Acta Ecologica Sinica	2016	36	22	7335	7345	10.5846/stxb201508151708
[No author name available]	3rd International Conference on Sustainable Design and Manufacturing, SDM 2016	Smart Innovation, Systems and Technologies	2016	52		1	688	
Kanematsu Y., Oosawa K., Kikuchi Y.	Agriculture	Energy Technology Roadmaps of Japan: Future Energy Systems Based on Feasible Technologies Beyond 2030	2016			405	414	10.1007/978-4-431-55951-1_27
De Souza V., Borsato M., Bloemhof J.	Designing eco-effective reverse logistics networks	Advances in Transdisciplinary Engineering	2016	4		851	860	10.3233/978-1-61499-703-0-851
Leong Y.T., Tan R.R., Aviso K.B., Chew I.M.L.	Fuzzy analytic hierarchy process and targeting for inter-plant chilled and cooling water network synthesis	Journal of Cleaner Production	2016	110		40	53	10.1016/j.jclepro.2015.02.036
Shi L., Chen W.Q.	Industrial ecology in China: Retrospect and prospect	Shengtai Xuebao/ Acta Ecologica Sinica	2016	36	22	7158	7167	10.5846/stxb201611232387
Kikuchi Y., Kanematsu Y., Okubo T.	A computer-aided scenario analysis of national and regional energy systems based on feasible technology options	Computer Aided Chemical Engineering	2016	38		1959	1964	10.1016/B978-0-444-63428-3.50331-3
Yong J.Y., Klemeš J.J., Varbanov P.S., Huisingh D.	Cleaner energy for cleaner production: Modelling, simulation, optimisation and waste management	Journal of Cleaner Production	2016	111		1	16	10.1016/j.jclepro.2015.10.062
Petek J., Glavič P., Kostevšek A.	Total Site Resource Efficiency System	Computer Aided Chemical Engineering	2016	38		2235	2240	10.1016/B978-0-444-63428-3.50377-5

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Yazan D.M., Romano V.A., Albino V.	The design of industrial symbiosis: An input-output approach	Journal of Cleaner Production	2016					10.1016/j.jclepro.2016.03.160
Kuznetsova E., Zio E., Farel R.	A methodological framework for Eco-Industrial Park design and optimization	Journal of Cleaner Production	2016					10.1016/j.jclepro.2016.03.025
Notarnicola B., Tassielli G., Renzulli P.A.	Industrial symbiosis in the Taranto industrial district: Current level, constraints and potential new synergies	Journal of Cleaner Production	2016					10.1016/j.jclepro.2016.02.056
Szabó S., Bódis K., Kougias I., Moner-Girona M., Jäger-Waldau A., Barton G., Szabó L.	A methodology for maximizing the benefits of solar landfills on closed sites	Renewable and Sustainable Energy Reviews	2017	76		1291	1300	10.1016/j.rser.2017.03.117
Fraccascia L., Giannoccaro I., Albino V.	Rethinking Resilience in Industrial Symbiosis: Conceptualization and Measurements	Ecological Economics	2017	137		148	162	10.1016/j.ecolecon.2017.02.026
Wu J., Guo Y., Li C., Qi H.	The redundancy of an industrial symbiosis network: A case study of a hazardous waste symbiosis network	Journal of Cleaner Production	2017	149		49	59	10.1016/j.jclepro.2017.02.038
Wang D., Li J., Wang Y., Wan K., Song X., Liu Y.	Comparing the vulnerability of different coal industrial symbiosis networks under economic fluctuations	Journal of Cleaner Production	2017	149		636	652	10.1016/j.jclepro.2017.02.137
Desrochers P., Szurmak J.	Long distance trade, locational dynamics and by-product development: Insights from the history of the American cottonseed industry	Sustainability (Switzerland)	2017	9	4			10.3390/su9040579
Sun L., Spekkink W., Cuppen E., Korevaar G.	Coordination of industrial symbiosis through anchoring	Sustainability (Switzerland)	2017	9	4			10.3390/su9040549

Author Name(s)	Title	Source Title	Year	Vol.	Issue	P. Start	P. End	Doi
Hein A.M., Jankovic M., Feng W., Farel R., Yune J.H., Yannou B.	Stakeholder power in industrial symbioses: A stakeholder value network approach	Journal of Cleaner Production	2017	148		923	933	10.1016/j.jclepro.2017.01.136
Sun L., Li H., Dong L., Fang K., Ren J., Geng Y., Fujii M., Zhang W., Zhang N., Liu Z.	Eco-benefits assessment on urban industrial symbiosis based on material flows analysis and emergy evaluation approach: A case of Liuzhou city, China	Resources, Conservation and Recycling	2017	119		78	88	10.1016/j.resconrec.2016.06.007
Tiu B.T.C., Cruz D.E.	An MILP model for optimizing water exchanges in eco-industrial parks considering water quality	Resources, Conservation and Recycling	2017	119		89	96	10.1016/j.resconrec.2016.06.005
Fraccascia L., Giannoccaro I., Albino V.	Efficacy of landfill tax and subsidy policies for the emergence of industrial symbiosis networks: An agent-based simulation study	Sustainability (Switzerland)	2017	9	4			10.3390/su9040521
Gabriel M., Schöggel J.-P., Posch A.	Early front-end innovation decisions for self-organized industrial symbiosis dynamics- A case study on lignin utilization	Sustainability (Switzerland)	2017	9	4			10.3390/su9040515
Saraceni A.V., Resende L.M., de Andrade Júnior P.P., Pontes J.	Pilot testing model to uncover industrial symbiosis in Brazilian industrial clusters	Environmental Science and Pollution Research	2017	24	12	11618	11629	10.1007/s11356-017-8794-y
Daddi T., Nucci B., Iraldo F.	Using Life Cycle Assessment (LCA) to measure the environmental benefits of industrial symbiosis in an industrial cluster of SMEs	Journal of Cleaner Production	2017	147		157	164	10.1016/j.jclepro.2017.01.090
Mauthoor S.	Uncovering industrial symbiosis potentials in a small island developing state: The case study of Mauritius	Journal of Cleaner Production	2017	147		506	513	10.1016/j.jclepro.2017.01.138

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Liu Z., Adams M., Cote R.P., Geng Y., Chen Q., Liu W., Sun L., Yu X.	Comprehensive development of industrial symbiosis for the response of greenhouse gases emission mitigation: Challenges and opportunities in China	Energy Policy	2017	102		88	95	10.1016/j.enpol.2016.12.013
Serdar M., Biljecki I., Bjegović D.	High-performance concrete incorporating locally available industrial by-products	Journal of Materials in Civil Engineering	2017	29	3			10.1061/(ASCE)MT.1943-5533.0001773
Yedla S., Park H.-S.	Eco-industrial networking for sustainable development: review of issues and development strategies	Clean Technologies and Environmental Policy	2017	19	2	391	402	10.1007/s10098-016-1224-x
Ubando A.T., Aguilar K.D.T.	Fuzzy quadratic programming model for the optimal design of an algal bioenergy park under optimal price markdown percentage	IEEE Region 10 Annual International Conference, Proceedings/TENCON	2017			936	941	10.1109/TENCON.2016.7848142
Leong Y.T., Lee J.-Y., Tan R.R., Foo J.J., Chew I.M.L.	Multi-objective optimization for resource network synthesis in eco-industrial parks using an integrated analytic hierarchy process	Journal of Cleaner Production	2017	143		1268	1283	10.1016/j.jclepro.2016.11.147
Ceglia D., Abreu M.C.S.D., Da Silva Filho J.C.L.	Critical elements for eco-retrofitting a conventional industrial park: Social barriers to be overcome	Journal of Environmental Management	2017	187		375	383	10.1016/j.jenvman.2016.10.064
Winans K., Kendall A., Deng H.	The history and current applications of the circular economy concept	Renewable and Sustainable Energy Reviews	2017	68		825	833	10.1016/j.rser.2016.09.123
Yap N.T., Devlin J.F.	Explaining Industrial Symbiosis Emergence, Development, and Disruption: A Multilevel Analytical Framework	Journal of Industrial Ecology	2017	21	1	6	15	10.1111/jiec.12398

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Ohnishi S., Dong H., Geng Y., Fujii M., Fujita T.	A comprehensive evaluation on industrial & urban symbiosis by combining MFA, carbon footprint and emergy methods—Case of Kawasaki, Japan	Ecological Indicators	2017	73		315	324	10.1016/j.ecolind.2016.10.016
Taddeo R., Simboli A., Ioppolo G., Morgante A.	Industrial symbiosis, networking and innovation: The potential role of innovation poles	Sustainability (Switzerland)	2017	9	2			10.3390/su9020169
Wang Q., Deutz P., Chen Y.	Building institutional capacity for industrial symbiosis development: A case study of an industrial symbiosis coordination network in China	Journal of Cleaner Production	2017	142		1571	1582	10.1016/j.jclepro.2016.11.146
Zhang C., Romagnoli A., Zhou L., Kraft M.	Knowledge management of eco-industrial park for efficient energy utilization through ontology-based approach	Applied Energy	2017					10.1016/j.apenergy.2017.03.130
Fan Y., Qiao Q., Fang L., Yao Y.	Emergy analysis on industrial symbiosis of an industrial park – A case study of Hefei economic and technological development area	Journal of Cleaner Production	2017	141		791	798	10.1016/j.jclepro.2016.09.159
Sharib S., Halog A.	Enhancing value chains by applying industrial symbiosis concept to the Rubber City in Kedah, Malaysia	Journal of Cleaner Production	2017	141		1095	1108	10.1016/j.jclepro.2016.09.089
Couto Mantese G., Capaldo Amaral D.	Comparison of industrial symbiosis indicators through agent-based modeling	Journal of Cleaner Production	2017	140		1652	1671	10.1016/j.jclepro.2016.09.142
Fraccascia L., Albino V., Garavelli C.A.	Technical efficiency measures of industrial symbiosis networks using enterprise input-output analysis	International Journal of Production Economics	2017	183		273	286	10.1016/j.ijpe.2016.11.003
Tseng M.-L., Bui T.-D.	Identifying eco-innovation in industrial symbiosis under linguistic preferences: A novel hierarchical approach	Journal of Cleaner Production	2017	140		1376	1389	10.1016/j.jclepro.2016.10.014

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Kim H.-W., Ohnishi S., Fujii M., Fujita T., Park H.-S.	Evaluation and Allocation of Greenhouse Gas Reductions in Industrial Symbiosis	Journal of Industrial Ecology	2017					10.1111/jiec.12539
Halstenberg F.A., Lindow K., Stark R.	Utilization of Product Lifecycle Data from PLM Systems in Platforms for Industrial Symbiosis	Procedia Manufacturing	2017	8		369	376	10.1016/j.promfg.2017.02.047
Dong L., Wang Y., Scipioni A., Park H.-S., Ren J.	Recent progress on innovative urban infrastructures system towards sustainable resource management	Resources, Conservation and Recycling	2017					10.1016/j.resconrec.2017.02.020
Wang X., Shi X.Q.	A review of industrial ecology based on GIS	Shengtai Xuebao/ Acta Ecologica Sinica	2017	37	4	1346	1357	10.5846/stxb201606301326
Oguntoye O., Evans S.	Framing Manufacturing Development in Africa and the Influence of Industrial Sustainability	Procedia Manufacturing	2017	8		75	80	10.1016/j.promfg.2017.02.009
Hein A.M., Yannou B., Jankovic M., Farel R.	Towards an automatized generation of rule-based systems for architecting eco- industrial parks	Smart Innovation, Systems and Technologies	2017	65		691	699	10.1007/978-981-10-3518-0_60
Dias G.M., Ayer N.W., Khosla S., Van Acker R., Young S.B., Whitney S., Hendricks P.	Life cycle perspectives on the sustainability of Ontario greenhouse tomato production: Benchmarking and improvement opportunities	Journal of Cleaner Production	2017	140		831	839	10.1016/j.jclepro.2016.06.039
Medina-González S., Graells M., Guillén-Gosálbez G., España A., Puigjaner L.	Systematic approach for the design of sustainable supply chains under quality uncertainty	Energy Conversion and Management	2017					10.1016/j.enconman.2017.02.060
Malinauskiene M., Kliopova I., Hugi C., Staniškis J.K.	Geostrategic Supply Risk and Economic Importance as Drivers for Implementation of Industrial Ecology Measures in a Nitrogen Fertilizer Production Company	Journal of Industrial Ecology	2017					10.1111/jiec.12561

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Deutz P., Baxter H., Gibbs D., Mayes W.M., Gomes H.I.	Resource recovery and remediation of highly alkaline residues: A political-industrial ecology approach to building a circular economy	Geoforum	2017					10.1016/j.geoforum.2017.03.021

Appendix-II. Top ten countries in IS research with industrial growth indicators

Countries	No. of Papers	Annual Industrial Growth rate	Industrial production in Price (million US\$)
China	85	6.10%	474,000
USA	49	0.10%	351,600
UK	49	3.10%	38,500
Italy	34	1.80%	39,400
Japan	27	2.00%	138,000
Netherland	21	3.10%	13,100
Philippines	21	7.20%	9,920
Australia	19	-1.60%	369,400
Canada	19	4.80%	22,200
France	19	1.30%	30,900