

ANNUAL REPORT

2020

▲ International Society
▼ for Industrial Ecology



OUR MISSION

The International Society for Industrial Ecology promotes industrial ecology as a way of finding innovative solutions to complicated environmental problems, and facilitates communication among scientists, engineers, policymakers, managers and advocates who are interested in better integrating environmental concerns with economic activities.

The mission of the ISIE is to promote the use of industrial ecology in research, education, policy, community development, and industrial practices.

▲ International Society

▼ for Industrial Ecology

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PRESIDENT'S REPORT



**HEINZ
SCHANDL
PRESIDENT**

It is a pleasure to present you the second annual report of our scientific society looking back at industrial ecology activities during 2020. What a year 2020 has been. In January we had the most severe bushfires Australia ever has seen with the smoke clouds from millions of hectares of burnt forest circling the globe and air quality in Australian cities at horrendous pollution levels.

There was only a short period of reprieve from this reminder of the impact of accelerating climate change. A couple of months later, on 11 March 2020, the World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak a global pandemic. Initial waves of COVID-19 spread through Europe and the US and many countries had to lock-down their economies, global air travel came to a standstill, many businesses that were not providing essential services were closed down, children needed to attend school from home and working from home became a new reality for many. At the same time the pandemic laid bare the economic and social problems of the global economy and distributed the health and economic risk of COVID-19 unevenly across different countries and people.

Some thought that the pandemic was also a moment of environmental relief with carbon emissions declining for the first time in decades and water and air quality improving in many places. Many decisions that were deemed impossible before the pandemic now became a new normal. I think the pandemic also marked, finally, the end of the 20th century in that the characteristics and drivers of the last century have now been replaced by novel drivers that determine the way in which the economy and society operates. We are now facing the feedback of the earth system to the actions of 9 billion people and are grappling, simultaneously, with rising inequality, a decline in institutions and a novel sense of ignorance against facts and science.

It has been the role of our scientific society to explore alternatives to current thinking, to provide a knowledge base for transitioning to sustainable production and consumption, and to inform government and business leaders about the benefits of reorganising material supply chains to be more cyclical, less dependent on primary resources, less wasteful, and minimising waste and pollution. In the face of the enormity of the task to enable a resource-efficient, low carbon and low waste economic system and to service the material living standards of ever more people, the knowledge products and insights from industrial ecology and sustainability science more broadly are fundamental to the sustainable development agenda.

More practically, the pandemic has also meant that we had to postpone the biennial ISIE conference and the industrial ecology Gordon Research Conference and that we had to look for alternative ways in which we can bring together our community. Our sections turned to virtual meetings and online conferences with the perpetual conference of the socio-economic metabolism section being a highlight among the many activities that our membership organised. We also instituted a new 24-hour across-the-globe event and will hold the first International Industrial Ecology Day on June 21, 2021. This event will start in Sydney and ends in San Francisco on the same day with virtual activities and small face-to-face gatherings across the globe.

I have also been very pleased by the way in which we were able to further improve the governance of the new ISIE and the way in which our board, the executive team and the ISIE secretariat have run the ISIE during 2020 and despite the difficulties we were all experiencing. We have successfully run an AGM twice now and have become an organisation that is guided by the interest of its membership. Its important to add that our new structure also allowed us to buffer the financial impact of the postponement of our conference which in the past has been a major source of income for the society.

There are also things which we have not been able to pursue to the extend necessary which include fostering relationships of the ISIE with likeminded societies and contributing, in a more regular fashion, to the global sustainability debate by offering insights from our research. We did, however, support several important initiatives driven by our membership which include the working group looking into the positioning the ISIE towards synergy with the circular economy agenda and our diversity and inclusion initiative, among others.

This has also been my final year as ISIE president and I would like to take the opportunity to thank our executive director Paul Hoekman, treasurer Valerie Thomas and vice-treasurer Ester van der Voet, secretary Tim Baynes and vice-secretary Callie Babbitt and really the whole board for the way in which you all have contributed, in many ways, to pursuing the important objectives of the ISIE, to further the science of industrial ecology, to foster careers and create impact in policy and business. I am also very grateful for all the hard work by Lizelle Dela Cruz and, in the second half of the year, by Nina Kisbey-Green to keep our small but productive Secretariat running.

I am certain you will enjoy reading the 2020 annual report. It demonstrates a busy and successful year of the ISIE, the different sections and all our members.

MEMBERSHIP REPORT



**TIM
BAYNES
SECRETARY**

Number and Type of Membership

In 2020 there had been noticeable growth in the number and proportion of student and young professional members.

This has waned while regular membership has grown slightly. There is an express intent from the ISIE Board to attract institutional membership through recognition of ISIE members' contribution, for example, in the UN's International Resource Panel.

Membership

In between conference years, the Society's membership naturally goes through a downward part of a 2-year cycle, and this was the case in 2020. There are now 495 members from 48 nations, though we may expect this to change upwards with ISIE membership allowing access to the ISIE Industrial Ecology Day 2021 event. Since March 2020, we have attracted 142 new members, and more than 240 members have renewed.

	2020	2021
Regular	245	256
Student	248	192
Young Professional	78	42
Institutional	0	0
Courtesy	6	5
Total	577	495

Table 1 Comparison of membership for the years 2020 and 2021

Where is Our Membership?

Europe has retained much of its absolute numbers in membership while North America has decreased and this is reflected in the respective proportions in ISIE membership. Both regions combined still account for 70% of all of ISIE's membership. Asia represents about a fifth of the Society, and the four other major global regions represent 10% of ISIE membership.



Figure 1 ISIE membership by global regions

More Members are Involved in More Sections

ISIE members are often involved in several Sections. This year we have a new Islands Section that has quickly gained 50 members. Although, ISIE's total membership is down this year, there is evidence that we have actually increased activity. Adding all members in all Sections, sums to a total membership of 1263 involved across the Sections, which is actually slightly more than in 2020 (1262). This indicates that each Society member is involved in 2 to 3 Sections on average.

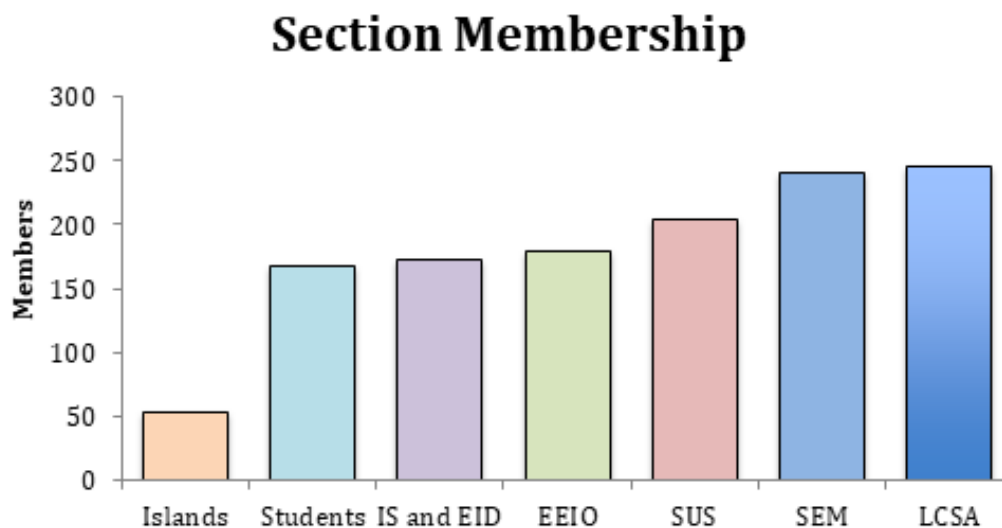


Figure 2 Membership of sections totals. Key - IS and EID: Industrial Symbiosis and Eco-Industrial Development, EEIO: Environmentally Extended Input-Output Section, SUS: Sustainable Urban Systems, SEM: Socio-economic metabolism, LCSA: Life Cycle Sustainability Assessment

FINANCIAL REPORT



**VALERIE
THOMAS
TREASURER**

In this report, the ISIE provides its members with an overview of the finances of our society. We will look back at the year 2020, and look forward to the upcoming years.

Income: The Society has three principal sources for generating funds: membership subscriptions; donations; and net proceeds from biennial conferences.

We offer only two-year memberships. Fees vary by the country in which members live and work. Memberships start at the beginning of the calendar years. Total membership for 2020 amounted to €22 335. In addition, we received €635 in donations.

Expenses: We have been resilient despite the pandemic, with low operating expenses. Even so, without conference income our expenses exceeded our income. We need a long-term solution for our conference-dependent income.

Remunerations: There are two main paid positions within the ISIE: the Administrative Assistant running the secretariat, and the Executive Director. In 2020, these remunerations were 61% of our expenses. In addition, the Secretary and the Treasurer receive a modest remuneration.

Office Expenses: We have contracted with Penguin Protocols for website management. And we have expenses for accounting software, communication services (Zoom), and banking fees.

Travel: No travel took place in 2020, and none is budgeted for 2021. We have tentatively reserved some travel budget going forward.

Scholarships and Awards: The ISIE usually makes available scholarships for students to attend the biennial conference. A budget is also made available during the alternating years to support the other conferences. There were no expenditures for scholarships or awards in 2020.

Projects and Initiatives: We expect that member-driven proposals and other projects will become a pillar in our society. We did not have any spending in this category in 2020. We plan to spend €20 500 in 2021.

Journal of Industrial Ecology: We are in the process of transferring the ownership of the Journal of Industrial Ecology from Yale University to the ISIE. Expected income from the JIE is shown in the budget; this amount is exactly matched by expected expenses.

Income Statement 2020

Income (€)	2020 Forecast	2020 Real	2021 Budget	2022 Forecast	2023 Forecast
Regular memberships	14,000	19,530	19,000	9,500	19,000
Student memberships	2,000	1,335	1,000	500	1,000
Young professional memberships	4,000	1,770	2,000	1,000	2,000
Institutional memberships	1,500	0	0	5,000	0
Donations	0	635	1,000	2,000	4,000
Conference income	0	0	0	0	50,000
Journal Industrial Ecology Income			47,600	79,764	80,111
Total income	21,500	23,270	70,600	97,764	156,111
Expenses (€)					
Remunerations					
Administrative services	10,500	9,334	9,614	9,902	10,199
Executive Director	10,600	10,400	15,030	12,000	12,360
Secretary Remuneration	2,500	2,000	2,500	2,500	2,500
Treasurer Remuneration	2,500	2,000	2,500	2,500	2,500
General expenses					
Accounting software	491	241	250	258	265
Credit card fees	600	586	660	330	660
Banking fees	200	240	247	255	262
Website management	3,500	3,388	3,600	3,708	3,819
Journal of Industrial Ecology	6,000	5,481	47,600	79,764	80,111
Other costs	200	93	200	206	212
Travel					
Executive Director	2,000	0	0	2,000	2,060
President and Board Members	2,000	0	0	2,000	2,060
Scholarships and Awards					
Conference Scholarships	1,000	0	0	5,300	10,000
ISIE Awards	0	0	750	0	750
Projects and initiatives					
Yale closing ceremony	2,000	0	0	0	0
Member proposals	13,000	0	20,500	15,000	15,450
Unforeseen costs (legal etc.)	2,500	1,618	2,500	2,575	2,652
Total expenses	55,591	35,380	105,951	138,297	145,861
Net income	-38,091	-12,110	-35,351	-40,533	10,250
Start-of-year reserves	190,128	190,128	178,017	142,666	102,133
End-of-year reserves	152,037	178,017	142,666	102,133	112,383

Balance Sheet

December 31, 2020

Current assets

Cash	152,761
Accounts Receivable	0
	152,761

Restricted funds

Laudise Medal	11,610
Scholarship Fund	14,345
Metabolism	2,256
Development	346
	28,557

Total assets (€) **181,317**

Liabilities

Accounts Payable	3,300
Other Liabilities	0
	2,800

Equity

2020 Earnings	-12,110
Retained Earnings	190,128
	178,017

Total liabilities and equity (€) **181,317**

Balance Sheet

December 31, 2019

Current assets

Cash	94,494
Accounts Receivable	67,331
	161,825

Restricted funds

Laudise Medal	12,645
Scholarship Fund	15,624
Metabolism	2,457
Development	377
	31,103

Total assets (€) **192,928**

Liabilities

Accounts Payable	2,800
Other Liabilities	0
	2,800

Equity

2019 Earnings	77,064
Retained Earnings	113,064
	190,128

Total liabilities and equity (€) **192,928**

ENVIRONMENT AND SUSTAINABILITY



**PAUL
HOEKMAN**
EXECUTIVE
DIRECTOR



**STIJN VAN
EWIJK**

These events have exposed our members to new ideas, people, countries and cultures. However, these conferences are also directly linked to significant emissions as a result of the air travel undertaken by conference attendees.

In an effort to quantify the total emissions as well the emission reduction potentials, we analyzed the participation profiles of 2013-2017 ISIE conferences in a [recently published paper in the Journal of Industrial Ecology](#). We extend that work to include the latest ISIE conference in Beijing in 2019.

The past four conferences led to an estimated 20 million kilometers traveled—more than 50 times the distance to the moon. The graph below (Figure 1) summarizes the emissions by conference and the region of origin of the attendees.

ISIE conference travel emissions and reduction potentials

The ISIE's flagship biennial conferences have been attended by members of our society for over two decades. With a global membership, the ISIE rotates venues between East Asia, North America, and Western Europe.

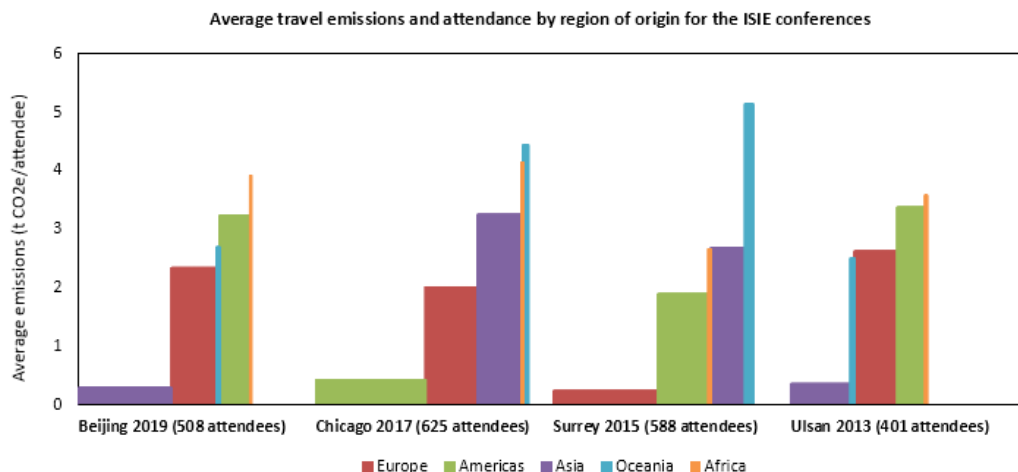


Figure 1 Travel emission profiles of the last four ISIE biennial conferences.

Participation and emissions fluctuate, but independent of location, there is often: 1) a large cohort attending from the same region at a relatively small environmental cost and; 2) significant travel movements and emissions linked to the ISIE conferences.

The total (and average per capita) emissions in tons of carbon dioxide equivalent (tCO₂e) per conference are 722 (1.8) for Ulsan, 766 (1.3) for Surrey, 955 (1.5) for Chicago, and 717 (1.4) for Beijing. To put these numbers in perspective, the global average annual emissions per capita are about 7 tCO₂e, and the emissions associated with a single conference trip are often greater than the annual per capita emissions in many developing countries.

Unfortunately, decarbonization of air travel is unlikely to happen soon and, consequently, flying less is an important strategy to achieve climate targets. In our paper, we analyzed a number of alternative scenarios involving: a shift from air travel to land transportation; carbon taxation; 'augmented conferences' where participants located the furthest join digitally; multi-site conferences attended in parallel; and virtual conferences.

Due to COVID-19 travel restrictions, the virtual option has become a familiar conference format.

The figure below (Figure 2) shows that the reduction potentials vary strongly, with a shift to land transport and a carbon tax at the lower end of the scale, and multi-site conferences having much larger reduction potentials. Virtual conferences may eliminate travel emissions entirely.

Despite these promising reduction potentials, finding an alternative format is not straightforward. There is great value in face-to-face meetings, and often more so when meeting new people or people outside of our own region. From this perspective, the conference formats with the highest reduction potentials are not the most attractive.

This year we will see a virtual event replace our traditional conference, which offers an opportunity to learn about the merits and challenges of such an event, as well as a forum to discuss efforts to reduce future ISIE travel emissions.

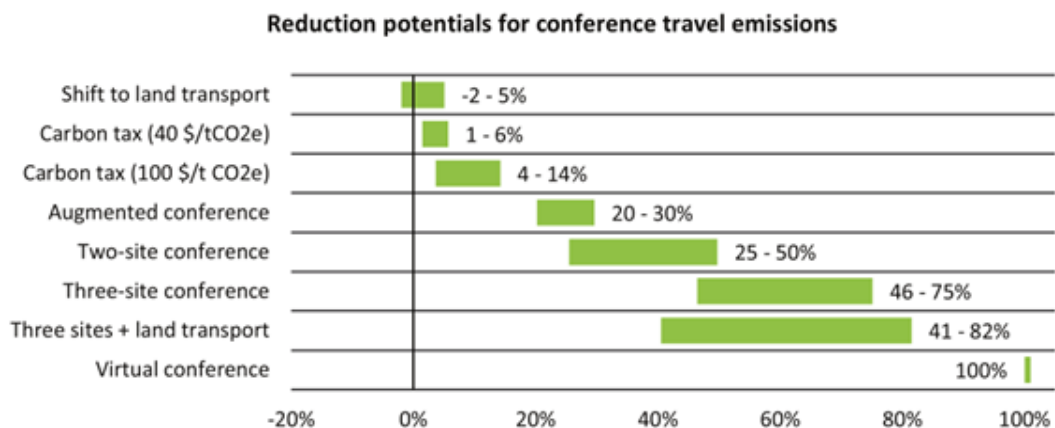


Figure 2 Travel emission reduction potentials for ISIE conferences

DIVERSITY AND INCLUSION INITIATIVE



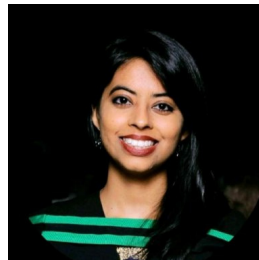
**ELIETTE
RESTREPO**



**CALLIE
BABBITT**



**FERNANDO
AGUILAR-LOPEZ**



AKSHI SINGH

Last year was marked with unprecedented challenges in our professional and personal lives. The COVID-19 pandemic shifted our work-life balance, and gave us a new perspective on what truly matters. The activities of the Diversity and Inclusion Initiative focused on the definition of a roadmap for the Diversity and Inclusion Strategy and on redefining a portfolio of activities that is mindful of our new ways of working, considering new challenges and opportunities for a more diverse and inclusive ISIE.

Vision Statement

ISIE believes that diversity, equity, and inclusion are at the core of our mission to create innovative solutions to global sustainability challenges and facilitate communication among diverse stakeholders. We are committed to creating an inclusive culture where all people have the opportunity to contribute to, benefit from, and shape the field of Industrial Ecology.

Diversity and Inclusion Statement Goals:

- Increase the voice, representation, and participation of students, researchers and practitioners who reflect the diversity of global society but who have been historically underrepresented in Industrial Ecology.
- Provide opportunities and resources for ISIE members to learn about diversity and inclusion principles.
- Enable broader participation in and accessibility of ISIE conferences and events
- Incorporate diversity and inclusion principles that mitigate implicit bias in publishing, awards, and recognition
- Promote diversity and inclusion in the governance and leadership of ISIE

These goals will be benchmarked and reported annually.

Development of a D&I Strategy

The roadmap for the D&I strategy consists of three phases: i) Conceptualisation and benchmarking, ii) Review by an expert, and iii) Finalization of the strategy with input from the expert. In the first phase, we aim to learn from and integrate existing best-practices in a draft D&I Strategy that directly benefits our student community while having the potential to be scaled up to the broader ISIE. In the second phase, we intend to gather feedback from an expert so that potential unconscious biases in the D&I Strategy can be timely addressed. In the third and final phase the expert's feedback will be integrated and the D&I strategy will be finalized.

New portfolio of activities for the coming year

Being mindful of the new challenges and opportunities for a more diverse and inclusive ISIE, we are redefining our portfolio of activities, which will include, among others:

- Broadening the student community through further inclusion and engagement with student associations. The new outreach program is intended to introduce students from diverse academic backgrounds and geographical locations to the ISIE community. The synergetic effects of such collaboration would lead to a more diverse set of skills, ethnicities, and age groups.
- Support for underrepresented groups in the ISIE community either financially or otherwise. Previously, this strategy aimed at partially financing conference related expenses for researchers who could otherwise not have participated due to financial constraints.

- However, due to the COVID-19 situation, conferences are expected to largely remain online for the current year. Therefore, we aim to utilize the funds available this year on various approaches that are suitable to offer support under the current conditions
- Reaching out to institutions in underrepresented regions. Industrial ecology as such continues to be a small, growing community and it has not yet fully penetrated in many parts of the world. Identifying institutions in areas with a small or a non-existent industrial ecology community, but with compatible fields such as environmental engineering, can help integrate those communities into the ISIE. This has synergistic effects on the diversity and inclusion strategy and on increasing the penetration of industrial ecology as a field of study.
- Ad-hoc support for D&I projects/questions from the students and the ISIE. Aimed at creating a welcoming platform/environment for all members of the ISIE community to share ideas and receive support on matters related to diversity and inclusion.
- A D&I workshop to introduce the new strategy and inform members of the ISIE community on support available to them. The workshop will be aimed at both the student and larger ISIE community as a whole.

Support for the D&I Portfolio

The ISIE board has recognized the D&I Initiative as a priority society-wide and beyond the student chapter. We continue our close exchange with the ISIE regarding alignment and support for the D&I Strategy implementation. Callie Babbitt, Vice Secretary on the ISIE Board, offered support in fine-tuning and implementing the D&I Strategy as well as in evaluating possible financial support for the D&I portfolio.

An important advancement towards ensuring the continuity of the D&I Initiative has been achieved by the establishment of a new Diversity and Inclusion Team: following their election as members of the Student Chapter Board, Akshi Singh, Master Student at the University of Cape Town (UCT) and Fernando Aguilar Lopez, PhD Student at the Norwegian University of Science and Technology - NTNU have joined as Diversity and Inclusion Officers for the period 2020-2021.

COMMITTEE MEMBERS

D&I Officer **Eliette Restrepo**

D&I Officer **Akshi Singh**

D&I Officer **Fernando Aguilar-Lopez**

Board representative **Callie Babbitt**

JOURNAL OF INDUSTRIAL ECOLOGY



**REID
LIFSET
EDITOR IN
CHIEF**

2020 in review and plans for 2021

The JIE had a good year in 2020: The impact factor increased from 4.826 to 6.539. Reach (i.e., access to the JIE) increased to over 11,000 institutions worldwide and downloads increased by 42%. Two special issues were published: [Industrial Ecology of Climate Change Adaptation and Resilience](#) and [LCA of Emerging Technologies](#). A series of webinars explored the findings of the LCA issue and attracted considerable participation. New special issues are in preparation: Material Efficiency and Climate Change, [Data Innovation in Industrial Ecology](#), [Industrial Ecology for the Oceans](#), and [LCSA for the SDGs](#).

Many authors opted for the ISIE [data openness badges](#) that recognize data contribution—so many that we recruited Konstantin Stadler (NTNU) as an additional data editor. Other new editors include Mark Huijbregts (Radboud University Nijmegen) as Associate Editor (AE) for LCA; Vered Blass, as AE, Supply Chain and Operations;

Lynette Cheah (Singapore U of Technology and Design), AE for LCA; Xin Tong (Peking U), AE, circular economy; Lynnette Widder (Columbia U) as book review editor; and Xiao Li as Editor for Outreach. Stefanie Hellweg is stepping down as Associate Editor for LCM so that she can attend to her new responsibilities as ISIE President.

Charles Corbett, having taken on a deanship, is stepping down from his role as an associate editor for supply chain management. Lei Shi (Nanchang University) will be shifting from his duties as co-Editor-in-chief to AE, industrial symbiosis and Junming Zhu is shifting from AE for public policy to co-Editor-in-chief. Chris Kennedy (U of Victoria) has taken over as Chair of the JIE's Best Paper Prize Committee from Helge Brattebø (NTNU).

The JIE also renewed its publication contract with Wiley. One especially attractive provision in the contract is a 25% discount on open access fees for ISIE members. In its 25th year, 2021 will be a year of big changes. Plans are in progress for the ISIE to take ownership of the JIE. A committee of ISIE members has been working with Yale on the operational aspects of the hand-over and drafting governance policies for the oversight and management of the journal. In addition, Reid Lifset is stepping down as editor-in-chief (EiC) for a much needed rest after 25 years! A search is underway for new EiCs.



Figure 1 The JIE and the American Center for Life Cycle Assessment held a series of webinars based the JIE special issue on LCA for Emerging Technologies

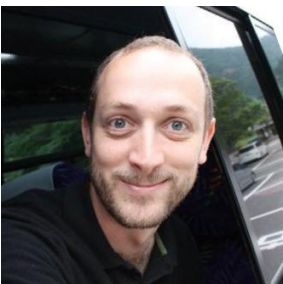


Figure 2 The number of JIE papers earning ISIE data accessibility badges is growing rapidly!

CONFERENCE COMMITTEE



**ANNA
PETIT-BOIX
CO-CHAIR**



**TOMER
FISHMAN
CO-CHAIR**

Lessons learn from unprecedented times

The year 2020 has brought about several challenges that have been reflected in the Conference Committee's tasks and progress. Since its inauguration in 2019, this Committee's main purpose has been to support the Society by re-evaluating the structure of our conferences and events and developing a long-term plan for all the meetings held by or jointly sponsored by the ISIE.

The Committee is structured in two working groups focusing on:

- (1) conference formats, timing and ISIE-host relations
- (2) participation and sustainability.

However, these changing times have required a re-evaluation of our priorities and both groups have devoted to finding short-term solutions to our current conference needs.

Around the globe, countless conferences have been cancelled; others have gone fully virtual to ensure the safety of their participants while still offering them a chance to interact and present their research. This transformation has required massive efforts to find immediate solutions in an online world that was not familiar to every host.

Supporting the organization of virtual and sustainable events is one of the cornerstones of the Conference Committee's tasks and goals. Given its urgency, we devoted all of our efforts to elaborating a preliminary guideline titled 'Challenges and opportunities of online conferences'. The document identifies the main purposes of attending ISIE conferences, namely scientific exchange, networking, collaboration, community building and Society administration, and explores a wide range of options for meeting these needs. The guideline is the result of a collective effort, including the experiences of recent ISIE online conference hosts and the working group on sustainable conference travel, to whom we express our gratitude.

What's ahead?

Innovation will be central motto in 2021. The upcoming 'Industrial Ecology Day', to be held virtually on June 21, will be a chance for us to be creative and test new conferencing formats that have surely come to stay. The conference committee is actively supporting the organization of this event and will gather insightful information about this experience to guide future online events.

COMMITTEE MEMBERS

Co-chair **Anna Petit Boix**

Co-chair **Tomer Fishman**

Immediate Past President **Edgar Herwich**

Committee Member **Stijn Van Ewijk**

Committee Member **Weslynn Ashton**

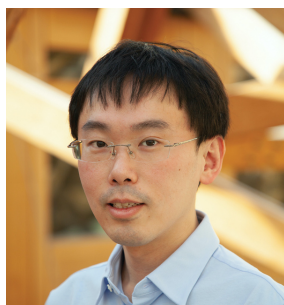
Committee Member **Paul Currie**

Committee Member **Keisuke Nansai**

Committee Member **Matthew Eckelman**

Committee Member **Shoshanna Saxe**

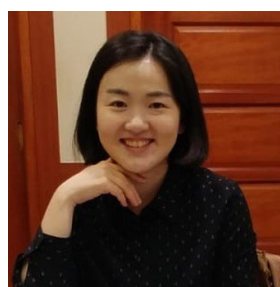
MEMBERSHIP COMMITTEE



QINGSHI TU



**KAZUYO
MATSUBAE**



**JOOYOUNG
PARK**



**EUGENE
MOHAREB**

A Report from the Member Satisfaction and Membership Benefits Survey

To gauge the status of the member satisfaction and gather opinions for membership benefits, a survey was conducted in August 2020 and 60 responses were collected. As for the service provided through the ISIE webpage, the results indicated a high level of member satisfaction:

about 93% responded that they were very satisfied or satisfied with the communication through the ISIE webpage and 92% were very satisfied or satisfied with its contents and accessibility.

Some of the suggestions for further improving the ISIE webpage include creation of forums similar to LCALIST Archives by SimaPro and

Table 1. Response to seven membership-exclusive benefits

	Agree (strongly agree)	Disagree (strongly disagree)
Conference discount	82% (52%)	5% (-)
Newsletters	42% (18%)	25% (3%)
Access to JIE	70% (43%)	20% (7%)
Online courses	53% (23%)	17% (5%)
Workshops and webinars	63% (27%)	17% (5%)
Teaching materials	60% (25%)	22% (7%)
Forums	63% (13%)	25% (7%)

informal communication channels, timely updates to the job board, provision of more educational videos, and increase accessibility to the content and JIE papers by changing design of the front page.

Opinions on the seven membership benefits were also solicited. As shown in Table 1, respondents were in general supportive for providing these exclusive benefits to members.

The two benefits that have been offered exclusive to members – conference discount and access to JIE – particularly received high supports. Exclusive benefits for online courses and newsletters also received more supports, but relatively less compared to other benefits. In addition to the seven benefits investigated, additional benefits such as heavy discounts for online conference, discounts for non-ISIE conferences, mentorship for students and early-career researchers, lifetime membership and/or fellow of the Society were proposed. There was also a suggestion for a two-tier model: free-access to these resources for members, but a fee-for-access for non-members (e.g., providing purchasing options for IE database, webinars, and/or case studies).

As for the interactions with industrial members, only 15% of the respondents expressed “sufficient” and the rest said either “neutral” or “insufficient”. To promote industry membership, the followings were suggested: sponsorship from sustainability- or CE-oriented companies, discounted research in exchange of industry data, and benchmarking of ACLCA (American Center for Life Cycle Assessment). Suggested activities with institutional members include networking events, company webinars, collaborative research projects, online repository for contact information.

COMMITTEE MEMBERS

Committee member **Jooyoung Park**

Committee member **Kazuyo Matsubae**

Committee member **Qingshi Tu**

Committee member **Eugene Mohareb**

▲ International Society
▼ for Industrial Ecology

ISIE Sections

Environmentally Extended Input-Output

Life Cycle Sustainability Assessment

Students

Sustainable Urban Systems

Island Industrial Ecology

Socio-Economic Metabolism

Industrial Symbiosis & Eco-industrial Development

Members of the ISIE are able to join subject sections as part of their membership. Sections provide a small community within the ISIE through which ideas are exchanged and collaborations are formed. Members can engage on a minimal level or can be considered for leadership positions within a Section.

ENVIRONMENTALLY EXTENDED INPUT-OUTPUT SECTION

The EEIO section of the International Society for Industrial Ecology (ISIE) is to develop environmentally extended input-output analysis internationally in academia and to promote its application in policy and businesses. This includes establishing and maintaining cooperation with international organizations, companies, and government organizations. The section may collaborate with the International Input-Output Association (IIOA) when organizing its activities.

Due to the Covid-19 pandemic, many planned activities have been cancelled in 2020, including “How to teach EEIO” workshop during EcoBalance 2020 supposed to be held in Japan. Although the workshop was cancelled due to the postponement of EcoBalance 2020, we would like to thank those who accepted to be lecturers; Prof. Sangwon Suh (Bren School of Environmental Science and Management, UCSB, USA), Prof. Shigemi Kagawa (Faculty of Economics, Kyushu University, Japan), and Dr Arunima Malik (ISA, School of Physics, The University of Sydney).

We will organize EEIO sessions across three time zones (Europe/Africa, Asia/Australia, America) on the Industrial Ecology Day June 21, 2021. We will also organize the ISIE-SEM perpetual online conference – joint session by SEM and IO sections. The scheme of the conference will focus on “Progress in modelling the socio-economic metabolism - linking stocks and flows through combined material flow and input-output analysis”. The EEIO section meeting will also be held on the same day. The EEIO section will also work with the Joint Interest Group on Life Cycle Assessment (LCA) of SETAC North America and the American Center for Life Cycle Assessment (ACLCA) to develop a roadmap to enable EEIO to better serve decision-making at all levels.

As of early January 2021, the section had a total of 178 members. The EEIO board is composed of four people.

SECTION BOARD MEMBERS

Co-Chair **Keisuke Nansai**

Co-Chair **Kuishuang Feng**

Board Member **Dominik Wiedenhofer**

Board Member **Moana S. Simas**

LIFE CYCLE SUSTAINABILITY ASSESSMENT SECTION

Reflecting on 2020

The new board was formed since April 2020:

We formed an editorial team for a special issue in the Journal of Industrial Ecology on Life Cycle Sustainability Assessment for Sustainable Development Goals and publicize it in relevant forums. The goals of the special issue include:

- Promoting original research that applies or develops quantitative and/or qualitative LCSA-related methodologies to support decision-making related to multiple SDGs in different economic sectors/industries/systems, and at different temporal and geospatial scales, including the local versus global dimension.
- Encouraging the integration of LCA with other advanced modelling techniques to better incorporate social, environmental, and economic considerations for improved LCSA methodology in support of various SDGs.
- Exploring how LCSA can contribute to the achievement of the SDG framework as a whole.
- Further developing the assessment and coverage of interlinkages, trade-offs and prioritization of SDGs in LCSA methodology.
- Considering further developments in the SDG community, such as a possible revision of the SDG framework, and studying how these possible adaptations could be flexibly covered in LCSA methodology.

LCSA section partnered with ACLCA and JIE to organize a webinar event “Innovation in LCA Emerging Technologies” on June 16th, 2020.

Highlight new LCSA section members, JIE feature articles, relevant news, and announce upcoming events in the ISIE LCSA quarterly newsletters.

We hosted a small survey of LCSA members to gather information on LCSA courses and course materials used in higher education. This led us to update the information on our section’s website.

Upcoming events in 2021

- The invitation for full manuscripts for the LCSA special issue will be issued in April, 2021 and the special issue publication is expected in early 2022.
- Organize webinars on timely topics related to LCSA.
- Lead a review of various LCA software with regards to their capabilities to conduct LCSA.
- Emphasize the use of social media, particularly increase the activity of the LinkedIn group and open a new Twitter account. The LCSA section will accordingly appoint a social media manager.

Introducing the new LCSA Board

You can read more about the newly elected LCSA board on the ISIE website [here](#).



Cassandra Thiel
(Co-chair)



Wenjie Liao
(Co-chair)



David Font
Vivanco



Oludunsin Tunrayo
Arodudu



Yuan Yao



Haibo Feng

SECTION BOARD MEMBERS

Co-Chair **Wenjie Liao**

Co-Chair **Cassandra Thiel**

Board member **Yuan Yao**

Board member **Oludunsin Tunrayo Arodudu**

Board member **David Font Vivanco**

Board member **Haibo Feng**

STUDENT SECTION

Membership

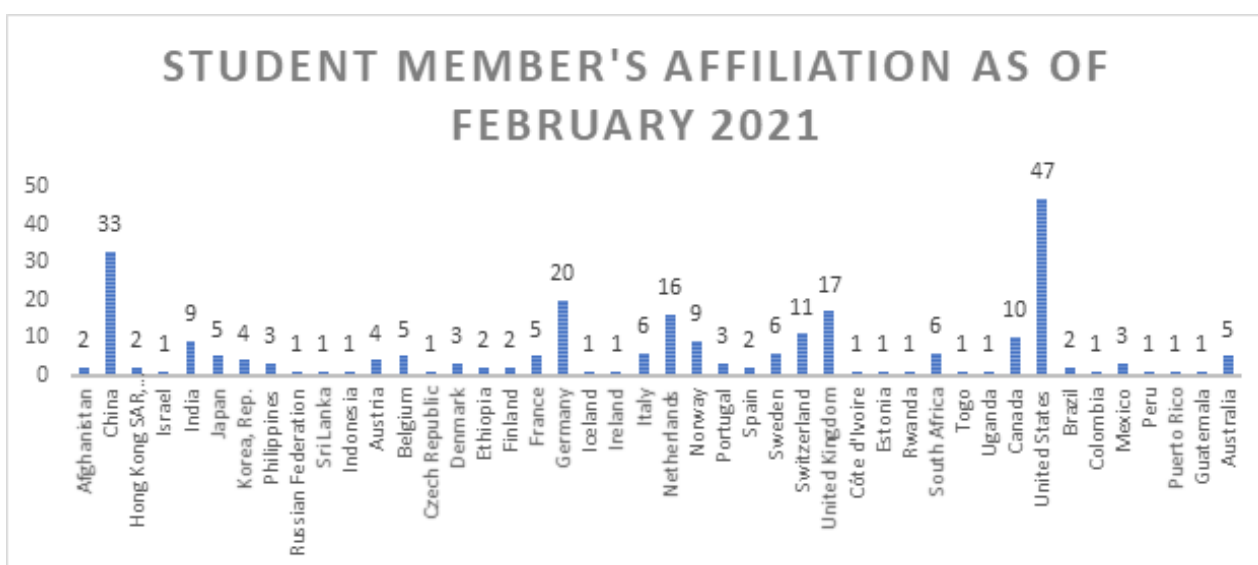
The Student Chapter is represented by a Board, with 10 international students in charge of organizing student activities, extending outreach, and supporting organization of conference activities. The Student and Young Professional Community of ISIE consists of 258 members from 44 countries across the globe. Currently, the United States, followed by China and Germany are the countries with the most student members registered with ISIE. We have the highest level of representation from Europe, Asia and North America in that order. Membership from Africa, South America and Oceania stands at 11, 9 and 5, respectively. While this is an increase from previous number of members, we are actively increasing our efforts to reach out to previously underrepresented countries term this year.

Accomplishments in 2020

Together, the members of the Student Chapter Board, students and ISIE council members met many goals over the last year. Apart from the events conducted, the Student Chapter Board has been busy planning for ISIE 2021 and adapting to the new circumstances during the current pandemic.

The following are some highlights from 2020:

- Held a large Student Virtual Networking Event with 26 participants in 2020 and a smaller event in December 2020 to connect fellow students and postdocs working on similar research topics
- Solidified the ideas for peer groups, an initiative by a previous team, and prepared it for a 2021 launch



- Began planning SIEYP 2021, with a view to impart skills relating to the topics of diversity and inclusion
- Held the 2020 Student Chapter Board elections, with 4 newly elected members

Planned Activities for 2021

- Conducting the first ever virtual SIEYP, with two goals: Firstly, we will be carrying forward the remarkable practice of having a workshop to impart a skill that young professionals can practically use. Secondly, as the pandemic prevents in-person networking, which is often the highlight of the conference, we will be dedicating and designing a section of SIEYP to better facilitate interactions amongst attendees.
- Launching Industrial Ecology Peer Groups, creating a peer network of students, postdocs and professionals working on similar themes to share progress, provide feedback, collaborate and support the overall development of members and scientific pursuit. Planned for a March 2021 launch with an informal advertising event, we are aiming at making the peer groups self-sustaining in the long run.
- Expanding our 2 member diversity and inclusion team into a 3 member committee, increasing our efforts to reach out to previously unrepresented countries, and providing support to members from these countries. More details about our Diversity and Inclusion efforts can be found in their report on Page 12.
- Continuing our successful run, conducting two Virtual Networking Events in May and November.
- Conducting the 2021 Student Chapter Board Elections in October 2021, to replace the 6 outgoing members, and installing a new and able team to carry forward our work.

SECTION BOARD MEMBERS

President	Aishwarya Iyer
Vice-president	Glenn A. Aguilar-Hernandez
Diversity & Inclusion Officer	Eleitte Restrepo
Diversity & Inclusion Officer	Fernando Aguilar Lopez
Diversity & Inclusion Officer	Akshi Singh
Board Member At-Large	Diana Ita Nagy
Board Member At-Large	Brent McNeil
Board Member At-Large	Sónia Cunha
Board Member At-Large	Daniel Itzamna Avila-Ortega
Board Member At-Large	Jan Streeck

SUSTAINABLE URBAN SYSTEMS SECTION

The Sustainable Urban System (SUS) Section wants to engage practitioners and researchers by providing a platform for multidisciplinary systems approaches to understand, plan, build, and manage sustainable, healthy, and resilient cities. As of early February 2021, the Section has 191 members.

In 2020, the Section was highly involved in the foundation of the new unconference series - Actionable Science for Urban Sustainability (AScUS), organized webinars to discuss COVID-19 related teaching and research collaboration opportunities, continued its Member Spotlights series, and elected a new board.

Actionable Science for Urban Sustainability (AScUS) in June 2020

- AScUS is a multidisciplinary, discussion-only, and participant-led event to promote knowledge sharing and co-production.
- The event was supposed to be a hybrid online/in-person event in Segovia (Spain), but it was moved entirely online with the COVID-19 pandemic and had about 70 participants.

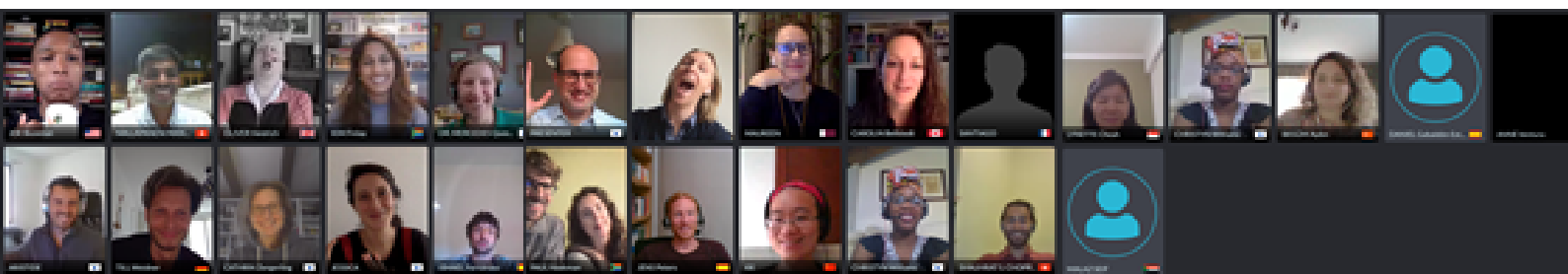
- AScUS was co-developed with the Metabolism of Cities (MOC) organization that also developed and hosted the unconference website.
- Every discussion session led to a concrete Path-2-Action (P2A) document that could take any form and to the development of a podcast and a website.

Teaching/Research seminars for COVID-19 related opportunities

- Teaching: a seminar was organized for everyone to share their experience and frustration with online teaching.
- Research: a seminar was organized to share research ideas and start new collaborations.

Members Spotlights

- Launched in April 2018, SUS Member Spotlights aims to connect our members and help everybody to get to know each other. We featured 12 members in 2020.



Board election

As the SUS section board elected in 2017 reaching its end of term, we conducted an election in October 2020.

The 2017-2020 board includes:

- Chair: Sybil Derrible, University of Illinois at Chicago.
- Vice-Chair: Oliver Heidrich, Newcastle University.
- Treasurer and Research Coordinator: Eugene Mohareb, University of Reading.
- Secretary: Hua Cai, Purdue University.
- Web Editor and Communication Strategist: Matan Mayer, IE University.
- Professional Liaison Coordinator: Paul Hoekman, Metabolism of Cities.
- Awards Coordinator: David Bristow, University of Victoria.

The newly elected board includes:

- Co-Chair: Melissa Bilec, University of Pittsburgh



- Co-Chair: Hua Cai, Purdue University
- Professional Liaison Coordinator: Joe Bozeman III, University of Illinois at Chicago
- Web Editor and Communication Strategist: Liang Dong, City University of Hong Kong
- Research Coordinator: Shauhrat Chopra, City University of Hong Kong
- Treasurer and COP26 Activities Coordinator: Oliver Heidrich, Newcastle University
- Secretary and Creative Director: Paul Currie, Stellenbosch University

Upcoming events and activities in 2021

- Proposed a Session for the ISIE Virtual Day
- Engaging emerging professionals in section activities
- Refining strategic vision for the section

SECTION BOARD MEMBERS

Co-Chair **Melissa Bilec**

Co-Chair **Hua Cai**

Treasurer and COP26 Activities Coordinator **Oliver Heidrich**

Secretary and creative director **Paul Currie**

Web Editor and Communication Strategist **Liang Dong**

Professional Liaison Coordinator **Joe Bozeman III**

Research coordinator **Shauhrat Chopra**

ISLAND INDUSTRIAL ECOLOGY

Between August and September 2020, the ISIE board discussed and approved a new section by the name of “Island Industrial Ecology” (Island-IE). Proposed by Simron J. Singh, along with twelve other proponents from various countries, the Island-IE is now one of the seven sections of ISIE. The inaugural board of seven members established in early 2021 was through an open call for “willingness to serve” for a period of 2 years. The board members are: Simron J. Singh (Chair), John Telesford (Vice-Chair), Bart Van Hoof (Secretary), Dominik Noll (Treasurer), Catalina Spataru (member), Simran Talwar (member), and Bob Paul (member). The board also welcomes Haoran Zhang (non-voting) who has kindly agreed to support new section with website and communication. The member strength of Island-IE is currently 50.

Islands are sites of compound events and multiple risks. They are highly vulnerable to the impacts of global warming such as sea-level rise, flooding, droughts, and hurricanes. Practices such as infrastructure development along the coast, high imports, undiversified exports, poor waste management, and centralised energy systems are additional stressors. At the same time, islands are excellent systems for Industrial Ecology scholarship, and offer a rare opportunity for sustainability research and transformation.

With relatively well-defined boundaries, naturally and socially, they can be “real-world laboratories”, an approach that is gaining momentum in addressing societal challenges.

The Island Industrial Ecology (or Island-IE) section of the ISIE promotes basic and policy-relevant industrial ecology research on islands to foster a transformation to sustainability. The Section encourages combining transdisciplinary approaches to engage stakeholders for more inclusive resource-use patterns on islands. Section members address issues such as resource self-sufficiency, food and energy security, sustainable water and nutrient management, (disaster) waste management, resilient infrastructure, and the equitable distribution of costs and benefits of resource-use. Concepts applied include (but not limited to) circular economy, socio-metabolic research, industrial symbiosis, decoupling, life-cycle approaches, citizen science, material recoverability, green infrastructure, and nature-based solutions to enhance system resilience.



The goals of Island-IE are:

- To provide a platform to support networking, create communities of learning and practice, and interaction between various stakeholders such as scholars, policy-makers, students, non-government organizations, and academic institutions.
- To promote and manage an open-access data sharing platform and fulfill a recognized need for statistical capacity on islands for use by scholars, policy, and businesses.
- To organize virtual or in-person science and science-policy events for discussing and disseminating insights generated by Island-IE members in support of healthy and resilient islands.
- To build industrial ecology research capacity on islands by encouraging collaborations with and between island-based institutions, and promote peer-to-peer student exchange and learning.

SECTION BOARD MEMBERS

Chair	Simron J. Singh
Vice-Chair	John Telesford
Secretary	Bart Van Hoof
Treasurer	Dominik Noll
Member	Catalina Spataru
Member	Simran Talwar
Member	Bob Paul

SOCIOECONOMIC METABOLISM SECTION

The year 2020 was certainly a turbulent year due to circumstances and uncertainties around Covid-19, which restricted face-to-face interactions and travel. The ISIE-SEM section has responded to these changes in multiple ways, focusing on remote engagement and interaction among section members and between sections. These were the core of the SEM section's activities this year, as detailed below.

The ISIE Socioeconomic Metabolism Perpetual Conference

The SEM section started a monthly series of online sessions to allow exchange in our community even when physical conferences are not possible. Holding the conference online enables us to avoid not only spatial restrictions but also temporal limitations – online conferences do not have to be condensed to a limited number of days like a regular conference. Instead, the ISIE-SEM Perpetual Online Conference will hold its sessions periodically. Think of it as a hybrid conference-webinar series.

Sessions are held once a month, and are accessible in real time to anyone via Zoom (allowing audience participation) and YouTube (view only), and the recordings are made available on the ISIE website:

<https://is4ie.org/events/isie-section-conferences/65>

In total, over 500 participants joined the ISIE-SEM perpetual online conference so far in real time, plus 800+ views on YouTube in total (as of 2021.02.08).

The ISIE-SEM Perpetual Online Conference continues in 2021, and will be expanded with more SEM members' engagement, and new session topics.



SEM Website updates, social media presence, and welcome message

In parallel with the online conference, we have updated our section web site and activity. We have added content presenting the section's mission and focus and have flanked the regular online events with announcements on the ISIE-SEM website and social media posts (twitter: @isie_sem). Also, we have composed a welcome message to all new members containing tips and links about the section.

SEM biannual conference

The 2020 ISIE-SEM biannual conference which was planned to be held in Sendai, Japan, jointly with the EcoBalance Conference, but could not be held due to Covid19. Plans for the 2022 conference are still on hold and decision will be taken, once the date for the regular bi-annual ISIE conference has been decided.

Sessions of the SEM Perpetual Conference so far

Most sessions are available to view on the [ISIE website](#).

Session 1: COVID-19 and SEM

9 July 2020

Chair: Tomer Fishman

Speakers: Benjamin Sprecher (Leiden-U), Vered Blass (Tel Aviv-U), Dominik Weidenhofer and Helmut Haberl (IFF, AU)

Participants: 46

Viewers: 66

Session 2: Spatially-explicit SEM research

2 September 2020

Chair: Stefan Giljum

Speakers: Dan Moran (NTNU), Victor Maus (WU Vienna), Jing Guo (Nagoya-U), Neus Escobar (U-Bonn)

Participants: 80

Viewers: 83

Session 3: The Resource Constraint of the Green Transition

9 October 2020

Chair: Gang Liu

Speakers: Ester van der Voet (Leiden-U), Keisuke Nansai/Takuma Watari (NIES), Stefan Horn/Evi Petavratzi (British Geological Survey), Joris Baars/Oliver Heidrich (Newcastle-U)

Participants: 80

Viewers: 600

Session 4: Nutrients for Food

27 November 2020

Chair: Kazuyo Matsubae

Speakers: William Brownlie (UK Centre for Hydrology & Ecology), Allison M Leach (U-New Hampshire, US), Helmut Rechberger (Vienna-U of Tech, AU), Azusa Oita (NARO, JP)

Participants: 40

Viewers: 71

Session 5: Industrial Ecology and the Circular Economy

9 December 2020

Chair: Stefan Pauliuk

Speakers: Junming Zhu (Tsinghua-U, CH), Eleonore Lebre (Sustainable Minerals Institute and U-Queensland, AU), Stijn Van Ewijk, Yale, US)

Participants: 80

Viewers: -

Session 6: Toward Sustainable Material Stock 28 January 2021

Chair: Hiroki Tanikawa

Speakers: Tomer Fishman (IDC Herzliya, Israel), Ippei Maruyama (U-Tokyo, Japan), Maud D. Lanau (U-Sheffield, UK), Beijia Huang (U-Shanghai Science and Technology, China)

Participants: 73

Viewers: 64

Session 7: Socio-economic metabolism and inequality

25 February 2021

Chair: Peter-Paul Pichler

Speakers: Diana Ivanova (U-Leeds, UK), Joe Bozeman (U-Chicago, US), Ingram Jaccard (PIK)

Participants: 53

Viewers: 21

Session 8: ISIE and Oceans

28 April 2021

Chair: Helen Hamilton

Speakers: Tamar Makov & Alon Shepon (BGU & Tel Aviv-U, Israel), Paritosh Deshpande (NTNU), Julia Blanchard (U-Tasmania)

Participants: -

Viewers: -

Socio-economic metabolism research during the Industrial Ecology Day 2021, June 21.

This year's main industrial ecology online event, the Industrial Ecology Day 2021, will feature sessions of various formats, including keynote talks, poster and oral presentations, panel discussions, and networking events. There will be various contributions from our community, including sessions on the stock-flow-service nexus, data and uncertainty, the use of machine learning and big data, urban metabolism, community MFA modelling, built environment, and circular economy transition, in particular. In total, more than half of the sessions have a direct relation to socioeconomic metabolism.

For the detailed program, please visit: <https://is4ie.org/events/event/international-industrial-ecology-day-2021>

We look forward to this exciting event!

Best practice guidelines for MFA

The SEM section board has started the compilation of best practice guidelines for conducting scientific material and energy flow analyses (MEFA). The document will contain the basic requirements for locating data in a systems context, data transparency, and recommendations for the use of common classifications for materials, commodities, and processes. A draft of the document was sent out to the researcher community for review in September 2020. Another round of expert feedback was collected in February 2021, this time targeting government research centers and statistical offices as well as those researchers who had provided substantial input during the first round of review. The guidelines are currently finalized and their release is scheduled for June 2021.

SECTION BOARD MEMBERS

Chair **Hiroki Tanikawa**

Vice-Chair **Stefan Pauliuk**

Secretary **Gang Liu**

Treasurers **Kazuyo Matsubae, Stefan Giljum**

Web Editor & Communication strategists **Peter-Paul Pichler, Helen Ann Hamilton**

Link to ISIE membership committee **Tomer Fishman**

▲ International Society

▼ for Industrial Ecology

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