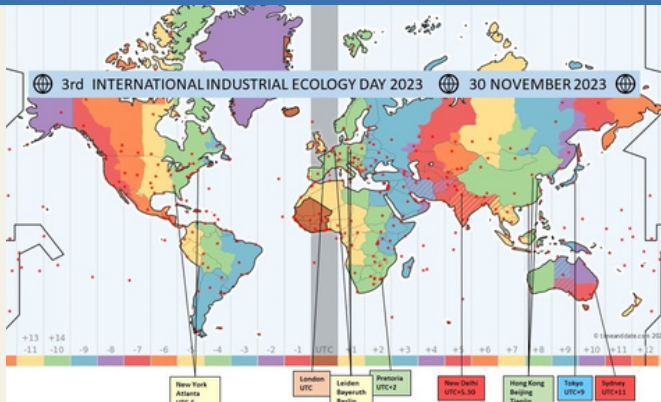


JOURNAL OF
INDUSTRIAL ECOLOGY

Special Issue on
the Industrial Ecology of Climate Change Adaptation and Resilience



Yale School of Forestry & Environmental Studies



ISIE ANNUAL REPORT

2023

▲ 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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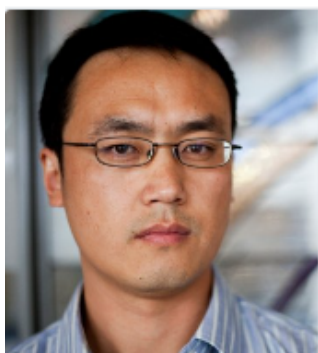
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PRESIDENT'S REPORT



**MING
XU**
PRESIDENT

Reflecting on ISIE's remarkable achievements and growth in 2023, I am pleased to convey the notable strides our society has taken in various domains.

The 11th International Conference on Industrial Ecology in Leiden, Netherlands, emerged as a pivotal moment for ISIE. With an impressive turnout of over 850 participants from 40+ countries, it stands out as one of our largest gatherings. Notably, this event marked the first comprehensive assembly of our society since the onset of the pandemic. The conference, themed "Transitions in a World in Turmoil," addressed critical concerns encompassing energy, resource utilization, climate change, and sustainability. I extend gratitude to Tomer Fishman and René Kleijn for their instrumental roles in organizing this successful event.

By the conclusion of 2023, ISIE witnessed a record surge in membership, surpassing the 1,100-member milestone. While some members have yet to renew their annual memberships as of February 2024, our community remains robust with 990 active members – a record high. Our membership spans across 50+ countries, with a notable surge in European representation, reaching 47% in 2023, largely

attributed to the success of our biannual conference in Leiden, Netherlands. Simultaneously, other regions, particularly Asia, maintained strong representation. Ongoing efforts are directed towards further bolstering participation from Asia leading up to the 2025 conference in Singapore.

In 2023, the establishment of the "Sustainable Circular Economy" (SCE) section proved immensely successful, attracting 363 members. This accomplishment reflects an overall upswing in ISIE membership across all sections, totaling 2,854 members. On average, each ISIE member engages with two to three sections, highlighting the diverse range of interests and expertise within our community.

The ISIE Development Board concentrated its efforts on strategic initiatives requiring financial backing. Seven impactful initiatives were identified, ranging from supporting student attendance at the 2025 ISIE conference in Singapore to the development of a summer school in industrial ecology. These member-driven initiatives aim to fortify ISIE's operational and educational endeavors, fostering sustained growth.

The recognition of Prof. Ester van der Voet with the prestigious Society Prize, the highest accolade for professional achievement within ISIE, and Prof. Christoph Helbig's receipt of the Laudise Medal for outstanding achievements by a researcher under 36, were celebrated through an online award ceremony in early 2024. This highlighted the exceptional contributions within our community.

The formation of a new Education Committee, led by Lynette Cheah, marked a proactive step towards advancing educational initiatives, particularly focusing on supporting industrial ecology education in developing countries.

The Journal of Industrial Ecology (JIE) continued to thrive, with numerous innovative papers published and special issues launched. Metrics such as impact factor, readership, and open-access initiatives underscored the sustained influence and relevance of the JIE.

At the end of 2023, we heard the sad news of Bob Ayres' passing. Industrial Ecology lost a giant and we lost an old friend. An online forum was created on the ISIE website for our members to share their memories of Bob. At the 2024 Gordon Research Conference on Industrial Ecology, there will also be a session dedicated to Bob.

As we look forward to the 12th biennial conference in Singapore in 2025, I am confident that ISIE will continue to evolve, bringing together scholars and practitioners from across the globe. Our unwavering commitment to diversity, inclusivity, and the development of the next generation of industrial ecologists remains resolute. I extend gratitude to each member for their continued support, and I anticipate another year of collaborative efforts, innovation, and progress within the ISIE community.

MEMBERSHIP REPORT



**SIMRON
SINGH**
SECRETARY

The society has seen the highest membership levels on record at the end of 2023 with 1,100+ members. At the time of writing this report (February 2024), some members had not renewed their annual membership, and so our numbers now stand at 990, still the highest on record (see Table 1).

	2022	2023	2024
Student	303	309	505
Regular membership	357	290	359
Young Professional	71	65	108
Courtesy membership	8	13	18
Total	739	677	990

Table 1: Comparison of ISIE membership at the beginning of years 2022, 2023 and 2024

Where is Our Membership?

Our members come from across 50+ countries, from all regions of the world (Figure 1). In the past year, the growth in membership has been mostly in Europe, from a share of 39% in 2022 that increased to 47% in 2023. This is not surprising since the last biannual conference was in Europe (Leiden, Netherlands) that attracted new members to the society from nearby who attended the conference. Accordingly, the % share of other regions declined, but not in absolute numbers: Asia from 32% to 26%, North America from 24% to 21%, while others remained more or less the same (Figure 2). Within Asia, China continues to have the highest number of members with 122 members, followed by Japan with 39 members (Figure 1). Asia still remains the second-ranked global region in terms of representation in the ISIE Society. This share is likely to increase in the next two years as several efforts are underway to attract researchers from Asia to the society, leading up to the next biannual conference in Singapore in 2025.



Figure 1: ISIE membership map across world regions

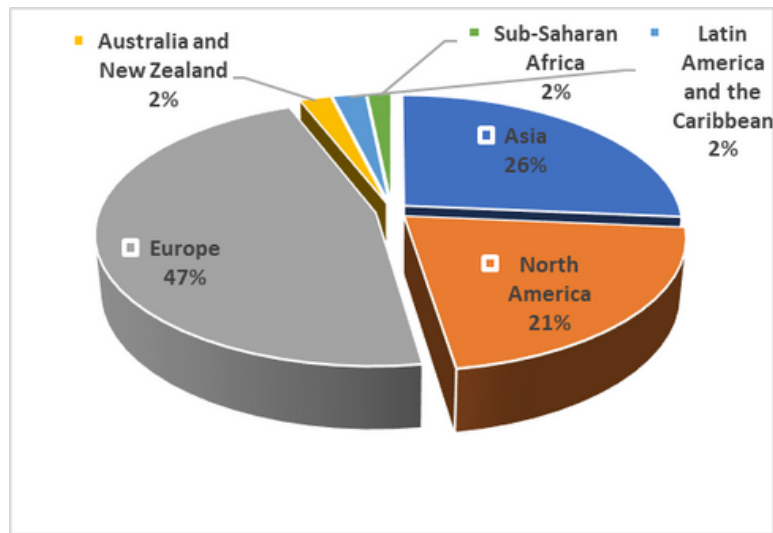


Figure 2: ISIE membership by percentage across global regions in Feb 2024

Members Involved in Sections

A new section “Sustainable Circular Economy” (SCE) came into existence in 2023 that has seen tremendous popularity with 363 members currently. Moreover, the overall increase in ISIE membership in 2023 also translated to growth across all its Sections (Figure 3). The sum of membership across all Sections appears to be 2,854. This suggests that, on average, an ISIE member is involved in two to three Sections, highlighting the diverse range of interests and expertise of the society's membership.

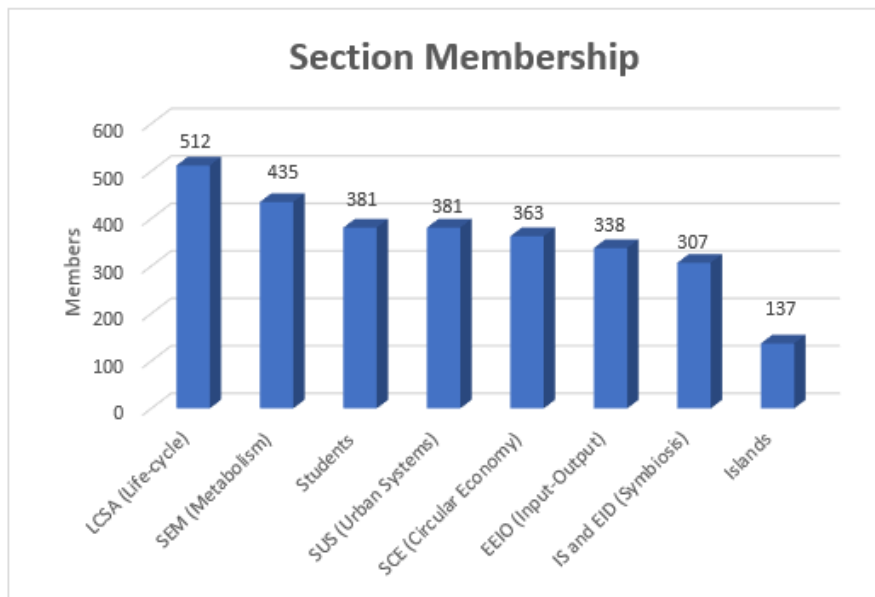


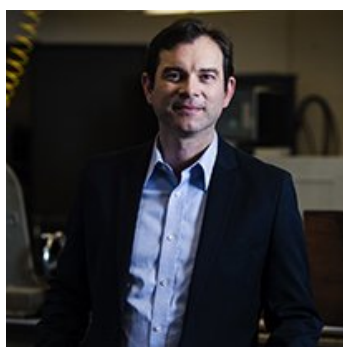
Figure 3 Membership across the sections in Feb 2024

The notable, consistent increase in both the quantity and the percentage of student and young professional members over the last four years stands out as a key development. The rise in student and young professional membership is especially encouraging for the society, as these members infuse the organization with new perspectives, innovative ideas, and a vibrant energy that can propel the society and the wider community forward.

Moreover, the society actively encourages and backs proposals from students for projects that guarantee access to essential resources, mentorship, and networking opportunities crucial for their professional success. In 2023, the society green-lighted three membership initiatives that were widely accessible to its members, all of which originated from students or those in the early stages of their careers. This approach of supporting members interested in spearheading their initiatives allows the society to tap into the diverse talents and knowledge within its community.

Overall, the membership growth and the society's widening global influence are positive signs of the ISIE Society's dedication to cultivating a diverse and welcoming community of scholars and practitioners. The ISIE Society's board, along with its sections and committees, has made substantial contributions towards equipping members with valuable resources and insights pertinent to industrial ecology. A significant driver behind the society's ability to attract new members has been the reduction of membership fees in the past, making it more accessible for all regions of the world and groups to participate. Furthermore, the society's proactive stance on encouraging student involvement displays its commitment to nurturing the next wave of professionals in industrial ecology.

FINANCIAL REPORT



**MATTHEW
ECKELMAN**
TREASURER

The ISIE is in a stable financial position, with growing expenditures on member proposals and scholarships balanced by growing membership dues. There were no major changes to the structure or magnitude of expenses for this fiscal year, which corresponds to the calendar year 2023. The ISIE holds two cash accounts, in euros and in US dollars, and pays expenses from whichever account holds the fewest fees. The overall balance sheet is presented in euros.

A major process improvement this year was the uploading of all of the ISIE's transactions and accounts into the professional accounting software Quickbooks Online, as suggested by last year's independent financial review. This move will enable modern accounting and rapid reporting functions, and will help prepare ISIE in case it needs to prepare detailed financial statements for bureaucratic purposes.

Income: The Society generally 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 and donations for 2023 amounted to €43,764 (before credit card fees), more than €15,000 greater than was expected and more than 35% greater than in 2022, thanks to a strong membership increase. An additional unexpected source of income was interest on the two cash accounts, which amounted to €3,321, thanks to high global interest rates.

Staff Expenses: There are two main paid positions within the ISIE: the Administrative and Outreach Manager running the secretariat, and the Executive Director. In 2023, these remunerations were slightly less than half of our expenses. The contract for the Administrative and Outreach Manager position was extended through to 2024; the new contract is reflected in the 2023 budget and did not substantially impact ISIE's finances. In addition, the Secretary and the Treasurer receive a modest remuneration of €2,500 each.

General Expenses: Apart from staff, our operating expenses are lean by design, totalling less than €5,000. The majority of this is for website management and legal fees. After opening an additional cash account and enabling payments in both euros and dollars, actual banking fees dropped from €429 in 2022 to €131 in 2023. Higher-than-expected credit card fees (€1,192 actual vs. €645 budgeted) are a function of our large number of membership transactions through Stripe, our payments processor.

Travel: The ISIE supported travel for the Executive Director and Admin and Outreach Manager to attend the ISIE conference in Leiden, the Netherlands.

Scholarships and Awards: The ISIE spent €14,039 to support scholarships for non-US young scholars to attend the ISIE Conference in the Netherlands, while US young scholars were supported by a \$50,000 grant from the US National Science Foundation. In addition, the ISIE provided €1,000 for awards for the student poster competition. The 2024 budget includes €15,000 to support student scholarships for GRC meeting in Switzerland.

Projects and Initiatives: Several member initiatives were approved by the board in 2022-2023, with expenditures occurring in 2023 for the Industrial Ecology and Circular Economy report, Innovative Abstracts, IE and Islands workshop and videos, and ISIE marketing videos, totaling €13,154. There were also 2022 budgeted expenses from the organization of JIE handover events and celebrations that were finally completed and paid out in 2023.

Journal of Industrial Ecology: The ISIE has assumed ownership of the Journal of Industrial Ecology (JIE), which operates essentially as a subsidiary with its own budgeting. The JIE budget and contracts are expressed in USD, which makes integration into ISIE's euro budget challenging in terms of accounting. The Treasurer is working with an external accountant to explore the best way to organize the JIE's accounts within the ISIE's. Over the past several years, the JIE has posted a surplus of approximately \$10,000 per year. The 2024 budget submitted by the JIE will cover expenses for all editorial services and other expenses and is again expected to have a surplus.

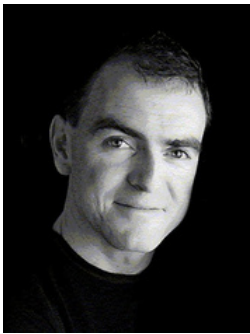
Reserves: Accounting for income and expenses that were budgeted in 2022 in paid in 2023, as well as budgeted in 2023 and paid early in 2024, reserves were €182,642 (combined euros and US dollars) at the beginning of 2023 and €196,816 at the end of 2023.

ISIE 2024 Proposed Budget

	2022		2022		2023		2023		2024		2025	
	Budgeted		Actual		Budgeted		Actual		Proposed		Projected	
Income (€)												
Memberships and Donations	€	18.000,00	€	31.753,65	€	26.000,00	€	43.764,48	€	30.000,00	€	32.000,00
Conference Income	€	-	€	-	€	60.000,00	€	60.000,00	€	-	€	30.000,00
Journal of Industrial Ecology Income	€	82.854,92	€	82.881,97	€	103.347,07	€	104.110,73	€	98.138,45	€	101.039,00
Journal of Industrial Ecology prior payment:	€	38.610,81	€	38.610,81	€	-	€	-	€	-	€	-
Interest	€	-	€	-	€	-	€	3.321,44	€	3.000,00	€	3.000,00
Total income	€	139.465,73	€	153.246,43	€	189.347,07	€	211.196,65	€	131.138,45	€	166.039,00
Expenses (€)												
Remunerations												
Administrative Services	€	(9.902,00)	€	(8.400,00)	€	(19.350,00)	€	(19.350,00)	€	(19.950,00)	€	(20.400,00)
Executive Director	€	(13.325,00)	€	(16.106,61)	€	(12.253,88)	€	(12.253,88)	€	(13.694,40)	€	(14.265,00)
Secretary Remuneration	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)
Treasurer Remuneration	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)	€	(2.500,00)
General expenses												
Accounting	€	(258,00)	€	-	€	-	€	-	€	(620,17)	€	(650,00)
Credit card fees	€	(540,00)	€	(788,25)	€	(645,42)	€	(1.192,23)	€	(744,72)	€	(794,37)
Banking Fees	€	(255,00)	€	(429,28)	€	(200,00)	€	(130,70)	€	(220,00)	€	(130,70)
Website Management	€	(3.300,00)	€	(3.326,40)	€	(3.350,00)	€	(2.610,47)	€	(3.000,00)	€	(3.000,00)
Other costs	€	(206,00)	€	-	€	-	€	-	€	-	€	-
Legal Regulatory, and Insurance	€	(3.000,00)	€	(1.089,12)	€	(1.200,00)	€	(923,50)	€	(1.200,00)	€	(1.200,00)
Travel												
Executive Director and Admin Manager	€	(2.000,00)	€	(1.748,26)	€	(5.000,00)	€	(3.578,94)	€	(5.000,00)	€	(5.000,00)
Scholarships and Awards												
Conference Scholarships	€	(10.000,00)	€	(9.997,12)	€	(15.000,00)	€	(14.039,03)	€	(15.000,00)	€	(15.000,00)
ISIE Awards	€	(750,00)	€	(2.475,07)	€	(1.750,00)	€	(1.000,00)	€	(1.000,00)	€	(2.000,00)
Projects and Initiatives												
JIE Special Issue and Handover Organization	€	(2.000,00)	€	-	€	-	€	(2.943,05)	€	-	€	-
Member and Board Proposals	€	(22.500,00)	€	-	€	(12.250,00)	€	(13.154,50)	€	(15.000,00)	€	(15.000,00)
Journal of Industrial Ecology												
Journal of Industrial Ecology	€	(109.650,30)	€	(85.137,91)	€	(97.002,95)	€	(90.933,46)	€	(91.094,39)	€	(93.294,05)
Journal of Industrial Ecology carry-over	€	-	€	(16.642,50)	€	-	€	-	€	-	€	-
Total expenses	€	(182.686,30)	€	(151.140,53)	€	(173.002,25)	€	(167.109,76)	€	(171.523,68)	€	(175.734,12)
Net income (€)												
	€	(43.220,57)	€	2.105,90	€	16.344,82	€	44.086,89	€	(40.385,23)	€	(9.695,12)
Start-of-year reserves*	€	180.535,66	€	180.535,66	€	182.641,56	€	182.641,56	€	226.728,45	€	186.343,22
End-of-year reserves*	€	137.315,09	€	182.641,56	€	198.986,38	€	226.728,45	€	186.343,22	€	176.648,10
*equivalent in €; separate currency reserves and obligations listed in balance sheet												
Average exchange rate of 1 USD =		0,951		0,951		0,951		0,951		0,951		0,951

(blue text indicates obligations paid in following year)

FINANCE COMMITTEE REPORT



TIM BAYNES

**FINANCE
COMMITTEE**

These are perhaps the most thorough and accurate financial statements produced by ISIE to date. In response to recommendations of the previous Finance Committee report, the Treasurer has adopted professional accounting software which undoubtedly has reduced the likelihood of calculation or reporting errors and, we hope, made the Treasurers role more productive. There may be some residual expenses that appear in the more recent PDF reports that need reconciling with the provided ISIE 2024 Proposed Budget spreadsheet[1], but agreement across all documents and accounts is much improved compared to previous years.

After corresponding with the Treasurer and reviewing the 2023 accounts and financial statements for the Annual Report, the Finance Committee has no significant concerns regarding the 2023 actual figures presented, nor the 2024 forward budget.



JIASHUO LI

**FINANCE
COMMITTEE**

We welcome comments from the Treasurer and, indeed, hope that in the Treasurer's Annual report or elsewhere, the recommendations of the prior year's Finance Committee Report are acknowledged and what changes made, if any, are documented. This cycle of reporting, review and reporting could provide a useful history for successive Treasurers.

Comments on ISIE 2023 Financial Tables

The Finance Committee have reviewed the ISIE's Financial tables of actual Profit and Loss and the Balance Sheet for 2023 in comparison with budgets submitted in the preceding Treasurer's report at the AGM 2023.

1. Of the Total income of over €198,000 in 2023, more than 7% of this is Net income after subtracting Total expenses. This may be expected in a biennial conference year when there is important Conference income. We have suggestions on how this may be used in non-conference year budgets later.

[1] For example, membership dues appearing late in the year. We have used the spreadsheets provided as the reference tables for numerical assessment here unless otherwise indicated as reference to a "report" generated in PDF by the accounting software.

2.Regarding Member Proposals and other activities, it is encouraging to see over €13,000 has been actually spent this year compared to zero for 2022, indicating a healthy level of activity beyond day-to-day operations.

3.Regarding the **ISIE Balance Sheet Detail 2023**, we note a substantial change in the **Equity** item in the Balance Sheet from €123,330 reported for 2022[2] to €167,018 in 2023 (35% change).

Equity is connected to the value of a company as owned by shareholders[3]. Please see the definition of equity here <https://www.investopedia.com/terms/e/equity.asp> and elsewhere. Total Equity should mathematically equal Total assets minus Total liabilities. The reported results may be correct but please ensure that the calculations for **Retained earnings** and **Total equity** are accurate.

4.We approve of the presentation of 4 years of accounts, which helps provide a view over at least two biennial conference years and two non-conference years.

5. To the extent that income from membership is worth reporting separately from donations, these two may be separated items of Income in future reports. This may not be possible when donations are made in the same payment action at membership renewal.

Some small changes are suggested in order and formatting that may be adopted for clarity in later reports:

6. In the ISIE Profits and Loss 2023 report, “JIE Graedel Prize EUR” should appear as an item of “Total ISIE Scholarships and Prizes”.

7. For the same table(s), it was noted that indentation (spaces) and bold formatting to differentiate each category, was used inconsistently.

(1) Regarding the bold formatting, for example, "Total ISIE member proposals" and "Total ISIE Scholarships and Prizes" were bolded though they do not belong to the same level of hierarchy as "Total Income." Perhaps we can consider using italics to highlight these items instead?

(2) The terms like "bank charges EUR" should be at the same hierarchical level as "Total ISIE member proposals," but there seems to be inconsistency in using bold formatting for some instances and not for others, making it less clear.

(3) Additionally, can we consider representing "expense" or "loss" as negative numbers in the report table consistent with the negative values in the spreadsheets.

Comments on ISIE 2024 Projected Budget

1.For the **ISIE 2024 proposed budget**, it seems that the projected total income level for 2024 is lower than the budgeted income level for 2022. This looks to be a result of the combination of a non-biennial conference year and the absence of “Journal of Industrial Ecology prior payments”. Never-the-less, there could be a moderately more positive outlook on income.

[2] <https://is4ie.org/resources/documents/81>

[3] A reading of Article 20 of the ISIE Bylaws (<https://is4ie.org/resources/documents/81>) does indicate that every Member is entitled to “receive an equal share” of the remaining value of the company after sale of assets under liquidation, which agrees with the definition of equity.

2. With the exception of planned expenses on the Executive Director, Administrative Services and Member Proposals, budgeted items for 2024 appear have the same or lesser value as the budget for 2023. With the Net income result mentioned earlier, we can see how this decision may reduce the proposed Net income loss of 2024 compared to that in 2022 – the previous non-conference year.

3. We would ask the Treasurer to consider alternative thinking to smooth out fluctuations in budgeted funding for Conference Scholarships and ISIE awards across biennial conference and non-conference years, perhaps through varying cash reserves, rather than expense budget items. This would improve year-to-year consistency in relationships between the ISIE accounts and some Membership benefits.

4. There is a budgeted increase in Journal of Industrial Ecology Income of approximately €13,700 compared to a previous annual actual increase of around €8,400. It would be good to understand the reasoning behind this expectation. We note, however, there was an unexpected charge in 2023 for the Journal to renew its trademark, and a reported “JIE Handover” expense of €15,900. Presumably these expenses won’t recur in 2024 and the net result for the Journal will be more positive than previous years (even if income expectations are not met).

DEVELOPMENT BOARD REPORT

ISIE Development Board 2023 Annual Activity Report

The ISIE Development Board during 2023 focused on choosing areas of ISIE needs that could be promoted by funding contributed by ISIE members and perhaps by others (corporations, charitable foundations, etc.) with an interest in assisting ISIE in its operational and educational activities. The result of these efforts was the development of an operational development plan (attached) that suggests seven different initiatives for which donated funds could be usefully targeted. Two of these are activities originated by members of the student section, whose initiatives we are pleased to recognize. The seven initiatives are as follows:

Support for students and junior faculty to attend the 2025 ISIE international conference in Singapore

Providing industrial ecology textbooks to faculty and students in developing countries

Support for two student positions to research, organize, and plan for administration of pre-university programs in industrial ecology and global change

Developing a platform for sustainability literacy and research dissemination

Developing an industrial ecology methods “crash course”

Support for a staff position as ISIE Director of Development

Support for development of a summer school in industrial ecology

With the concurrence of the ISIE President and Board, we plan to communicate this development plan to the ISIE membership. We also plan to develop a variety of donor information materials, and to begin solicitation activities with possible non-ISIE donors whose interests overlap those of our society.

Thomas Graedel, Chair
ISIE Development Board

Operational Development Plan (February 4, 2024)

ISIE Development Board

Objectives of This Operational Plan: This operational plan is presented to describe the actual and intended activities of the ISIE Development Board in support of activities related to the International Society for Industrial Ecology as the Society addresses local and global challenges related to the acquisition and use of material resources, industrial activities in support of climate change mitigation, sustainable consumption, urban planning, and related activities related to human development on a changing planet.

General Comment on Anticipated Specific Plans for the ISIE Foundation: The following plans relate to activities in active discussion by the Foundation in support of the Objectives presented below. These activities are not presented in order of preference, and all are viewed as potentially desirable activities in the next five to ten-year period.

Funding Opportunity Number 1: Support for Student and Junior Faculty to Attend the 2025 ISIE International Conference in Singapore

Project Coordinators: Koichi Kanaoka (Yale University) and Kamila Krych (Norwegian University of Science and Technology)

The goal of this activity is to make it possible for students and junior faculty, especially those from developing countries, to attend and participate in the next biennial meeting of the society. Some 800-1000 participants attend a typical meeting, but few are from developing countries due to financial constraints. Providing funding for about fifty such participants would assist them in their efforts as well as expand the reach of ISIE into regions of the world where ISIE's scientific approaches could be of great benefit.

The anticipated budget for such a program is as follows:

Travel per person - € 2000

Lodging per person - € 1000

Meeting registration - € 1000

Total per person - € 4000

Budget for the support of fifty attendees:
€ 200,000

Funding Opportunity Number 2: Providing Industrial Ecology Textbooks to Faculty and Students in Developing Countries

Project Coordinator: Lynette Cheah (Singapore University of Technology and Design)

The goal of this activity is to provide industrial ecology textbooks for students and junior faculty, especially those from developing countries, in support of industrial ecology instruction where textbook funds are low. Providing textbook funding has the potential to expand the reach of ISIE into regions of the world where ISIE's scientific approaches could be of great benefit. The budget for setting up this program and beginning to provide textbooks to those interested is € 10,000

Funding Activity Number 3: Support for two Student Positions to Research, Organize, and Plan for Administration of Pre-College Programs in Industrial Ecology and Global Change

Project Coordinators: Stephen Levine (Tufts University), Alissa Kendall (University of California Davis), and Roland Clift (University of Victoria, Canada)

The goal of this activity is to support two industrial ecology graduate students to research, organize, and work with local and perhaps regional pre-college and community

college instructors to bring industrial ecology and global change perspectives to students interested in industrial ecology, global change, and related topics.

Two students working part-time for a nine-month period are budgeted at € 2,000/month, or a total of € 36,000/yr. In anticipation that this effort might be extended to work with those in countries outside the initial test audiences, a three-year effort would cost € 36,000.

Funding Opportunity Number 4: Developing a Platform for Sustainability Literacy and Research Dissemination

Project Coordinator: Max Koslowski (Norwegian University of Science and Technology)

The goal of this activity is to provide support for the development of an informational platform on global change and methods for analysis and understanding related to sustainability. The goal is to provide a platform that would communicate industrial ecology goals and methods to the general public: a “wikipedia of industrial ecology”. Setting up the online platform is estimated to cost € 4,000.

Funding Opportunity Number 5: Developing an Industrial Ecology Methods Crash Course

Project Coordinator: Shiva Zargar (University of British Columbia)

The goal of this activity is to develop and implement an online “crash course” focusing on industrial ecology methods (LCA, MFA, TEA, etc.). The goal would be to communicate industrial ecology approaches to institutions, organizations, and industries who would benefit from such a focused platform. The cost to develop such a program is estimated to be € 6,000.

Funding Opportunity Number 6: Support for a staff position as ISIE Director of Development

Project Coordinator: Ned Gordon (ISIE)
The goal of this activity is to provide support for a

new full-time ISIE staff position to develop and implement plans for fund-raising and dissemination in support of the activities and intentions of the ISIE. The salary and benefits of such a position are estimated to be € 75,000 per year. A stretch goal is to endow this position for five years:

€ 375,000

Funding Opportunity Number 7: Support for Development of a Summer School in Industrial Ecology

Project Coordinator: Thomas Graedel
The goal of this activity is to develop and implement a two-week summer school for selected graduate students and faculty to learn about the latest advances and methodologies in industrial ecology. This effort would be modeled after summer schools currently held in specialties such as chemistry and biology. At each school the faculty would consist of world leaders (volunteers) in state-of-the-art industrial ecology, plus two staff members to administer the program and its details. The program would require a three-year period of development. The estimated cost per year is:

Support for travel and lodging for three faculty instructors and two program staff

Travel: € 3,000/person, Lodging: € 2,000/person, Salary (staff only, two months preparations and two weeks on site at € 5,000/month): € 40,000

Support for travel and lodging for twenty-five attendees:

Travel: 25 attendees at € 3,000/person = € 75,000, Lodging: € 50,000/person = € 125,000

Total for three summer schools:

Instructors and staff € 495,000

(This development plan was developed by Thomas Graedel (ISIE Development Board) and Ned Gordon (ISIE Executive Director) on February 4, 2024)

NOMINATING COMMITTEE REPORT



XIAO LI
MEMBER



SHWETA SINGH
MEMBER



RUPERT MYERS
MEMBER



**STEFANO
CUCURACHI**
MEMBER



REID LIFSET
MEMBER



**DOMINIK
WIEDERHOFER**
MEMBER



STEFANIE HELLWEG
IMMEDIATE PAST-PRESIDENT

Selection Process of Candidates

Process of Candidate Selection – The Nominating Committee evaluated the existing and future projected members of ISIE roles for diversity in regional representation, gender & racial diversity and diversity in experience level. A first shortlist of candidates was formed. Additional nominations were suggested and discussed to add to the potential candidate list for roles where there were shortfalls of potential candidates, until all ISIE roles up for election had at least two candidates standing. The Committee also made a note of being inclusive of gender neutrality/LGBTQ community to be all inclusive in future election announcements.

List of Final Selected Candidates for ISIE roles - Nominating Committee

Candidate	Position	Geographical Location/Gender/Position
Chika Aoki-Suzuki	Nominating Committee	Japan/Female/Senior Researcher
Peter Berrill	Nominating Committee	Germany/Male/Professor
Sina Leipold	Nominating Committee	Germany/Female/Professor
Stijn Van Ewijk	Nominating Committee	UK/Male/Assistant Professor
Luca Ciacci	Nominating Committee	Italy/Male/Senior Assistant Professor

List of Final Selected Candidates for ISIE roles - Board members

Candidate	Position	Geographical Location/Gender/Position
Junming Zhu	Board Member	China/Male/Associate Professor
Tamar Makov	Board Member	Israel/Female/Assistant Professor
Ramzy Kahhat	Board Member	Peru/Male/Professor
Arpad Horvath	Board Member	California/Male/Professor

The final election materials are currently being prepared. The election is expected to be completed around mid-April 2024.

AWARDS COMMITTEE REPORT



**STEFANIE
HELLWEG**
CHAIR



**MING
XU**
MEMBER



**ANDREA
HICKS**
MEMBER



**SHINICHIRO
NAKAMURA**
MEMBER



**YUAN
YAO**
MEMBER

Members in the year 2023: Andrea Hicks, Shinichiro Nakamura, Ming Xu, Yuan Yao and Stefanie Hellweg (chair).

The Awards Committee solicits nominations for the Society Prize and the Laudise Medal and selects the awardees from the nominees. The Society Prize is awarded for outstanding contributions to the field of industrial ecology. It is the ISIE's highest recognition of professional achievement. The Laudise Medal is awarded for outstanding achievements in industrial ecology by an early career researcher. The awards committee includes the most recent awardees, the president and the past president (chair).

The awards committee met in two rounds in 2023. In the first round (March-May 2023), the call for nomination was released and several nominations of highly qualified candidates were submitted for the Society Prize, but not for the Laudise medal.

Prof. Ester van der Voet was selected as winner of the Society Prize. The award was officially handed over to her in the concluding session of the ISIE conference in Leiden in June 2023. In the same session in Leiden, the committee announced that the criteria for the Laudise medal were evidently not clear and that the awards committee would elaborate and publish those along with a renewed call for nominations in fall 2023.

In the second round (October – December 2023) the awards committee first defined and published criteria for the Laudise medal on the Webpage of the ISIE, along with the renewed call for nominations. A sizable number of nominations were submitted. From the pool of candidates, Prof. Christoph Helbig was selected as recipient of the Laudise medal.

Both awardees, Ester and Christopher, were invited to give an online presentation in January 2024 about their research. This colloquium was well attended and received.

It is available to the membership (and beyond) on ISIE YouTube channel:

<https://www.youtube.com/watch?v=cxyfIptvSI> .

The awards committee would like to thank everyone who submitted nominations or engaged otherwise in the process! And of course, it would like to warmly congratulate again Ester and Christoph as ISIE's 2023 awardees!

CONFERENCE COMMITTEE REPORT



**ANNA
PETIT-BOIX**
CO-CHAIR



**TOMER
FISHMAN**
CO-CHAIR

Summarizing four years of supporting ISIE conferences

The ISIE conferences committee has adjourned in April 2023 after four years of activity. The committee started as an ad-hoc working group in early 2019, following then-ISIE president Edgar Hertwich's call for member volunteers to take a lead in proposing long-term plans for the society's conferences and events. This working group became a full-fledged committee during the 2019 ISIE conference in Beijing, composed of member volunteers and ISIE board members.

In its first year, the conference committee originally focused on ISIE's regular biennial conferences and section meetings, aiming to better institutionalize and improve their schedules, diversity and inclusion, host selection processes, clearly define the roles of the society and the local hosts/organizers, and their environmental impacts.

The committee's focus naturally had to change during the Covid19 period. The conference committee adapted its objectives to the reality of lockdowns and other limitations. The conference committee's members had leading roles in the creation and organization of the new fully-online IE day, which by now had two iterations and is becoming an ISIE tradition. The committee also collected best-practice knowledge and advised the leadership of the society on online and hybrid platforms for conferences and events, with a report on challenges and opportunities of online conferences.

Following the ease of Covid restrictions and in preparation for the delayed ISIE biennial conference in Leiden, the Netherlands in 2023, the conference committee resumed some of its original objectives, which culminated in standardizing and facilitating guidelines for ISIE conferences. These guidelines include:

- Format of the call for proposals to host the next biennial conference
- General information on ISIE conferences
- Review of past ISIE biennial conferences
- Guidelines on host responsibilities and ISIE responsibilities
- Checklist for conference host proposals, including environmental criteria and social inclusion
- Template for principal budget items

The ISIE first used these new and revised guidelines in 2023 in the call to host the 2025 ISIE conference, which will be held in Singapore. With these guidelines in place, the society has a stable foundation for organizing its biennial conferences for upcoming years together with local hosts. The conference committee has thus completed its work in April 2023, a few short months before the very successful biennial conference in Leiden, the Netherlands. Nevertheless, the ISIE will continue working in various ways on conferences-related topics such as their environmental impacts, new formats like hybrid and multi-site conferences, alignment and collaborations with other academic societies' events, knowledge transfer between conference hosts, and so on.

THE ISIE 2023 BIENNIAL CONFERENCE IN LEIDEN, THE NETHERLANDS



TOMER FISHMAN
CO-CHAIR



RENÉ KLEIJN
CO-CHAIR

The 11th International Conference on Industrial Ecology (ISIE2023) of the International Society for Industrial Ecology, was from July 2 to 5, 2023. Following a lengthy delay caused by Covid19, we're excited that the conference made its way back to Leiden, the Netherlands, where the first ISIE conference was held in 2001.

The Leiden conference may have been the largest Industrial Ecology so far, with over 850 passionate individuals from over 40 countries. We had around 820 presentations in 99 oral sessions, 2 poster sessions of around 350 posters, seven keynote speakers, and the first participation of two new ISIE sections (Islands and Circular Economy).

The conference celebrated the power of Industrial Ecology in finding science-based solutions for sustainability problems.

We, scientists, need to stick together and work towards a better future in this turbulent world. The conference theme was Transitions in a world in turmoil. The way we use energy and resources in our present system is not sustainable. Major changes are necessary in our energy system to make it climate-neutral. At the same time our use of land, water and material resources needs to change dramatically to become sustainable. To avoid further deterioration of nature and our environment and resource supply constraints we must move toward a circular economy, while at the same time ensuring equitable transitions. The Covid19 crisis and the Russian aggression in Ukraine have changed the geopolitical context in which these transitions will have to take place. This offers both challenges and opportunities.



11TH INTERNATIONAL CONFERENCE ON
INDUSTRIAL ECOLOGY:
TRANSITIONS IN A WORLD IN TURMOIL
JULY 2-5 2023, LEIDEN,
THE NETHERLANDS



The final version of the conference proceedings is on the [conference website](#) and the [ISIE website](#). It's possible to download the presentations of the participants that uploaded them from the [ExOrdo conference program](#). Please check here the [video of the ISIE2023 conference!](#) Photos are available upon request from the ISIE. The conference survey results are available on the ISIE website:

<https://is4ie.org/resources/documents/94>.

We deeply appreciate everyone's presence, engagement, and insightful discussions. The energy and enthusiasm in the conference rooms were inspiring, as bright minds tackled the pressing challenges of our time.

Looking ahead, the [12th biennial conference](#) of ISIE is planned to be held in vibrant Singapore in two years. Imagine the amazing experiences and connections we'll make in that dynamic city! We can't wait to see you there, ready to push the boundaries of industrial ecology and have a blast.

Once again, thank you for making the 11th ISIE Conference unforgettable. Let's keep collaborating, innovating, and inspiring one another as we pave the way for a more sustainable world.



Photo 1: Opening ceremony - René Kleijn and Tomer Fishman



Photo 2: Opening ceremony - Tomer Fishman with ISIE President Ming Xu



11TH INTERNATIONAL CONFERENCE ON
INDUSTRIAL ECOLOGY:
TRANSITIONS IN A WORLD IN TURMOIL
JULY 2-5 2023, LEIDEN,
THE NETHERLANDS





Photo 3: Photo with Bob Ayres



Photo 4: Visit to the Hortus Botanic Garden



Photo 5: A plenary lecture

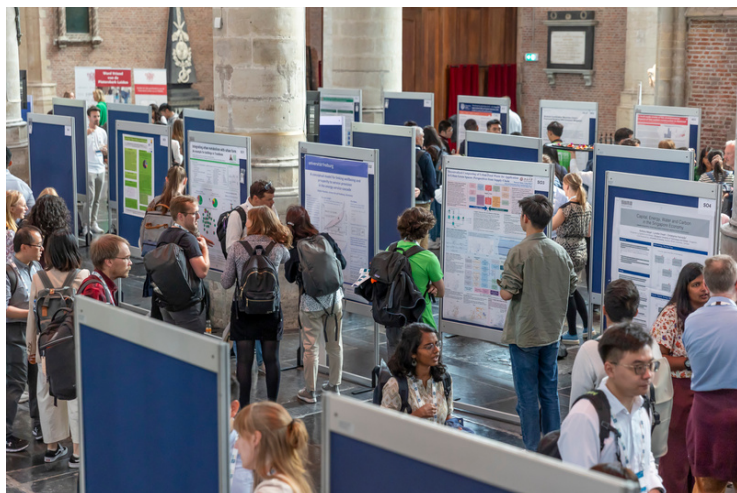


Photo 6: Poster session

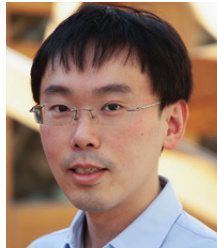


Photo 7: Closing ceremony

CAREER COMMITTEE REPORT



**REED
MILLER**
PRIOR CO-
CHAIR



QINSHI TU
CO-CHAIR



**JOANA
BASTOS**
CO-CHAIR



**GLENN
AGUILAR-
HERNANDEZ**
CO-CHAIR



**ELIZABETH
WACHS**
CO-CHAIR

We continued to develop the activities for the two subcommittees, namely, 1) Jobs and 2) Mentorship and Professional Development (MPD). Multiple zoom meetings were held to identify the areas of interest to strategically leverage the resources available from ISIE.

During the ISIE 2023 conference in Leiden, we hosted a successful mentoring event that attracted approximately 50 participants from a wide spectrum of career stages, include graduate students, postdoctoral fellows, industrial professionals, research scientists, faculty members. The participants were split into groups and discussed topics like 'Determining career path', 'Preparing for industry jobs', and 'Applying for research funding'. Combined with the feedback collected from pre-event survey, we identified the following five clusters of interest among event attendees: **Cluster 1** focuses on navigating careers amidst personal challenges and includes discussions on entrepreneurship and sustainability consulting, highlighting a keen interest in balancing professional ambitions with personal circumstances. Cluster 2 delves into the academic journey, covering PhD applications, transitions to industry or government roles post-PhD, and life beyond academia, emphasizing the critical transition points in academic careers.

Cluster 3 concentrates on research strategy and academic independence, offering insights into developing research questions and career development within academia. **Cluster 4** explores work-life balance, combining an academic career with family life, and preparing for job applications in both academia and industry, reflecting concerns about achieving equilibrium between professional pursuits and personal well-being. Finally, **Cluster 5** addresses preparation for job applications across various sectors, underscoring the practical aspects of career advancement post-studies and strategies for successful transitions. Together, these clusters encapsulate a comprehensive overview of the multifaceted interests ranging from personal development challenges to strategic career planning and professional growth within and outside academia.

In 2024, we aim to compile open-access resources that can address the questions and concerns identified in the five clusters above. We welcome more ISIE members to join our events and share your perspectives.

EDUCATION COMMITTEE REPORT



Lynette Cheah (Chair)
University of the
Sunshine Coast, Australia



Stijn Van Ewijk
University College London,
UK



Ramzy Kahhat
Pontifical Catholic University
of Peru



Reed Miller
University of Maine, USA



Heather M. Logan
Technical University of
Denmark



Tamar Makov
Ben-Gurion University
of the Negev, Israel

The Education Committee was newly formed at the start of 2024 with six enthusiastic members. Our goal is to advance the education initiatives of the Society, building on early work kickstarted within the Development Board. To launch our efforts for this year, we are considering ways to support industrial ecology education in developing countries.

We would like to make educational resources, including textbooks and course materials, more accessible to learners and educators. We will be reaching out to the members to seek more ideas on how we can best support IE education.

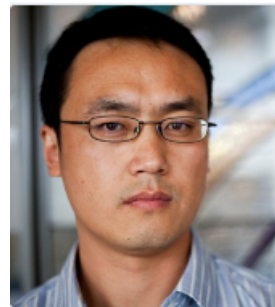
Your inputs and suggestions would be most welcome.
Please email lcheah@usc.edu.au to contact us!

INTERNATIONAL INDUSTRIAL ECOLOGY DAY REPORT



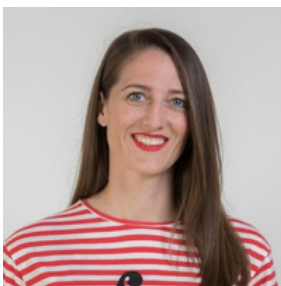
**HEINZ
SCHANDL**

IE DAY 2023
CHAIR



**MING
XU**

ISIE
PRESIDENT



**IRENA
BITUNJAC**

ISIE ADMIN AND
OUTREACH
MANAGER



**EDWARD
GORDON**

ISIE EXECUTIVE
DIRECTOR

3rd International Industrial Ecology Day 2023

On November 30, 2023, the International Society for Industrial Ecology (ISIE) hosted the third International Industrial Ecology Day (IE Day), marking its establishment as a key annual event. Originally conceived during the pandemic as a substitute for in-person conferences, IE Day has evolved into a vital platform for advancing awareness and involvement in industrial ecology. IE Day reflects a growing demand for the science of industrial ecology to present science-based information to the policy and business community engaged in the circular economy, decarbonisation, and sustainable development. This year's IE Day saw the organization of 15 sessions across various global locations, drawing an impressive attendance of 671 individuals.

The 2023 edition of IE Day experienced remarkable levels of participation and engagement, attracting both ISIE members and the wider community from different time zones around the world.

Key Highlights of International Industrial Ecology Day 2023

- The International Society for Industrial Ecology (ISIE) successfully hosted an impressive lineup of 15 sessions during the IE Day 2023, welcoming both members and the broader community.
- These informative sessions spanned across 8 diverse time zones, encompassing Australia, Japan, China, India, South Africa, Germany, London, and the Americas (US Eastern Coast), ensuring global reach and participation.

- The event witnessed good attendance, drawing 671 participants, which underscores the growing global interest in the principles and practices of industrial ecology.
- Engagement levels were notably high, with certain sessions attracting up to 135 attendees and two other sessions each drawing approximately 100 participants, highlighting the compelling nature of the topics discussed.
- Demonstrating a commitment to inclusivity, ISIE organized sessions to occur simultaneously across multiple time zones, maximizing accessibility for participants from various regions.
- ISIE's dynamic use of social media channels played an important role in promoting the event, resulting in a significant boost in social media followers and enhancing the society's digital presence.
- The society's LinkedIn profile has grown to 1,269 followers, indicating a sustained interest in ISIE's activities and the field of industrial ecology.
- To extend the reach of IE Day 2023 and ensure that its valuable insights are accessible to all, ISIE uploaded 10 of the day's sessions to its official YouTube channel, allowing individuals from around the world to engage with the event's content at their convenience:

- <https://www.youtube.com/@internationalocietyforind6366/videos>

Looking ahead, ISIE is committed to further harnessing IE Day as a pivotal platform for facilitating knowledge exchange, fostering collaboration, and advocating for the field. With the event's growing impact, there's a forward-looking proposition to officially designate November 30th as International Industrial Ecology Day, thereby solidifying its place as a cornerstone event for the community and stakeholders involved in environmental sustainability efforts.

The resounding success of IE Day 2023 vividly highlights the robust interest and passion within the ISIE community and beyond for initiatives in the realm of industrial ecology. The extensive participation from various time zones underscores the universal significance and critical role of industrial ecology in tackling environmental challenges on a global scale.

FULL PROGRAM OF THE IE DAY 2023

<p>1. International Industrial Ecology Day - Advancing Towards a Circular Economy</p> <ul style="list-style-type: none">• Time: 14:00-15:00 AEDT (3:00-4:00 UTC)
<p>2. S-18 Research Project: Sustainable Urban Built Environment and Climate Change Adaptation and Mitigation</p> <ul style="list-style-type: none">• Time: 14:00-15:00 JST (5:00-6:00 UTC)
<p>3. Advancing Circular Economy in Cities: Exploring the Environmental and Economic Implications of Reuse Systems</p> <ul style="list-style-type: none">• Time: 13:00-14:00 HKT (5:00-6:00 UTC)
<p>4. China's Industrial Ecology Scholarship: Past, Present, and Future</p> <ul style="list-style-type: none">• Time: 15:00-16:00 CST (7:00-8:00 UTC)
<p>5. Open Data in Life Cycle Assessment</p> <ul style="list-style-type: none">• Time: 16:00-17:00 CST (8:00-9:00 UTC)
<p>6. Advancing Energy and Environmental Systems Models for Carbon Neutrality and Sustainable Development</p> <ul style="list-style-type: none">• Time: 17:00-20:00 CST (9:00-12:00 UTC)
<p>7. Empowering Circularity: Unveiling the Impact of MSMEs in India's Sustainable Future</p> <ul style="list-style-type: none">• Time: 14:30-15:30 IST (9:00-10:00 UTC)
<p>8. Applying LCA to Understand the Food System</p> <ul style="list-style-type: none">• Time: 11:00 – 12:00 GMT (11:00 – 12:00 UTC)
<p>9. Harnessing Our Common Humanity of Ubuntu to Advance the Concepts of Industrial Ecology in South Africa</p> <ul style="list-style-type: none">• Time: 14:00-15:00 SAST (12:00-13:00 UTC)
<p>10. Industrial Ecology's Pivotal Role in Shaping Robust Carbon Accounting and Strategic Policy Designs for CBAM</p> <ul style="list-style-type: none">• Time: 14:00-15:00 CET (13:00-14:00 UTC)
<p>11. Sustainable Battery Material Flows</p> <ul style="list-style-type: none">• Time: 15:00-16:30 CET (14:00-15:30 UTC)

FULL PROGRAM OF THE IE DAY 2023

12. Understanding Diverging Stock Measurements of Floorspace and Materials in Buildings

- Time: 17:00-18:00 CET (16:00-17:00 UTC)

13. Honoring the Legacy of Bob Ayres

- Time: 13:00-14:00 EST (18:00-19:00 UTC)

14. Graedel Prize Winners Discuss their Winning Articles

- Time: 14:00- 15:00 EST (19:00-20:00 UTC)

15. Opportunities to Reduce Greenhouse Gas Emissions from Freight Systems

- Time: 14:00-15:00 EST (19:00-20:00 UTC)

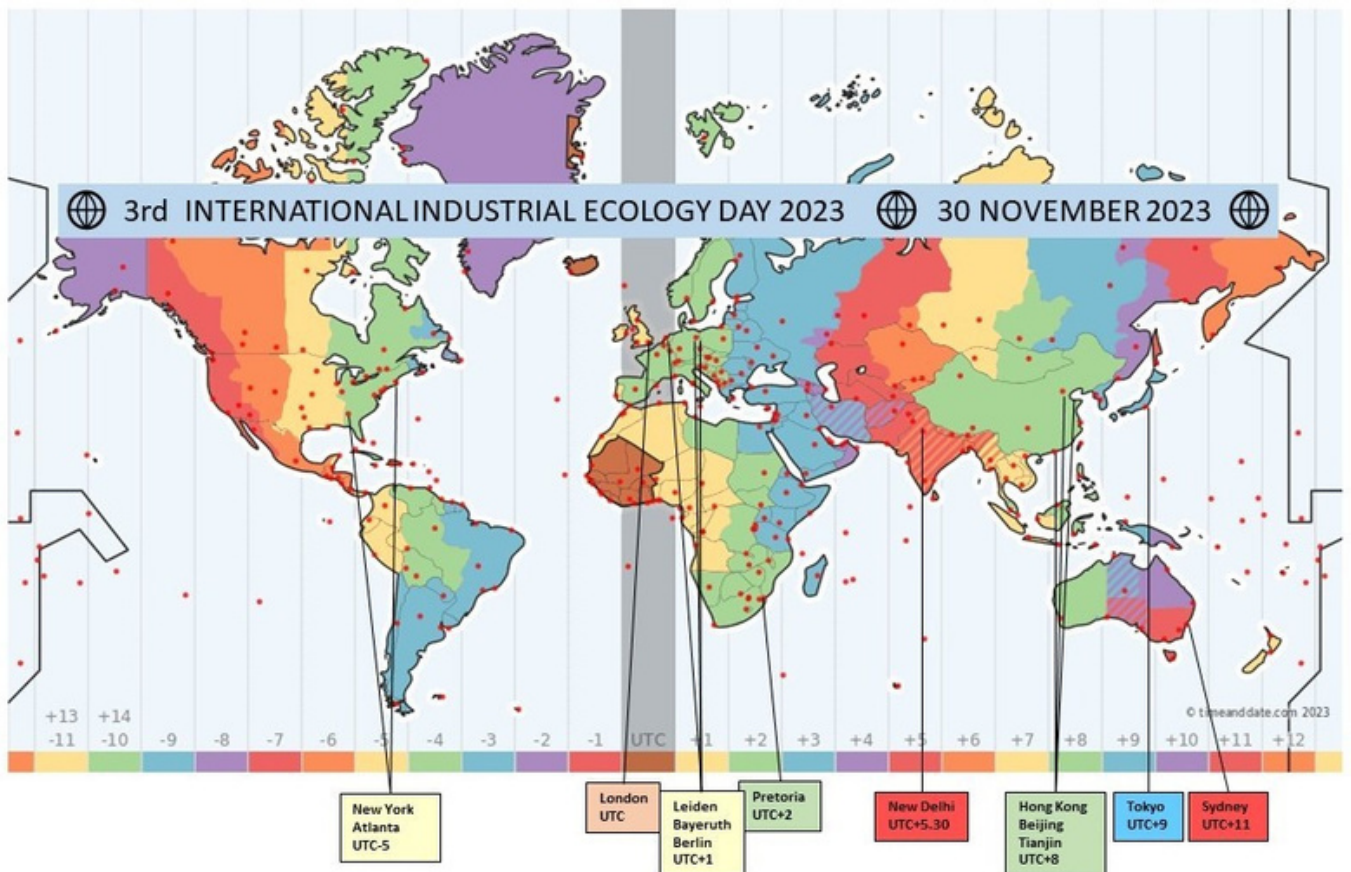


Figure 1: Summary map of IE Day 2023 sessions held in 8 time zones

List of general advertisement pages [LinkedIn]

1. **Title: Mark you calendar**
 - Released on 11/16/2023
 - Link: <https://www.linkedin.com/feed/update/urn:li:activity:7119592426347933696>
2. **Title: Save the Date: Nov 30th is International Industrial Ecology Day!**
 - Released on 11/21/2023]
 - Link: <https://www.linkedin.com/feed/update/urn:li:activity:7132757232642867200>
3. **Title: Join us for the 3rd International Industrial Ecology Day 2023 happening in just 3 days!**
 - Released on 11/27/2023
 - Link: <https://www.linkedin.com/feed/update/urn:li:activity:7134827666565644288>
4. **Title: Happy International Industrial Ecology Day!**
 - Released on 11/30/2023
 - Link: <https://www.linkedin.com/feed/update/urn:li:activity:7135839869422944256>
5. **Title: International Ecology Day 2023 Sessions are now live on our YouTube channel!**
 - Released on 12/13/2023
 - <https://www.linkedin.com/feed/update/urn:li:activity:7140618189641625600>

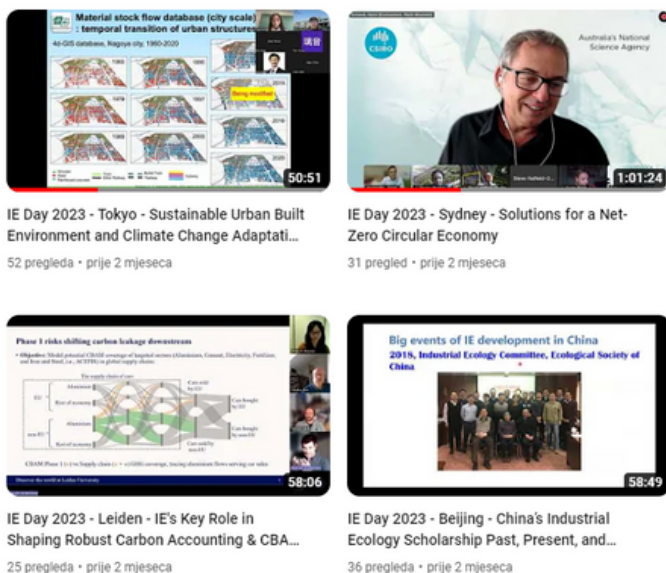


Figure 2: Screenshot of IE Day 2023 videos on ISIE YouTube channel



Figure 3: International Ecology Day 2023 photo

JOURNAL OF INDUSTRIAL ECOLOGY REPORT



GANG LIU

CO-EDITOR- IN
CHIEF



**RICHARD
WOOD**

CO-EDITOR- IN
CHIEF



**JUNMING
ZHU**

CO-EDITOR- IN
CHIEF

2023 in review and plans for 2024

2023 was a year of consolidation for the journal, with the editor in chief team of Gang Liu, Richard Wood, and Junming Zhu, supported by the managing editor Cheryl Myrup and the forever useful founding editor Reid Lifset.

Many interesting and innovative papers continue to be published in the Journal, including on the role of industrial ecology in circular economy research, the energy transition, advancements in life-cycle assessment, and material flow analysis. 392 submissions were made to the journal in 2023, with 88 articles published in six issues. The impact factor of the JIE did decrease slightly for the most recent data (2022) to 5.9. In contrast, our article (full-text) views are up to just shy of 900,000, an increase of 15% from 2022. The data points to significant citations from circular economy research, and shows that a lot of articles published in the JIE are still attracting significant citations 5-10 years after publication.

Seven of the nine highest cited papers in the JIE in 2023 were circular economy papers, with the other two papers being a battery LCA and the EXIOBASE publication.

In 2023 the JIE launched a virtual special issue (VSI) containing the JIE 56 articles cited in the IPCC 6th Assessment Report (AR6) in recognition of the important contributions industrial ecology research has had to research on mitigating climate change. The JIE is very pleased to recognize the efforts of the authors of these articles and the contribution they have made on this critical topic. Two additional special issues were mostly completed in 2023, on Product Lifetimes, and on the Life Cycle Sustainability Assessment for Sustainable Development Goals. These will be published in forthcoming issues. Two new special issues were launched, one on “Biodiversity Finance: Measuring and Managing Biodiversity in Corporations and Financial Markets” and “Environmental Impacts of the Digital Economy”.

To further support the society, the journal also launched a virtual special issue for papers presented at the biennial ISIE conference. Over 40 papers were submitted, and we look forward to launching this issue in 2024.

The year saw a number of JIE articles referenced in the media on topics as diverse as packaging waste, battery-metal supply chains, life cycle assessment harmonization, and a sustainable circular economy. The promotional team set up in 2022 led by Gang Liu has continued to bring attention to newly published Journal articles of interest on an ongoing basis, through which a JIE LinkedIn page has been utilized to great effect. Wiley has also supported the journal through the launch of Editors' Choice articles, which get additional promotion by Wiley and free access for reading for a number of months.

An increasing number of articles are being published open access, with over 61 out of 88 articles in 2023 appearing as open access. This metric is an increasingly important factor in how Wiley determines royalties to be paid to the ISIE. At the same time, the number of transformational agreements secured by Wiley—facilitating open access publication for authors at various institutions without paying a fee—has increased to over 350 active agreements in over 30 different countries. For Society members who are at institutions without an agreement yet in place, a 20% discount on JIE open access fees still applies.

Our median speed of decision from submission to first decision has improved from 48 days in 2021, to 44 days in 2022, to 40 days in 2023. Our speed from submission to final decision went from 42 days in 2021, to 67 days in 2022, then dropping significantly to 24 days in 2023.

Speed from submission to acceptance—a metric which necessarily includes the speed of author turnaround time—went from 216 days in 2020, to 215 days in 2022, then increased slightly to 232 days in 2023. (Efforts are being made to involve our outsourced editorial office at Wiley to closely track and follow up on stalled manuscripts, to improve time to acceptance at every step along the way.)

There have been a few changes to the pool of associate editors in 2023. Annie Levausseau stepped down as a Life Cycle Assessment Editor, as did Weslyne Ashton as an Industrial Symbiosis Editor.

We welcome new AEs Wouter Spekkink, Social Science; André Stephan, Urban Metabolism; and Stefan Pauliuk, MFA/SFA.

Current priorities for 2024 are further tackling the issue of review and publication time. A new team at Wiley is now in place to help support us in this endeavour. Further increasing impact of JIE articles through expanding special issues, and highlighting strong work. We strongly encourage members of ISIE to submit their best work to the journal, and we will endeavour to provide you with the best author experience. Through the support of you, the authors, the journal can keep growing and provide the best location for cornerstone IE work.

Gang Liu, Richard Wood, and Junming Zhu
CO-EDITORS-IN-CHIEF

SOCIAL-MEDIA OUTREACH REPORT



**IRENA
BITUNJAC**

ISIE ADMIN AND
OUTREACH MANAGER

The International Society for Industrial Ecology (ISIE) has made significant strides in enhancing its visibility across various social media platforms. One of the first strategies employed was the consistent utilization of the ISIE logo across all channels, including newly created social media profiles, thereby fostering brand recognition and identity.

LinkedIn Presence: Since the establishment of the ISIE LinkedIn page in November 2022, the Society has made significant strides in engaging with professionals and stakeholders in the field of industrial ecology. With a current follower count of 1297 as of March 2024 (500 in June 2023), the page serves as a valuable platform for sharing updates, insights, and fostering meaningful discussions within the community, as well as with a broader audience. Additionally, the existence of a LinkedIn group with 4.7K members facilitates engagement on multiple levels.

Twitter Engagement: The ISIE experienced significant growth in its follower base on Twitter, which increased from 555 in June 2023 to 668 by March 2024. This growth was supported by a proactive approach to content creation, as evidenced by the regular posting of tweets. As of March 2024, the Society has published a total of 150 tweets.



**WENHAO
WU**

ISIE WECHAT
SUPPORT

Facebook Reach: Similar to its LinkedIn efforts, the ISIE expanded its presence to Facebook in November 2022, launching a dedicated page. While the page has garnered 93 followers to date (76 in June 2023), we also manage an existing Facebook group with 1.4K members.

YouTube Expansion: To diversify its online presence, ISIE focused on expanding its YouTube channel, experiencing a surge in subscriptions from 126 in June 2023 to 203 by March, 2024. The upload of 51 informative videos covering various topics, including ISIE Awards colloquium, IE Day videos, white paper video (with the highest score of 887 views), Leiden conference video (397 views), SEM Perpetual online conferences (115 views), Meet the Sections (90 views), and other content, combined with strategic promotion across other social media platforms, has significantly contributed to enhanced visibility and audience engagement.

Expansion into WeChat: To extend our global reach and foster communication with the Chinese IE community, ISIE launched a 'news transfer' project in collaboration with the official WeChat public account of the Chinese Society for Industrial Ecology in November 2023.

The project has received voluntary support from Wenhao Wu at Beijing Normal University. To date, a total of 13 LinkedIn posts from ISIE have been translated and published on WeChat, garnering over 4,700 views. This initiative has enabled an increasing number of Chinese scholars to learn about ISIE and participate in our events. We anticipate further forms of communication in the coming years, believing in its impact to spark new ideas and create new opportunities.

To bolster outreach initiatives and streamline communication channels, the International Society for Industrial Ecology (ISIE) has integrated its logo into both the ISIE's website and mass email correspondence. This strategic integration serves to reinforce brand identity and foster recognition among stakeholders.

Throughout the reporting period, the ISIE has actively developed and disseminated various announcements across multiple platforms. Notable highlights included announcements pertaining to International Industrial Ecology Day; The Awards colloquium; the SEM & AP Conference 2024 in Beijing; The election of Arpad Horvath to the US National Academy of Engineering; the Leiden conference; workshops hosted by the University of Debrecen; the SEM Perpetual online conference and many others.

A significant milestone during this period was the launch of the White Paper landing page on the ISIE website. This involved designing and implementing a dedicated page where visitors could download the White Paper and access the accompanying video on our ISIE YouTube channel. The White Paper video has garnered 957 views to date.

The ISIE remains steadfast in its commitment to maintaining an active presence across various social media platforms. Regular announcements are diligently posted on LinkedIn, Twitter, and Facebook, serving to amplify the organization's reach and engagement. Furthermore, proactive promotion of the ISIE's YouTube channel across all platforms facilitates the dissemination of valuable content and enhances audience engagement.

Overall, these concerted efforts in integration and outreach underscore the ISIE's commitment to fostering community engagement, knowledge dissemination, and collaboration across diverse platforms. By leveraging these initiatives, the organization continues to advance its mission of promoting industrial ecology principles and practices on a global scale.

While our efforts have resulted in increased visibility and engagement, we remain committed to exploring new strategies and platforms to further expand our reach.

We encourage our audience to follow us on Twitter, LinkedIn, and Facebook, and subscribe to our YouTube channel to stay updated with our latest news and events.

We extend our gratitude to our followers and subscribers for their continued engagement and support.

Thank you all for your involvement and contributions to the ISIE community!

▲ International Society
▼ for Industrial Ecology

ISIE Sections

Environmentally Extended Input-Output
Industrial Symbiosis and Eco-Industrial Development
Island Industrial Ecology
Life Cycle Sustainability Assessment
Socio-Economic metabolism
Students
Sustainable Circular Economy
Sustainable Urban Systems

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

Reflecting on 2023

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 year, the EEIO community maintained cooperation with international organizations, companies, and government organizations, and enhanced collaboration with the International Input-Output Association (IIOA) when organizing its activities. The EEIO made its transition of leadership and deepened engagement within the community to enhance its connection in post-pandemic.

The new leadership embarked in February 2023, including co-chairs Kaihui Song (University of North Carolina), Peipei Tian (Shandong University) and board members Sébastien Dente (Ritsumeikan University). As of February 2024, the section had a total of 330 members, an increase from last year. Given the increasing number of members in the EEIO community, the board plans on hold another election for a new board member.

This year, we held a section meeting at the ISIE Leiden conference. We reported on past and current activities and presented the new section board members and gathered the ideas and opinions of the section members through a brainstorming session to shape the future of the EEIO section activities.

In 2023, we guided EEIO members through the free webinars launched by the IIOA to share information on Input-Output Analysis research.

Looking ahead

The EEIO community is looking forward to 2024 with plans to organizing recurrent EEIO-related webinars and increasing activities on social media platforms.

SECTION LEADERSHIP

Co-Chair **Kaihui Song** (University of North Carolina)

Co-Chair **Peipei Tian** (Shandong University)

Board Member **Sébastien Dente** (Ritsumeikan University)

INDUSTRIAL SYMBIOSIS AND ECO-INDUSTRIAL DEVELOPMENT

2023 saw the IS-EID section return to in person activities and camaraderie.

In July, around 30 members joined a section symposium in Leiden before the main ISIE conference. This 17th annual industrial symbiosis research symposium gave space for valuable updates from around the section on new programs, research initiatives, and symbiosis developments around the world. Professor Gijsbert Korevarr (Rotterdam University of Applied Sciences / TU Delft) provided insight into the local Dutch symbiosis perspective by giving a keynote on Circular Industrial Parks of the Netherlands. Additionally, a short discussion on the theme of symbiotic resilience in times of turmoil was workshopped. The symposium was closed with a well attended section dinner that flourished with further updates and synergistic discourse. More than a few toasts were raised for our longtime board member and section firebrand Peter Lowitt (who has hosted several symposia himself in Devens, MA) and in July entered a well deserved retirement. Best of wishes to Peter moving forward, and a huge thanks from the section for all you have contributed.

During the ISIE conference, the section also held a general section meeting to discuss goals, trajectory, and emerging areas of collaboration within the section. Strong interest was shown in setting up a section reading list on symbiosis to facilitate education, establishing a more formal policy working group on industrial symbiosis, and working more actively with outreach via articles, videos, podcast, and data repositories. In parallel with the section goals; networking, knowledge sharing, and collaborating on new developments were key areas for section development.

To realize the ambitions of the section membership, we are looking forward to welcoming new engaged academics and practitioners to the board of the section in 2024! Elections are opening this Spring, so please join the section on IS4IE.org for more information or drop us a line at symbiosis.isie@gmail.com.

SECTION BOARD MEMBERS

Chair **Graham Aid**

Vice Chair **Jose Alfaro**

Secretary and past Chair **Peter Lowitt**

Treasurer **Michael Martin**



Photo 1: Greetings to Peter Lowitt from Leiden 2023



Photo 2: Section dinner after the symposium 2023

SECTION BOARD MEMBERS

Chair **Graham Aid**

Vice Chair **Jose Alfaro**

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Treasurer **Michael Martin**

ISLAND INDUSTRIAL ECOLOGY SECTION

Introduction

The Islands section has seen a dynamic and fruitful year, with its members actively involved in a variety of initiatives. These endeavors encompass events, outreach endeavors, and avenues for fostering community involvement and staying abreast of the latest developments in the field. Membership within the section has continued to grow. In 2020, the section had 50 members, a number that has nearly tripled at the time of writing this report.



Figure 1: Map of distribution of Island – IE members

Sixth Sustainable Island Futures (SIF) Symposia (May 2023)

The Island-IE section maintains a collaborative alliance with the Sustainable Island Futures (SIF) Symposia Series, initiated by the Sustainable Island States Science, Technology, Engineering, and Mathematics (SISSTEM) group at the University of Aruba. Through this partnership, the SIF Symposia Series, in conjunction with the Metabolism of Islands (MoI), organizes biannual symposia that convene researchers globally to deliberate on strategies and methodologies for promoting sustainability in small island states. The primary objective of these symposia is to cultivate interdisciplinary and interinstitutional partnerships, which are pivotal for advancing sustainable development within island communities.

On May 10, 2023, the 6th virtual Sustainable Islands Futures (SIF) symposium was held. The focus was on resource circularity, island metabolism, industrial ecology, socio-metabolic research, islandness and threats and opportunities that hinder or further sustainable development and resilience of small island states. The keynote speaker of the sixth symposium was: Dr. Ragnheiður Bogadóttir (University of the Faroe Islands) who spoke on: "Social metabolism in the Faroe Islands and the cultural logics that organize it – implications for sustainability and resilience".

What's history got to do with it? Colonialism, structural vulnerabilities, and risk accumulation in Small Island Developing States (SIDS) (June 2023)

On 19th June 2023, the Islands section of ISIE, and Future Earth's Knowledge Action Network (Risk-KAN) on Emergent Risks and Extreme Events (Risk-KAN) organized a webinar in the form of a virtual keynote by Dr. Emily Wilkinson titled "What's history got to do with it?"

Colonialism, structural vulnerabilities, and risk accumulation in Small Island Developing States (SIDS)". The event was moderated by section chair, Simron Singh, and was part of Risk-KAN Keynote series on "Islands at Risk". Risk-KAN is a Future Earth Global Research Network and a joint initiative of Future Earth, IRDR, WCRP, and WWRP programs. The recording can be viewed [here](#).

"Metabolism of Islands" special session at the ISIE Leiden conference, and section meeting of "Island Industrial Ecology" (July 2023)

As part of the 11th International Conference on Industrial Ecology (ISIE2023) at Leiden, a special session on "Metabolism of Islands" was organized on 4 July. The session had 6 presentations on wide range of island cases: Hawaii, Samothraki, Svalbard, Comoros and New Caledonia and several Caribbean cases. Section board members, Simron Singh and Bart van Hoof were the session conveners and chairs.

At the conference, the "Island Industrial Ecology" section meeting was called on the 2 July, and was attended by 10+ members present at the ISIE Leiden (see photo). The discussion was vibrant and a small but enthusiastic group came up with the idea of a "white paper" on island industrial ecology.

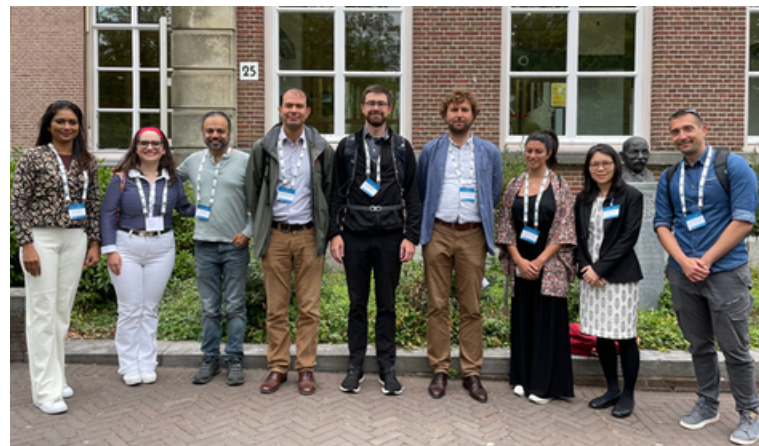


Photo 1: Some of the "Island Industrial Ecology" section members at the Leiden conference

“Metabolism of Islands” special sessions at the “International Conference on Small Island States”, Aruba (October 2023)

Three consecutive sessions on “Metabolism of Islands” (MOI) were organized at the Second International Conference on Small Island States “Turning the tide: climate change, social change and islands” on the Caribbean island of Aruba, from 23 to 26 October 2023. The event was attended by over 100 participants, and was organized by the University of Aruba, and the Institute of Island Studies, University of Prince Edward Island (Canada). Of the eight presentations made at the MOI special sessions, four were by section board members: Bob Paul, Dominik Noll, Simron Singh, and John Telesford (Singh and Telesford were conveners and chairs of the sessions).

As noted above, the Island Industrial Ecology section has a successful and ongoing relationship with the University of Aruba’s SISSTEM program, having organized several Sustainable Islands Future (SIF) symposia already. Furthermore, the newly launched Masters in island sustainability has incorporated an entire semester dedicated to the “Metabolism of Islands” approach that has the potential to further expand the field of island industrial ecology across the Caribbean. The first delivery of this module will take place in Fall 2024.



Photo 2: Speakers at the “Metabolism of Islands” special session at the Aruba conference.
From left to right: Bob Paul, Marta Ciceri, Farah El-shayab, Dominik Noll, John Telesford, Simron Singh, Maryam Vakilbashi, Supriya Pande, and Simon Courtenay.

Island Industrial Ecology documentary (October 2023)

On 22 March 2023, the Island-IE section board approved the submission of a member proposal to create a 30-minute documentary on the science and education of “metabolism of islands” or Island-IE. The member proposal (led by Dominik Noll on behalf of the island section) was approved by the ISIE membership in May 2023. The member proposal enabled the section to facilitate the planned film project as part of the Industrial Ecology Lecture Series. The section was faced with a unique opportunity in 2023 with a majority of the section board present in Aruba at the second International Conference on Small Island States and Subnational Island Jurisdictions (see above). The island conference provided a perfect setting for gathering rich footage to show case the work of Island-IE. The film team, ISIE students Marta Ciceri and Supriya Pande, supported by Alexandra Ulacio, a student at the University of Aruba, interviewed island researchers and local key stakeholders engaged with island sustainability. Besides the interviews, the team also filmed hotspots of current socio-metabolic challenges in Aruba. The footage is currently being edited into a documentary.



Photo 3: From left to right: John Telesford, Simron Singh, Bob Paul, Supriya Pande, Dominik Noll, Marta Ciceri, Alexandra Ulacio

Project launch on Sustainable Aviation Fuel (SAF) for Vancouver Island (November 2023)

On November 21, 2023, a leadership forum was hosted by the University of Victoria (Canada) to discuss with local leaders the opportunity for Vancouver Island to produce sustainable aviation and marine fuels from waste feedstocks generated from the built environment.

Canada has set an interim target of 10% requirement of sustainable aviation fuel to be achieved by 2030, and eventually reach net-zero by 2050, in line with the Paris Agreement. This initiative was prepared as a concept paper by Bob Paul, Principal, E5 Solutions Consulting and supported by his colleague advisors and Dr. Chris Kennedy in the Masters' in Industrial Ecology Program which was launched in September 2021.

International Aviation sector is one of the most challenging sectors to decarbonize and efforts are underway around the world to make SAF for the airlines from biogenic wastes, oil seed crops, garbage and forestry wastes using advance technologies. SAF is particularly important for island tourist destinations. In island nations waste is generally not viewed as a resource and this represents an opportunity to use it to make sustainable fuel. The focus of this work will be over several years and stages and expects to engage more members of the islands section.

Keynotes by “Islands” section members at a high-level event organized by the University of Hawaiï on advancing circular economy in Hawaiï (December 2023)

The University of Hawaiï (UH) organized a summit titled [Advancing a Circular Economy in Hawaiï](#), at the Hawaiï Convention Center on December 13, 2023. The objective of the summit was to advance sustainable and just solutions for healthy communities in Hawaiï and around the world. The summit invited three Island-IE members as keynote speakers: Simron Singh (University of Waterloo, Canada), Hiroki Tanikawa (Nagoya University, Japan), and Sandra Koehler (University of Augsburg, Germany). The recording of their talks is available [here](#).

According to Dr. Vassilis L. Syrmos (UH’s Vice President for Research and Innovation), this was the largest and most successful event organized by UH to date, with over 280 attendees. He further wrote to the three keynote speakers: “Because of your willingness to share your expertise and experiences with us, I believe the University of Hawai’i will be able to engage in meaningful and dynamic conversations that will help to shape a new path forward -- one that incorporates circular economy practices, indigenous knowledge and innovation, new technology, impactful policy shifts and cultural understanding - to achieve a more sustainable future for Hawai’i.”



Photo 4: From left to right – Hiroki Tanikawa, Simron Singh, Sandra Koehler, and Kamana Beamer (lead organizer of the Hawaii summit).

Under the leadership of Dr. Sandra Koehler (University of Augsburg), the 2009 MFA study initially published in JIE by Eckelman and Chertow is being updated, and expanded. As a backdrop, Hawaii was the venue for the first Island Industrial Ecology and Sustainability workshop organized by Dr. Marian Chertow (Yale University) in January 2011. Some 20 scholars working on Island-IE were invited from across the world, among them Hiroki Tanikawa and Simron Singh, to forge an Island-IE agenda. It is not incorrect to say that this 2011 workshop shaped the Island-IE and the creation of a new ISIE section a decade later.



Photo 5: Participants at the 2011 Hawaii Island-IE workshop (courtesy: Marian Chertow)

SECTION BOARD MEMBERS

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

LIFE CYCLE SUSTAINABILITY ASSESSMENT SECTION

Reflecting on 2023

2023 has been a consolidation year for the new board, which has welcomed our fourth member: Dr. Qingshi Tu from University of British Columbia.

The LCSA section participated in the 11th International Conference on Industrial Ecology in Leiden, with member Dr. Peter Berrill providing an introduction of the Section's work in an interview.

Board member Dr. Peter Berrill also organized a special session during the IE day on "Understanding Diverging Stock Measurements of Floorspace and Materials in Buildings". You can find the abstract [here](#).

This 2023 we have welcomed many new members for 506 total members. We look forward to your engagement in the Society and this Section over the coming year!

Looking ahead

The new Board is looking forward to 2024 with renewed energy and plans to:

- Organize recurrent LCSA-related webinars with relevant stakeholders via co-sponsorship agreements.
- Increase its activity on social media platforms, including the appointment of a social media manager.
- Feature early-stage researchers in the member spotlight section to help visualize emerging topics.
- Introduce emerging data, tools and projects that advance the research frontier of LCA.

SECTION BOARD MEMBERS

Co-Chair **David Font**

Co-Chair **Oludunsin Arodudu**

Board member **Andrea Hicks**

Board member **Peter Berrill**

Board member **Paul Wolfram**

SOCIOECONOMIC METABOLISM SECTION

With its about 415 members (about the same number as last year), the socioeconomic metabolism (SEM) section of the International Society for Industrial Ecology (ISIE) is the largest global network of researchers employing material flow analysis as a tool for environmental sustainability assessment. Below, we report important recent and ongoing activities.

Hundreds of SEM researchers joined the ISIE biannual conference in Leiden, The Netherlands, in July 2023: After a four year break due to the pandemic, the biannual ISIE conference is back! With its many presentations and posters of high quality and relevance, the face-to-face encounters of IE researchers from different cultures and career stages, and the very well organized events, the Leiden conference was a huge success! Our current secretary of the SEM section board, Tomer Fishman, was one of the co-chairs of this conference. On behalf of the entire section, we thank the conference chairs René Kleijn and Tomer Fishman and the local organizing team for the tremendous effort of making this special conference a high class and remarkable event! Details on the program can be found on the conference website <https://isie2023netherlands.nl/>

Upcoming section conference: The next ISIE-SEM section conference will take place at Peking University, China, in 2024, see the flyer below. We thank the chairs, Xin Tong and Gang Liu, for taking over this huge responsibility and wish them all the best for organizing our next section meeting! The conference website and abstract submission system will be online soon, and we look forward to seeing many of you in Beijing in the summer!

2024 ISIE-SEM section conference, Aug. 24-27, Peking University: <https://isiesem2024.net/>

The poster is titled "Call for abstracts" and "2024 Joint ISIE Socio-Economic Metabolism and Asia-Pacific Conference". It features a blue background with white and red text. The top right corner has the URL "https://isiesem2024.net/". The main text describes the conference as a gathering of experts from environmental sciences and engineering, geography, urban planning, climate change, and more, to tackle pressing global challenges. It lists the conference dates as August 24-27, 2024, in Beijing. The poster also lists the conference chairs, Gang Liu and Xin Tong, and provides a list of important dates from February to August 2024. At the bottom, it lists abstract topics including resource efficiency, circular economy, and climate change mitigation. The footer includes logos for the International Society for Industrial Ecology and Peking University, along with the venue information: Zhongyuan Xinyuan Global Village PKU, Beijing, 128 Zhongyuan North Street.

Figure 1: Call for Abstract Poster

Perpetual SEM Online Conference

The perpetual SEM online conference has been going on for 4 years now. It started during the pandemic and lockdowns as a way to overcome the lack of in-person conferences. It has evolved into a potent way for SEM section members to disseminate new research, to have discussions on up-to-date issues, and to draw in new members into the ISIE as a whole. Sessions contributed and organized by the section members continued in 2023. The online conference sessions were held in the spring and fall to complement the in-person meetings during the conference season.

In May 2023, we had a session organized by our board member Christoph Helbig, who convened the global scholarly community for a 90 minutes Perpetual Online Conference on the EU Critical Raw Materials Act – implications for science, administrations, and industries, with presentations from Sabina Grund, Stéphane Bourg and Gian Andrea Blengini. Thank you Christoph for facilitating this session!

2023 Industrial Ecology Day

The fall of 2023 did not see any new perpetual conference sessions. Instead, there was a large number of SEM-related sessions during the 2023 edition of the IE day, including the following:

- Sustainable Urban Built Environment and Climate Change Adaptation and Mitigation
- Advancing energy and environmental systems models for carbon neutrality and sustainable development
- Advancing Circular Economy in Cities: Environmental and Economic Impacts of Reuse and Sharing Systems
- Empowering Circularity: Unveiling the Impact of MSMEs in India's Sustainable Future
- Sustainable Battery Material Flows
- Understanding Diverging Stock Measurements of Floorspace and Materials in Buildings



Figure 2: International Ecology Day 2023 Photo

Member news

Christoph Helbig of the University of Bayreuth is the recipient of the 2023 Laudise Medal of the ISIE for researchers under the age of 36 for his research record on dissipative losses, geopolitical risks and raw material criticality assessments. The Laudise Medal, named in memory of Robert Laudise, is awarded for outstanding achievements in industrial ecology by an early career researcher. Christoph has been an active ISIE member since 2015, contributing significantly to the Society's activities. We congratulate our board member Christoph for this significant accomplishment and wish him good luck for his future research endeavors! See the ISIE announcement for details:

<https://is4ie.org/announcements/1835>

Upcoming board elections

The term of the current SEM section board will end in December 2024, and in the fall, we will hold board elections for the 2025-2026 section board!

Database and data exchange: As part of its mission and after an intense participative process, the ISIE-SEM section board has compiled the first Guidelines for Data Modeling and Data Integration for Material Flow Analysis and Socio-Metabolic Research.

The document is self-explaining and was designed as a standard reference for all who are in the process of publishing, documenting, or archiving MFA research, either within a software such as STAN (<https://www.stan2web.net/>) or in a custom modelling environment.

We hope that these guidelines will provide reliable orientation in many different research and consulting settings. The guideline document is evolving and will be updated every couple of years to keep pace with the development of the field. We also hope that it will trigger discussions and spur engagement around some of the open items, like the development of common material classifications or of a system taxonomy for MFA datasets.

The guidelines can be found under the following permalink: <https://doi.org/10.6094/UNIFR/217970>

Outlook on 2024

- The perpetual online conference will continue also in 2024, with several online sessions planned before the conference season starts. Session proposals can be submitted by all section members via the event section of the IS4IE homepage.
- To complement the data modelling guidelines (<https://doi.org/10.6094/UNIFR/217970>), 2024 will see another document: Good Practice Examples for Complete Traceability of Workflows and Reproducibility of Results in Industrial Ecology Research, to be released at the 2024 SEM section conference in Beijing.
- We plan to develop the resources page of the SEM section on the IS4IE website into a landing portal for MFA research, compiling links to seminar research, standards, software, data, and teaching material: <https://is4ie.org/sections/metabolism/resources>.
- The current SEM board plans to review and modernize the section's bylaws, including clarity on elections and improving organizational memory.
- Activities and meetings around socioeconomic metabolism will take place at the 2024 SEM section conference in Beijing.

Chair
Vice-Chairs
Secretary
Treasurer
Web Editor & Communication Strategists
Industry Liason

Appendix: An auto-generated poem on MFA by a widely used text generation software

Instruction by Tomer Fishman: “write a 10-line poem about material flow analysis, in iambic pentameter, including rhyme”

*The flow of materials, an ebb and a flow,
From inputs to outputs, observe and you'll know
That each step in the process, must be measured and weighed
To determine the costs, of each product we make
Inventory and delivery, logistics and more
The data can help us, to better explore
How to make it more efficient, and reduce our costs
With the analysis of material flow
Transportation and storage, energy and time
We'll measure it all, to find out what's sublime
From raw materials to finished goods, we'll track the supply
To make sure our products, are of the highest quality*

“The last two lines don't rhyme, also add something about material stocks? “

*Material stocks and wastage, must be taken in view
To make sure our process, is efficient and new*

SECTION BOARD MEMBERS

Chair **Stefan Pauliuk**

Vice-Chairs **Ichiro Daigo and Anastasia Papangelou**

Secretary **Tomer Fishman**

Treasurer **Peter-Paul Pichler**

Web Editor & Communication Strategists **Zhi Cao and Christoph Helbig**

Industry Liason **Shweta Singh**

STUDENT SECTION

Overview

The ISIE Student Chapter aims to connect students with peers and the broader industrial ecology community and to provide a space for exchanging ideas and resources. The Student Chapter is represented by a board, consisting of 10 international members. The Student Chapter Board (SCB) helps with identifying career pathways, provides scholarship and networking opportunities, and disseminates knowledge on industrial ecology.

Membership

In January 2023, the number of industrial ecologists enrolled in the Student Chapter amounted to 353 members from 53 countries across the globe. The figure by the end of January 2024 has increased to 437 from 57 countries, equating to an increase of 24% over the last year. The SCB Diversity and Inclusion Committee has been working to increase the representation of students, researchers, and practitioners who reflect the diversity of the global society that have been underrepresented in the field of industrial ecology.



Figure 1: Global distribution of members of the ISIE Student Section circa January 2024.

Achievements in 2023

The SCB organized several opportunities for the ISIE community in 2023:

- Conference (July): Preceding the 11th ISIE Conference, the SCB organized the 8th Symposium on Industrial Ecology for Young Professionals (SIEYP) in Leiden, Netherlands, which took place on July 1, 2023. A total of 187 participants gathered for the symposium, a historic high for SIEYP attendance. The SCB was able to financially support 47 students and early-career researchers to attend the SIEYP and ISIE Conference through scholarships, owing to generous funding from the U.S. National Science Foundation and the ISIE. The symposium consisted of networking activities and keynote presentations with accompanying workshops, on topics ranging from policymaking in industrial ecology and industry careers in industrial ecology to science communication. Afterwards, the participants enjoyed a guided walk of the city led by Leiden University students. The SCB also organized and administered the student poster competition for the ISIE Conference.
- Career Webinar Series (March and November): On March 30th, 2023, the SCB hosted an industry webinar with Gershman, Brickner & Bratton Inc. (GBB), an international solid waste consultancy. The event was attended by over thirty people and focused on GBB's flagship project, a sustainable business park in Kent County, Michigan. The speakers included Senior Vice President Jennifer Porter and SCB member Wyatt Williams, former consultant at GBB. On November 16th, 2023, the SCB hosted yet another career talk with two guests: Christian Tangene from the Norwegian Agency for Public and Financial Management ([DFØ](#)) and Killian Davin from UK-based carbon accounting solutions provider [Emitwise](#). They gave overviews of their respective organizations and described how they draw from their own backgrounds in industrial ecology.

- Virtual Networking events (May and October): Following previous years, two virtual networking events were organized for members of the student section. Each time, around 30 participants met in groups of peers with similar research interests, matched by SCB members, then met one-on-one online to network and exchange ideas.
- Election (October): The annual election for SCB members was held in the fall. In 2023, we welcomed 5 new motivated members into the board, joining 5 continuing board members to form the board for the 2023- 2024 term. The new members were elected from a pool of 10 candidates, and 76 members participated in the voting process.

Upcoming activities in 2024

- Knowledge dissemination and outreach:
 1. Online platform - Approved in last year's ISIE Annual General Meeting, the SCB is developing an online platform for science communication and education on industrial ecology.
 2. Social media - A new ISIE Student Chapter LinkedIn Group was launched in February 2024 to drive discourse on industrial ecology topics, already with 46 members. The group will facilitate the exchange of cutting-edge research, initiatives, and professional opportunities.
 3. Industrial ecology 'Wikipedia Editathon' - members of the society will be able to contribute to updating and generating new content about our field on Wikipedia.
- Diversity and inclusion: Outreach is being planned for students at universities and in regions of the world where industrial ecology is not widespread, including in Africa and Latin America.

- Webinar series: The SCB will continue to organize webinars with professionals in the circular economy and industrial ecology areas, aiming to help students learn of career pathways and current practices in industry and policy. In addition, the SCB is planning academic webinars that will help students prepare presentations, leading up to the Gordon Research Conference and Seminar for Industrial Ecology.
- Networking: As a SCB tradition, two virtual networking events are being planned for 2024, in April and October.
- Conference: The SCB will support the organization of the 2024 Gordon Research Seminar on Industrial Ecology by helping the seminar co-chairs review abstract submissions and plan sessions.



Figure 2. Participants in the 8th Symposium on Industrial Ecology for Young Professionals (SIEYP) in Leiden, Netherlands

SECTION BOARD MEMBERS

President	Koichi Kanaoka
Vice-president	Elisa Pastor-Vallés
Board Member	Thomas Maani
Board Member	Maximilian Koslowski
Board Member	Wyatt Williams
Board Member	Jakob Napiontek
Board Member	Anna Christy
Board Member	Catrin Böcher
Board Member	Jiajia Li
Board Member	Mithun Kumar Biswas
Board Member	Ursula Cardenas Mamani

SUSTAINABLE CIRCULAR ECONOMY SECTION

The Sustainable Circular Economy section (SCE) was founded in 2022 and ramped up its activities in 2023, with more to come in 2024. As of the 8th of February 2024, the section has 348 members.

The SCE section aims to facilitate cross-cutting activities connecting researchers, practitioners, topics and approaches across the entire ISIE, to leverage synergies within the field and increase the ISIE’s visibility in the broader discussions about the circular economy. The section aims to foster critical reflections about the increasingly popular concept of the Circular Economy and its relations to sustainability, drawing on the entire toolkit of systems-based approaches, concepts and methods of Industrial Ecology. Understanding how circularity strategies can contribute to meeting the grand sustainability challenges of our time is timely and crucial, to inform policy and action and assess potential trade-offs and limitations.

The section is currently governed by the founding board, which serves for 2 years from 2023 to 2025. After 2025 regular elections, following the procedures outlined for all other sections, will take place. The founding board is on purpose shaped diversely and inclusively, comprising researchers on different career levels, from PhD student to Full Professors, as well as regarding gender and locations.

The founding board members of the SCE section are:

Dominik Wiedenhofer, co-chair	University of Natural Resources and Life Sciences, Vienna	Austria
Magnus Fröhling, co-chair	Technical University Munich	Germany
Sina Leipold, member	UFZ Leipzig	Germany
Bhavik Bakshi, member	Ohio State University	United States of America
Hannah Wang, member	Yale University	United States of America
Xin Tong, member	Peking University	China
Chika Aoki-Suzuki, member	Institute of Global Environmental Studies	Japan

Activities of the SCE section and the board in 2023:

1. The board served as scientific reviewers for the ISIE conference on a “World in Turmoil”, in Leiden, Netherlands, 2.-5. June 2023
2. The board chaired and organized two special sessions at the ISIE conference in Leiden:
 - a. “Bringing Industrial ecology and the Circular Economy into Integrated Assessment Models (Part 1+2)”
 - b. “Assessing progress towards a sustainable circular economy across scales (part 1 + 2)”
3. The board hosted a successful kick-off meeting for the section at the ISIE conference in Leiden, drawing over 60 participants and resulting in active discussions and high interest by the community.
4. The board developed the section homepage to serve as a useful starting point for all interested stakeholders, as well as other researchers:
<https://is4ie.org/sections/circulareconomy>

Ongoing activities in 2024:

1. Virtual Special Issue collection of relevant research highlights published in JIE until 2023
2. Serve on the scientific reviewer board for the ISIE-SEM conference in Beijing 2024
3. Organize a special session at the perpetual online conference of the SEM section
4. Develop a call for a special issue in JIE on SCE advances
5. Organize student and early career researcher activities at ISIE events
6. Develop special sessions and workshops at other conferences

SECTION BOARD MEMBERS

Co-Chair **Dominik Wiedenhofer**

Co-Chair **Magnus Fröhling**

Board member **Bhavik Bakshi**

Board member **Chika AOKI-SUZUKI**

Board member **Hannah Wang**

Board member **Sina Leipold**

Board member **Xin Tong**

SUSTAINABLE URBAN SYSTEMS SECTION

The Sustainable Urban System (SUS) Section engages practitioners and researchers by providing a platform for multidisciplinary systems and approaches to understand, plan, build, and manage sustainable, healthy, and resilient cities. As of early January 2024, the section had 433 members, up from 360 members in 2023. The highlighted SUS activities in 2023 include:

SUS at the 2023 ISIE Conference in Leiden, The Netherlands

- SUS Section Meeting



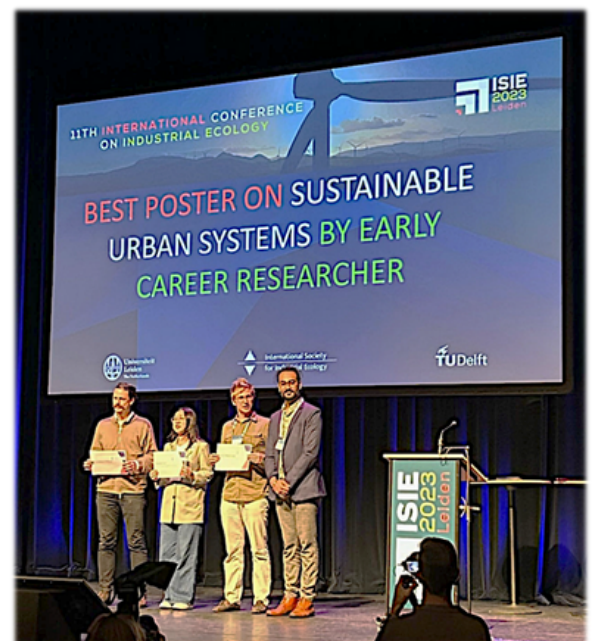
- Presented the perspective paper published in the Journal of Industrial Ecology, of which most of the 2023 SUS Board co-authored



- Social outing



- Held a SUS Early Career Researcher Poster Competition. The selected winners were
 - Nils Dittrich “Bayesian Networks for Bottom-Up Component Modeling in Building Stocks”
 - JiaJia Li “Wellbeing provided by the building stock in Trondheim: Service level and service accessibility”
 - Thomas Elliot “Socio-ecological Contagion in Urban Metabolism”



ISIE Introductory Video

The SUS section participated in the production of the ISIE Introductory Video series. Two videos on the topics of “Social Equity and Justice” and “Urban infrastructure dependencies” were recorded and are in the final editing stage. A third topic, “Digital Twins of Cities,” also garnered interest and may be produced in the future.

The 1st SUS Section Conference in Xiamen, China

The SUS Section and the Institute of Urban Environment, Chinese Academy of Science co-organized the first Urban Science and Sustainability Conference in Xiamen, China from December 14-17, 2023. In total, there were 288 participants from 12 countries that attended this conference in person, while 12,600 joined virtually via live stream.



Invited speakers included:

- Luis Bettencourt, University of Chicago
- Matthew Eckelman, Northeastern University
- Mark Elder, Institute for Global Environment Strategies in Japan
- Peter Groffman, The City University of New York
- Max Hagglom, The State University of New Jersey
- Guojun He, The University of Hong Kong
- Jing Huang, The Administrative Center for China's Agenda 21
- Michael Meadows, Nanjing University
- Carlo Ratti, Massachusetts Institute of Technology
- Clive Eric Sabel, Aarhus University
- Karen Seto, Yale University
- Yang Xia, Nature
- Ming Hung Wong, The Education University of Hong Kong
- Xiaoling Zhang, The University of Hong Kong
- Yu Zheng, JD.COM
- Ping Zhong, The Administrative Center for China's Agenda 21



Karen Seto

Frederick C. Hixon Professor of Geography & Urbanization Science, Yale University
Director, Hixon Center for Urban Sustainability; Co-Director, Yale Center for Geospatial Solutions



Luis Bettencourt

Professor
Professor of Ecology and Evolution, University of Chicago; Inaugural Director, Mansueto Institute for Urban Innovation



José Lobo

Professor
Clinical Associate Professor, School of Sustainability, College of Global Futures; Senior Global Futures Scientist, Julie Ann Wrigley Global Futures Laboratory, Arizona State University



Michael Meadows

Professor
School of Geography and Ocean Science, Nanjing University



Matthew Eckelman

LCAart founder, Associate Professor
Associate Professor of Civil and Environmental Engineering at Northeastern University in Boston



Mark Elder

Director
Director of Research and Publications in the Strategic Management Office at the Institute for Global Environmental Strategies (IGES) in Japan



Carlo Ratti

Professor
Professor of Urban Technologies, MIT; Planning Director, MIT SENSEable City Lab



Clive Eric Sabel

Professor
Professor in department of Public Health - Institute of Environmental and Occupational Medicine; Director, Bertha - Denmark's Big Data Centre for Environment and Health, Aarhus University



Peter M. Groffman

Professor
Advanced Science Research Center at the Graduate Center and Brooklyn College, Department of Earth and Environmental Sciences, The City University of New York



Max Häggblom

Distinguished Professor, Department Chair
Department of Biochemistry and Microbiology, School of Environmental and Biological Sciences Rutgers, The State University of New Jersey



Ming Hung Wong

Advisor (Environmental Science)
Department of Science and Environmental Studies, The Education University of Hong Kong



Yang Xia

Senior Editor
Nature



Guojun He

Professor
Professor in Economics and Management & Strategy, Business School, The University of Hong Kong (HKU); Director, ESG Research Institute, HKU; Associate Director, Institute of China Economy, HKU



Jing Huang

Director-General
The Administrative Center for China's Agenda 21



Yu Zheng

Professor, IEEE Fellow
Vice President of JD.COM and Chief Data Scientist of JD Technology; IEEE Fellow, ACM Distinguished Scientist



Ping Zhong

Deputy Director
The Administrative Center for China's Agenda 21

Parallel Session topics:

1. Urban Science
2. Urban Sustainability I – Data-driven Nexus Research
3. Urban Metabolism
4. Urban Ecology and Ecological Planning
5. Urban 3-D Growth and Environmental Consequences
6. AI for Sustainable Development
7. Urban Adaptation to Climate Change
8. Urban Health
9. Urbanization and Agri-food Systems
10. Urban Sustainability II – Carbon Neutrality and Resource Constraints

SUS Board Election

The SUS Section Board's last election cycle was in 2020 and reached its end of term in 2023. We conducted an election in December of 2023 to populate the new Board.

The 2021-2023 Board included:

- Co-Chair: Melissa Bilec, University of Pittsburgh
- Co-Chair: Hua Cai, Purdue University
- Professional Liaison Coordinator: Joe Bozeman III, Georgia Tech
- 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
- Emerging Professional Representative: Kangkang Tong, China-UK Low Carbon College, Shanghai Jiao Tong University

The newly elected board includes (2024-2026):

- Co-Chair: Kangkang Tong, China-UK Low Carbon College, Shanghai Jiao Tong University
- Co-Chair: Joe Bozeman III, Georgia Tech
- Shauhrat Chopra, City University of Hong Kong
- Yuli Shan, University of Birmingham
- Benjamin Goldstein, University of Michigan
- Thomas Elliot, Aalborg University
- Terri Basch

Upcoming Plans and Events for 2024:

- **Events:**
 - Special sessions at conferences (e.g., 2025 ISIE)
 - Social hours at conferences (e.g., 2024 GRC)
 - Facilitate online seminars
- Develop a Peer Mentorship Program
- Continue Paper/Poster Competition Programming
 - Student Paper competition
 - Poster competition
- Propose a special issue to a journal (e.g., JIE)
- Co-develop and explore other ideas with the General Body and Board

SECTION BOARD MEMBERS

Co-Chair **Kangkang "KK" Tong**

Co-Chair **Joe Bozeman III**

Professional Liaison Coordinator **Shauhrat Chopra**

Web Editor and Communication Strategist **Yuli Shan**

Research Coordinator **Benjamin Goldstein**

Treasurer and COP26 Activities Coordinator **Thomas Elliot**

Emerging Professional Representative **Terri Basch**

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