

2024 Industrial Ecology Project Grant Proposal

Proponent: Shweta Singh

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1. Project title

Advancing Industrial Ecology and Data Science for Sustainable Manufacturing in India: A Workshop

2. Project description

Industrial Ecology has played a significant role in informing sustainable development goals globally. However, IE methods are still relatively new in few countries and need better integration with other active research in these countries such as systems science and AI/data science. In India, currently there is a growing interest in sustainability due to the environmental concerns and focus on increasing manufacturing in India. There is an increased emphasis on LCA to inform decision making, however few researchers recognize the broader concepts of Industrial Ecology. Academic community is very active in the field of systems engineering and data sciences focusing mainly on engineering applications. The focus on sustainability has only recently been at the agenda of several institutes in India along with many government initiatives, thus there is an expansion of investments and activities in the field of sustainability. The increased focus on sustainability will likely also enhance research in the field of Industrial Ecology. This project focuses on organizing a workshop to bring together active researchers in Systems Science, Industrial Ecology and Data Science in India.

This workshop will be organized in collaboration with School of Sustainability, Wadhvani School of Data Science and AI at Indian Institute of Technology (IIT), Madras along with support from Purdue University, IN, USA. The unique aspect of workshop includes focus on the quantitative and analytical tools for assessment and informing design along with hands-on activities for industry. There will be a panel of executive leaders from the manufacturing sector and government to provide a top-level view of future of sustainable manufacturing in India. Researchers from Industrial Ecology will be invited to share their active research in sustainability area focused on manufacturing.

Organizing Committee: Dr. Shweta Singh, Dr. Arun Tangirala and Dr. Ashwin Mahalingam

We will be inviting speakers from academia working in the field of systems engineering, data science and industrial ecology in India. The selection of speakers will be based on their recent contributions to the work relevant to Industrial Ecology. We are targeting a total of 30-35 participants for the workshop.

Timeline and Draft Agenda:

Proposed Time: May 21 – May 22

Draft Agenda:

Day 1:

First Half: Invited talks by Academic and Industry/NGO/Government etc
(Industrial Ecology/Systems Engineering & Data Science/Data & AI etc)

Second Half: Roundtable discussions by Industry leaders in Manufacturing and Supply Chain

Day 2:

Discussions on future pathways and integration of Industrial Ecology in Research– R& D heads, academics, industrial

Hands on Training on Industrial Ecology Tools

3. What is the Benefit to the Society and its Members?

This workshop will bring the Industrial Ecology researchers in India together with Systems engineers working in the field of data science and manufacturing. The discussions will include academics, industry leaders and local manufacturing companies who are working on sustainability and data science. This will help in increasing membership for ISIE from India and highlight the Singapore ISIE conference 2025, thus mobilizing researchers from India to attend. This aligns with the inclusive approach of ISIE to integrate researchers from the “south”.

4. Budget?

EUR 5000.

5. Budget breakdown?

5000 Euro: Support for Travel and Lodging of Invited Speakers from Industry, Academia and Government (Indian Delegates, travel within India). The budget will support about 30 delegates.

Average Cost per Person: 10,000 INR (round trip)

Stay for 2 days per person: 5000 INR

Total flight + Accommodation = 15,000 INR (approx. 170 EURO per person)

6. Who Would Govern or Operate the Proposal?

Shweta Singh

7. What Resources are Available to Support the Proposal?

Administrative support from IIT Madras for organizing the workshop.

Organizing Committee : Shweta Singh, Ashwin Mahalingam, Arun Tangirala

IIT Madras will support Conference Center cost, Food cost + staff support for organization, local transport etc.

8. Is this Proposal Defined within a Single ISIE Section or across Sections?

Across the different sections

9. Name of Supporting ISIE Board Member or Section Leader

Simron Singh

10. Evidence of Support for the Proposal

There has been a call for increasing ISIE presence in South East Asia. India is on expedited trajectory in sustainability research and growing ISIE presence in India has been on agenda.