



Creating value in social dimensions of sustainable solutions

MCSC Annual Symposium 4:00-5:30pm October 17th 2022

This workshop is an opportunity to think through the use of metrics to pursue social dimensions of sustainability. How can we characterize aspects of sustainability that go beyond carbon, address the dirtiest ends of supply chains, and optimize for overall human wellbeing? Are there metrics of social impact that allow us to achieve our goal of benchmarking and redesigning equitable value chains from the ground up? This workshop is an opportunity to consider not only best practices for metrics, but reevaluate our approach to the use of metrics: opening up space for new ways of thinking about valuing the social dimensions of the human impacts of supply chains. We look forward to welcoming you to an inviting space for cross-industry & cross-disciplinary conversations about comprehensive metrics of sustainability, and push the envelope on who is considered and what is measured and measurable in sustainable solution-building.

We will hear from MIT experts **Professor Chakanetsa Mavhunga** (Science, Technology & Society) and **Professor Janelle Knox-Hayes** (Department of Urban Studies & Planning) on their research on social dimensions of sustainability.

In advance of the workshop, we would like to know:

What would you like to ask of other companies about how they value human impacts of their value chains?

Send answers to [this virtual workshop space](#) (or hold these questions and submit them live at the event)

Evaluating environmental and social dimensions of a waste-stream solution

To scaffold our conversation, we will work through a real world example of a recycling community and its social dimensions. The scenario presents a description of a cooperative of waste-pickers who enable source-segregated collection for a functioning recycling market.

Case study:

SWaCH is a cooperative of 3500+ waste pickers in Pune India, one of the largest of its kind in the world. The formalized structure of the cooperative, which serves almost a million households, has converted this labor-intensive task into a semi-formal profession. Waste pickers travel extensive routes to pick up waste directly from individual households, going door-to-door to collect and carry undifferentiated household waste which they then sort and sell to recyclers. They are paid for this service directly by households at the point of collection, and

also through the municipalities who benefit from a well-functioning source-segregated waste collection system that annually diverts 72,000 tons of dry waste and 144,000 tons of wet waste from landfills into the recycling and composting sectors.

The un-mixing of usable material from entropic waste streams is a complex global problem touching on every dimension of sustainability. Mixed waste streams present technical challenges in terms of: (1) cost, environmental, and health problems resulting from landfill or burning unrecovered waste, (2) limited usability in the secondary materials market of recycling streams contaminated by low-grade or poorly segregated materials, (3) limited technologies and industrial on-ramps for up-cycling and repurposing in circular material flows, and (4) material dead-ends of tough-to-recycle waste such as styrofoam and multi-layer-plastic bags. SWaCH's recyclers increase the supply of high-quality secondary materials through fine-sorting of waste despite resource-limited conditions.

Artisanal waste picking is an informal occupation held by an estimated 1% of India's population. The un-mixing of waste streams poses social challenges in the quality of life and severe health impacts for those participating and impacted by it. Waste pickers are able to derive a very basic income in the extremely labor intensive process of segregating at source. Yet they lack training, tools, and space to dismantle composites and advanced materials of increasing complexity. Space and specialized tools are particularly important for fine segregation of waste, but most waste pickers are migrants living in slums with limited space to process and store their products. Despite campaigns to educate the public in the safe disposal of hazardous waste such as batteries and used sanitary items, exposure to these materials remains a ubiquitous hazard of the job. Waste pickers desire improvements in their quality-of-life, particularly healthcare, dignity of work, stability in wages, larger homes, and educational opportunities for their children.

Pune's 5 million residents are no different from most people globally who are unable or unwilling to segregate end-of-life consumer products. Pune's waste recyclers constitute a socio-technical system in which a formalized network of cheap menial labor has built, from an environmental standpoint, a very sophisticated engine for materials recovery that is more effective at capturing certain types of recyclable waste than anywhere in the world. Recovery rates for PET are 90%, and for glass bottles up to 100%. Historically a job-of-last resort for migrant women without formal identity cards, waste picking in Pune has developed into a formalized occupation pursued by both men and women, integrated into municipal services, and touching life in every part of the city.

- Drawing on your own experience with existing metrics of sustainability, how would you go about characterizing the dimensions of environmental and social sustainability of SWaCH's activities?
- What are intersections/tradeoffs between environmental and social metrics?
- What do these metrics miss? Is there anything that cannot be categorized or measured?