

INTERNATIONAL
INNOVATION CORPS
MISSIONGARIMA

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VESUVIUS 2.0?

What Mumbai saw recently, in the face of massive fire at one of its biggest municipal dumping grounds, reminded many of Mt. Vesuvius, the volcano that wiped away an entire population. An analysis of our efforts in the face of this impending doom



THE UNIVERSITY OF CHICAGO
INTERNATIONAL INNOVATION CORPS
MISSION GARIMA

The team working on Mission Garima, the collaborative project of Tata Trusts and Municipal Corporation of Greater Mumbai

Mission Garima, a collaborative project between Tata Trusts and the Municipal Corporation of Greater Mumbai (MCGM), aims to eliminate unsafe, unhygienic, and undignified practices in urban sanitation work throughout Mumbai.

The initiative focuses on five key objectives: improved health services for workers, better occupational safety practices, more effective infrastructure and processes for solid waste management (SWM), more user-friendly equipment and technology, and a robust communications campaign that will mobilize local communities in support of the Mission. Mumbai's L ward, which encompasses much of the neighborhood of Kurla, will serve as Mission Garima's pilot ward. Process improvements successful in L ward will then be replicated and scaled to other wards throughout the city.

The International Innovation Corps (IIC) team brings together a truly interdisciplinary group of creative and analytical individuals committed to supporting Mission Garima's objectives. Our experiences range from designing urban cities to working in emergency rooms and the Government of Bihar to producing movies and documentaries. The team is committed to thoroughly analyzing and evaluating current practices in Kurla's SWM system in order to work hand-in-hand with both Tata Trusts and the MCGM in identifying and piloting innovative, yet practical and scalable, interventions

Vesuvius 2.0

The volcanic eruption of Mt. Vesuvius of Italy in 79 AD is often recalled as one of the most catastrophic natural disasters in European history. The tragedy led to the release of ash, gases and thermal energy, in amounts greater than that produced by the Hiroshima bombing. It eventually led to the destruction and complete demolition of two of the most prosperous economies of contemporary Europe, coupled with an estimated death toll of thousands. The satellite imagery of Mumbai (including the one on cover-facilitated by NASA) taken during the last week helps one imagine what the scene would have been like in 79AD. The picture above is not a volcanic eruption, but it does portend to what could be a major environmental crisis in the 21st century: ineffective waste management for major urban centers.

Mumbai, the commercial capital of India, has an estimated population of 29 million. This huge chunk of urban population woke up to horrifying morning air in the last week of January. The smog and fumes covering the majority of Mumbai as visible in the cover picture were allegedly caused by a flash fire in the Deonar Municipal Dumping Ground. The Deonar Dumping Ground manages a major fraction of Mumbai's solid waste. The fire caused not only major problems to nearby residents, but also physical

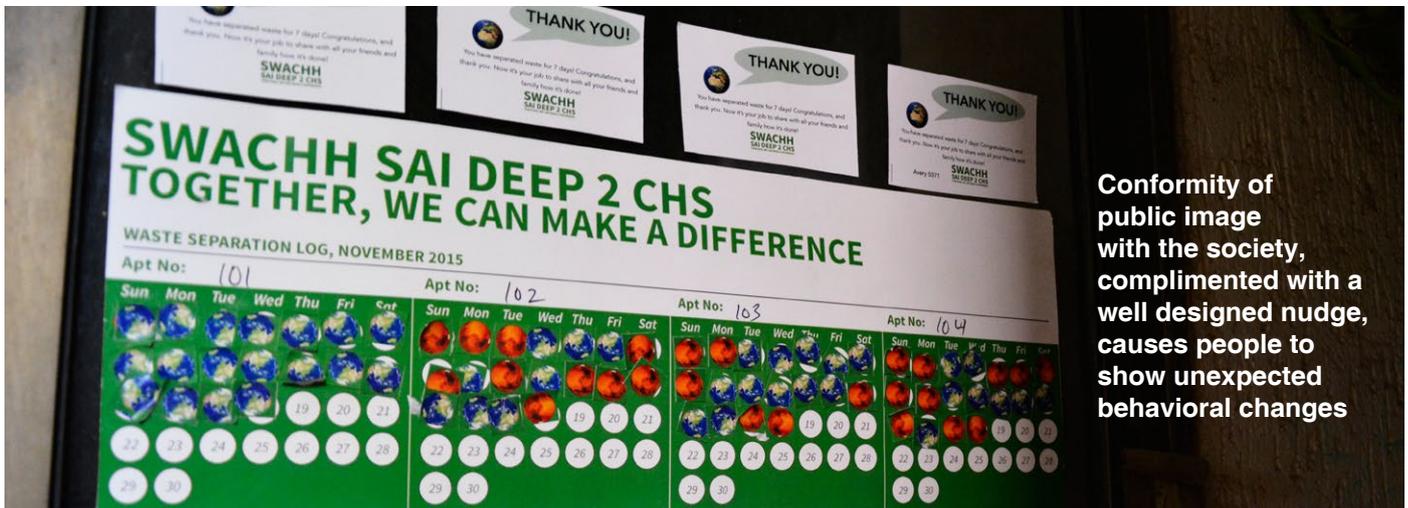
problems such as breathing issues and irritation in the eyes of many people.

Like any urban city, having undergone an organic growth in recent times, Mumbai also has struggled to balance its infrastructural growth amidst a massive influx of migration from rural regions. Over the years, this has led to increased stress on the municipal system which is responsible for managing the city's cleanliness. Waste management has now become a cumbersome task requiring better technology and efficient utilization of human capital.

The IIC-Tata Trusts Mission Garima team has been working with the MCGM on these fronts, and this newest environmental crisis has only served to bring the deficit of both resources into sharp relief. Our workstream on waste separation addresses the root cause of the problem by targeting the management of waste at the producer level: namely, the household. Further, our work with healthcare partners and technology under Mission Garima aims to improve how the city utilizes its capital within the waste management space. In this Issue of our newsletter, we present updates about these initiatives and reflect upon their requirement and efficiency in urban waste management - the improvement of which must surely be the imperative of these changing times.



NUDGE FOR GOOD



Conformity of public image with the society, complimented with a well designed nudge, causes people to show unexpected behavioral changes

Working in sustainable waste management for the past several months, our team has learned to effectively leverage a simple, but very powerful tool: design. When employed effectively, good design of surroundings elicits emotional responses that affect or even change the way people think and behave. And in a project where our primary goal is to change people's perceptions and interactions with their trash on a large scale, design has the potential to play an enormous role.

We tried to employ this in our pilot experiment to encourage residents in one Mumbai apartment complex to separate waste on some basic principles: namely, to separate dry (paper, cardboard, glass, etc) from wet (banana peels, kitchen waste, flowers, etc) waste. We hypothesized that a simple change in the design of certain surroundings could affect people's behavior within it. To this end, we designed a household calendar that would serve as a "waste separation log. When the trash collector made his daily rounds throughout the apartment he would, as per the training we gave him and his colleagues, post an Earth sticker ("good") for separated waste and a Mars sticker ("bad") for apartments that did not separate their waste..." (See photos [here](#)) This calendar system, a relatively simple addition to the surroundings of an otherwise ordinary apartment complex, we aimed to 1) give immediate feedback on people's actions and 2) create public awareness on people's behavior that would induce a sense

of competition.

Who would emerge the "waste champion" of the month? What started out as a crazy idea (Would any apartment manager agree to this? Would the calendars be seen as eyesores?) would in fact go on to receive approval from the apartment committee for a pilot program.

The intervention was rocky at first; within the first week of the month-long challenge, we found ourselves needing to meet with the trash collectors every few days just to address their concerns and complaints, as

"As foolproof as a solution may seem, there is always much to learn from the people one is designing for"

we had given them the extra workload of putting stickers on each household's calendar. The input of the workers allowed us to streamline our model - with their aid, we eventually were able to figure out the most efficient processes that would minimize the number of trips made by trash collectors. We learned a valuable lesson about the design process: one should never expect his or her "solution" to be the final one. As foolproof as a solution may seem, there is always much to learn from the people one is designing for. In our case, the trash collectors had no problem telling us that we were adding too much to their workload, and it forced us to rethink the trash collection process in its entirety. In the end, we found that it would be most efficient

to have each one collect dry waste after wet waste, and to carry only one bin (as opposed to carrying two bins or making rounds in pairs). By the end of the month, we had witnessed about 60% separation throughout the whole apartment – without a single rule or fine in place.

Frankly speaking, our particular intervention is not scalable as we employed it in this initial pilot, but the principles underlying it certainly are. During the pilot, we learned that rules, fines, provision of dustbins, and a reliance on environmental consciousness can only go so far in changing behavior amongst the general public. Rather than asking "how do we make people separate trash?" we asked "how do we make people want to separate trash?" Our intervention elicited an emotional response that made many people intrinsically desire to adopt the socially optimal behavior. Waste separation became a matter of public image and following social norms – and in this age of selfies, these can be incredibly influential.

The harder part, though, will be to execute our interventions brilliantly at scale - especially when it involves changing the long-held mindsets of a large population of people. Presently, our team is still figuring out how to take the findings from our pilot and restructure it for scale. The intervention will probably look very different in its next iteration, but the underlying principles and our commitment to experimentation and iteration will certainly remain.

Conference

In the week of November 23rd, members of the team traveled to Bangalore to attend the Icon-SWM 2015 conference hosted at the Indian Institute of Science, Bangalore.

The theme for the event was “towards sustainable waste management through technological innovations and participation” - the event itself, intended to bring forward the newest research by both Indian and international innovators in Solid Waste Management (SWM), ran for four days. In this time, Rhythm and Azeem attended dozens of research presentations and got exposed to a variety of different scales and priorities of various waste management strategies.

Our primary takeaways are as follows:

1. Facilitating compost of organic (wet) wastes into fertilizer seems to be the most viable means of reducing output of residential wastes to Mumbai’s dumping grounds.

2. Biomethanation of organic waste, an alternative process, can be managed at a variety of scales and hence may be incorporated as a part of this strategy, provided that we can find



LEARNINGS AND MUSINGS FROM ONE OF THE BIGGEST INTERNATIONAL CONFERENCES ON SOLID WASTE MANAGEMENT

the funding.

3. Multiple attendees to the conference agreed that segregation of waste at the source (including resident-level, factory-level, etc.) is a crucial part of effective SWM systems

The topic of how best to facilitate waste segregation at the household level is complicated because so much of why people will/will not segregate seems to be determined based on local context and circumstances. Seeking to understand this context must therefore be the first step of devising any truly effective interventions targeted towards waste separation.

Furthermore, and on a more theoretical front, we also had a chance to see some of the remarkable research that this international conference helped bring to light. For example, we were exposed to research focusing on mathematical modeling of waste production/composition for an area. There is some fascinating work being done in this space and our team surely hopes to learn as much as possible from the researchers who dedicate their lives to such an important topic.



IconSWM



Divide & Conquer Waste

At the end of conference, we reached out to Bangalore-based startup “2bin1bag” to try and learn how they managed to get ~80k households to begin separating their waste. Essentially, 2bin1bag works with apartments, schools, and other institutions to implement their model for facilitating household waste segregation and collection.

The basic model is to provide each member of the society with 2 bins and 1 bag - one bin for compostables, one bin for “reject waste” such as sanitary pads, broken glass, and razor blades, and one bag for dry waste such as plastic bottles, tetra packs, etc. The exact mechanism of collection and disposal of these wastes is tailored based on each society’s needs but, as the founders of the startup informed us, ensuring that a proper endpoint exists for wet/reject/dry waste is crucial, and must be secured before any organization would



Mallini Parmar spent an entire day with us to explain 2bins1bag’s model

attempt to enforce separation at the household level. To help ensure this model runs effectively once implemented, 2bin1bag also recommends that society managers work out some system of fines to ensure compliance to the segregation effort amongst the households involved.

All in all, the visit to Bangalore was information-dense and (hopefully) should be of some good use to our entire team as we move forward. Some of the models for waste segregation we saw in Bangalore might require some adaptation to Mumbai’s context in order to work, but how this might take place remains to be seen.

आमचा आहार, आमचे पोषण | My Food, My Nutrition



There is no such thing as a free lunch! The proverb aptly defines the team's efforts, thoughts and work situation in the past four months.

Armed with the great research ideas and motivational tagline of *Aamcha Aahar, Aamche Poshan* (my food, my

nutrition), the team forayed into the world of providing low cost nutritious food for the MCGM workers.

We maintained our status-quo of being present at the chowki during the early morning at 0630 AM. We talked to workers, motivated them, and laid special stress on the workers' committee to keep them abreast of our ideas on *Aamcha Aahar, Aamche Poshan*.

After visiting all the vendors near our pilot chowki and floating a tender, one of the vendors was selected and he promised to deliver quality products and food services to the workers. Along with the workers, we brainstormed with him on the menu, price and the timing of the food services. To our surprise, things appeared to be moving smoothly. Workers were happy, partners were happy and since everyone was happy, we were by default happy.

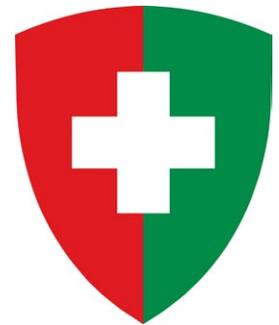
Then came the domino effect! The vendor kept on procrastinating and it took us some time to realise that business didn't spell enough profit for him. We reached out to other vendors; however none of them were in a position to scale up beyond tea and

biscuits and if they were, they were not willing to do so at early morning hours.

The not-so-successful pilot gave us ample learning. We decided to reorient and re-strategise our work to come up with solutions than could create win-win situation for all. Throwing back and forth the ideas on business model- scale of the vendor, operation cost, branding of the initiative; we felt the need of having a third person perspective. Over the past month, we have approached people working in the development space and have discussed the bottlenecks, possible solutions to our idea. We are in the process of creating business models, and this has been possible due to fresh perspectives that we have received. The business model will create a Public Private Partnership and will bring in innovative ideas for branding *Aamcha Aahar, Aamche Poshan*.

We are planning to align our work with Swasth Foundation and hopefully the partnership can be carried ahead to provide healthy long-term solutions for the workers to for improve their lifestyle.

HELPING SWASTH



Swasth Foundation aims to ensure healthcare delivery to low income groups. A brief description of our engagement in structuring outreach regarding diabetes and cardiovascular disease with Swasth.

To add support to Mission Garima's health program, our team is helping Swasth Foundation (a fellow collaborator on Mission Garima) to structure their outreach regarding Type II diabetes mellitus (T2DM) and cardiovascular disease (CVD) - all of this in partnership with their clinicians providing primary care services throughout the city. Our team is currently helping Swasth to devise:

a screening protocol for T2DM and CVD for use in future health camps, encompassing best-practices for risk assessment and usage of diagnostic resources

a booklet for patients who have received a confirmatory diagnosis of

T2DM, covering home-care protocols and nutritional/lifestyle shifts they can use to manage their disease

a pamphlet for persons at-risk for T2DM covering useful information and lifestyle advice for preventing a development of their risk status into full-blown disease

To these ends, our team may utilize the face-time afforded to our team with MCGM conservancy workers as a means to figure out some of the obstacles preventing working-class Indians from adopting the shifts necessary to manage T2DM risk in their daily lives. This has already begun to some degree, as Swasth has requested our data for the nutritional

preferences of conservancy workers gathered in co-design sessions. , the secondary research on nutrition we've gathered through assisting Swasth can be used by our team as we target specific food vendors for the Aamcha Aahar, Aamcha Poshan program.

Swasth Foundation will also be ensuring that their outreach for T2DM will extend to MCGM conservancy workers (who have already been identified as having elevated rates of T2DM and CVD early in 2015), thereby confirming yet another link between our work with Swasth and the broader goals of Mission Garima

Nearly Midway

As all the IIC Teams complete half a year on their projects, Azeem writes about the mid year training we all participated in at the UCHICAGO Centre in Delhi.

Our blogpost from 5th February, 2016

This week saw the 23 IIC fellows reuniting for a 4-day training series run by the IIC core team. The five teams (Mission Garima in Mumbai, EPIC in Mumbai, Millenium Alliance in Delhi, QIP Haryana, and CCE Rajasthan) of the '15-'16 IIC cohort got the chance to take in some of the grey, copper-tasting Delhi air while enjoying workshops and guest lectures at the University of Chicago Centre in Delhi.

The first day consisted primarily of trainings for the QIP Haryana and CCE Rajasthan teams, but a guest lecture with Rick Rossow brought the full cohort of fellows into the same room for the first time. Mr. Rossow, a senior fellow and Wadhvani Chair in US/India Policy Studies at the Center for Strategic & International Studies, gave his perspective on the obstacles and opportunities that Indian policy presents to international investors and businesses. A fiery Q&A session proved to be enlightening, with several fellows staying back to speak individually with Mr. Rossow after his talk ended.

The following days held a variety of things in store for our team. Housekeeping meetings with the core team, a negotiations lecture and training session with a Booth professor, and a talk on national-level medical interventions with Dr. Varun Vij on his work as the Indian program leader for PATH

were all opportunities afforded to our team. There was also a theme of preparing and framing our work this year in preparation for our future careers. Nicole of the IIC core team ran a workshop that, amongst other things, stressed the importance of both following your interests as well as thinking retrospectively to help create a narrative when talking about your work history.

This was also a time for the fellows to crowdsource on how to overcome obstacles that had come up in their work. In addition to core-team led workshops, Rhythm and Janey also organized an informal session amongst the fellows that allowed people to both air frustrations and solicit advice candidly. All of the fellows attended and the conversations seemed to get pretty in-depth so I think we can reliably chart up that session up to a success. Even more exciting: the topic came up of the fellows organizing and hosting a conference of our own, in which we'd be able to solicit speakers and create panels on topics that are very targeted to our interests. If this moves forward we'll definitely be sure to get the word out about it - it could definitely be an exciting event!

All in all, I think I can say the MG fellows came back somewhat recharged and ready to tackle our work with new energy and, hopefully, from new angles as well. We'll keep you posted.

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