

Bringing power to Padarwadi

Cummins models and executes an economically viable solution for generating electricity for an agrarian village.



Background:

Padarwadi, a village situated 120 kilometers from Pune, is one of the many villages in India that depend on agriculture as the only source of household income. Earnings are less than 1\$ per day, fundamental needs and hand-to-mouth survival takes precedence over everything else. The inconspicuous approach roads to the village further add difficulties for trade.

Sources of income for the residents of this village are as follows:

- Produce comprising 35,000 kg of paddy, annually, making rice their major crop
- Minor crops such as beans
- Locally procured honey which is marketed using a locally active Non-Government Organization (NGO)

In order to make the 35,000 kg of paddy ready for sale, it needs to be dehusked. For a village not well connected, this means frequent uphill walks carrying paddy to the nearby facilities situated more than 2 km away, a ritual the villagers must repeat close to 800 times a year, a non-productive activity resulting in wastage of precious time and effort. Setting up an economically viable solution for a village

struggling to have continuous power supply, seemed next to impossible.

Approach and effort:

With only three weeks at hand before the monsoons commenced, Cummins worked to define the scope of the project. The approach finalized entailed establishing a Distributed Generation Model for Rural Electrification which is :

- Economically sustainable
- Scaleable across multiple villages/hamlets
- Uses the 'Right Technology' for electricity generation, one that is compliant to current emissions regulations for diesel
- Uses locally available renewable energy (Straight Vegetable Oil from non edible oil seeds grown locally)
- Minimizes overall carbon emissions



The key was to provide electricity to run equipment such as power rice mill, oil expeller and decorticator using a single 15 kVA genset running on Pongamia Oil. Equally important was to empower the villagers so that they could independently take over the operations of the equipment and dehusk the paddy. This needed to be done in a manner that would not only be economically viable, but potentially could result in an avenue for generating income.

A process driven methodology followed and key Six-Sigma tools came in handy to define crucial details of the project.

Based on the Voice of Customer (VOC) that included feedback and technical and human constraints of the village and its villagers, Cummins refined their model and customized the delivery of this solution.



Resulting change:

The Padarwadi project is a typical initiative that underpins a ripple effect - a positive, continuous, progressive effect within the community as well as the organization. Some salient features of this successful model are:

- The revenue generation surrounding the model estimates to bring an annual cashflow of US\$ 2500 to the villagers
- The potential to double farming output: This is possible now as the villagers invest human capital on additional farms instead of non-productive and laborious activities surrounding dehusking of paddy
- The electrification project is within emission standards specified by the Central Pollution Control Board

Over and above the tangible benefits of this project, the real gain is the uplifted spirit of the villagers who are quick to think of newer and more creative ways of using their new assets. "We are making some sort of bread out of the rice, now that we have the flour mill as well", commented an excited villager. Indeed, positive energy spreads like a ripple.

Change the way one views garbage

Cummins employees worked to educate residents about appropriate waste disposal, while bringing dignity to waste collectors.



Background:

The Zero Garbage Ward is a project, close to the organization's mission of 'Demanding that everything we do leads to a Cleaner, Safer and Healthier Environment'.

Rapid urbanization, expanding population and use-and-throw habits of people have created a garbage explosion, which the current system is incapable of handling efficiently.

Uruli Devachi, Pune city's main landfill site was presenting health concerns for its residents. Regular agitations by residents and refusal to permit entry of trucks into the landfill meant waste was not being picked up from Pune city.

Approach and effort:

Katraj Ward No. 144 was chosen as the test case. Pune's largest ward in terms of geographic size and number of households, it was the ideal representation of the waste problems plaguing the city.

In collaboration with NGO Janwani, Cummins created a model for disposal of waste at the source. The overarching goals of the Zero Garbage Ward initiative include:

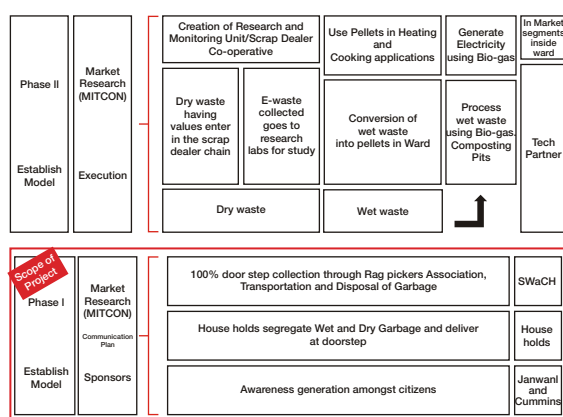
- Alleviating environmental problems, through segregating and recycling the dry and wet waste
- Increasing cleanliness
- Improving the quality of life for both residents and waste pickers, through better door-to-door

collection, improving safety and bringing dignity

- Reducing costs for the city by minimizing transportation expense and alleviating problems at landfills

In addition to Cummins and Janwani, other partners like SWaCH- a co-operative of rag pickers, Pune Municipal Corporation, Plastic Association, Scrap Dealers Association etc, also participated in this program.

The scope of the Zero Ward Garbage model is illustrated below:



The key to making this project a success was education.

- Waste pickers were trained on the new system and integrated into appropriate door-to-door collection
- Residents were taught how to segregate wet and dry waste

To do this, volunteers from Cummins:

- Marched through the streets of Katraj and met with residents for generating awareness on appropriate waste segregation
- Handed out communication material to explain the difference between wet and dry waste
- Organised public events in Katraj on waste segregation
- Used puppet shows as an innovative method to educate the public

Resulting change:

As with any Cummins project, the Zero Garbage Ward can be, and is being, replicated across the city - currently in 25 wards. The outcome of this project has been:

- The creation of a project manual that outlines the processes, a complaint mechanism to help keep the system on track, information for residents to report absent waste pickers, as well as methods for waste pickers to report residents and businesses that fail to segregate trash
- Maximum people participation - employees of Cummins, NGO representatives, rag pickers, politicians, corporators, PMC officials and citizens
- Bringing dignity to waste pickers - reducing manual handling of waste
- Initialising payment process for rag pickers
- Rag pickers have been given uniforms and gloves while collecting household waste for their safety
- Rag pickers have gained financially by selling dry scrap to scrap dealers

The Zero Garbage Ward project represents a paradigm shift from garbage as disposable to garbage as a renewable, even profitable resource.

