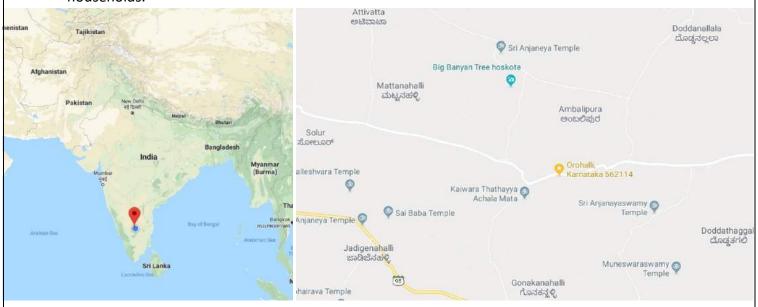# Study of a Waste management project in rural India

1. Project summary

The Waste management project in Orohalli Grama Panchayat (GP), Karnataka, India covers 11 villages. Nearly 1400 households, with a population of 6132, come under the project. Using Corporate Social Responsibility funds of a private company, a waste management NGO called Saahas, implemented the project. The Panchayat area had no waste collection mechanism, leading to waste littering and burning. With the project, waste is being collected from all households, and nearly 95% of the waste is either recycled or used as fuel for cement industry. Efficient waste management system will save both energy, by increasing recycling of materials, and also efficient usage of waste as a resource, is achieved. The project can be replicated in other rural areas around the world, and can also be made sustainable by levying service fee for households.

Images © Google Maps

2. Situation before Project Intervention

Most parts of rural India has no waste collection mechanism in place. Waste is either dumped in the outskirts of the villages or burnt periodically at household level or at the village outskirts. In countries like India or Nepal, where more than 60-70% of its people reside in rural areas, improper waste management is leading to health hazards, pollution, and various other problems, due to littering and burning of waste.

Orohalli Panchayat was no exception, until September 2017. The Panchayat had no waste collection system, and thus dry waste was either littered around streets or burnt. Drains were filled with dry waste and residents were ignorant about the ill effects of burning waste. We can also attribute the habit of littering in residents due to non-availability of a waste collection mechanism. However, wet waste is not a problem in Orohalli GP, as wet waste is either fed to livestock or put into backyard 'tippes', which gets converted into compost, over time.

3. Aim of the Waste management program

➢ To bring about behavioural change in residents, to segregate wet and dry waste at source, and to prevent littering
➢ To spread awareness about the pollution caused and ill effects due to open burning of plastic and other waste
➢ Weekly collection of dry waste from households
➢ To provide necessary infrastructure for sorting dry waste
➢ To supply non recyclables to cement factory for co processing

4. Awareness Sessions

Awareness to people, forms the basis of the project. Various awareness and training sessions were conducted to the different stakeholders in the Orohalli GP. Training sessions were conducted to the Panchayat members and staff members of the project, during the initial stages of the project, whereas awareness sessions have been conducted in Anganawadi (kindergarten), schools and women self-help groups, throughout the duration of the project.

1) Awareness and training session to Panchayat members and staff members

2) Door to Door project awareness sessions

3) Door to Door Blue Bag distribution, to store dry waste in houses, shops and schools

4) Awareness sessions with Anganawadi, Schools and self-help groups: Reaching out to school children is very important, as they will be taking the idea and the cause forward

5. Waste collection system

The residents are to segregate wet and dry waste at source. Wet waste is handled at the household level itself, so only dry waste is to be collected. The households or shops or schools, store dry waste generated, in the blue bags provided to them. Dry waste is collected door to door from all 11 villages of Orohalli, on a weekly basis, by the waste collection personnel, using the Electric vehicle (E-vehicle) provided.

An old Panchayat building in Orohalli was repaired, and is being used as the Dry Waste Collection Centre (DWCC). Dry waste collected using the E-vehicle, is sorted and stored in the DWCC.

Dry waste is sorted into 8-9 categories, by our staff in the DWCC, based on the commercial value in the local scrap market. The remaining dry waste is sent to cement factories, for co-processing, as a partial replacement of coal. The high value recyclables go to the respective recycling facilities through local scrap dealers.

6. Dry waste collection data

Collection of dry waste from the villages started in November, after nearly 2 months of awareness and campaigning. Total dry waste collected, during the project period is 16.3 Tons. On an average, nearly 1630 kg of dry waste is collected per month, in the Panchayat area.

Sl. No.	Village Name	Total Units	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Total waste per village
1	Thaggali Hosahalli	152	155.5	143.0	186.5	187.0	122.5	160.5	174.0	206.5	245.0	281.0	1861.5
2	Chikka Thaggali	67	54.5	105.5	95.5	56.5	77.5	104.5	98.5	54.5	103.0	109.5	859.5
3	Dodda Thaggali	103	125.0	136.5	187.5	109.0	20.0	277.5	192.0	131.0	138.0	187.0	1503.5
4	Injanahalli	89	124.5	88.0	123.0	60.0	85.0	98.0	139.5	128.5	111.5	156.0	1114.0
5	Ambalipura	21	54.5	33.5	49.0	35.0	34.0	46.5	71.5	69.0	70.0	94.5	557.5
6	Belamangala	95	87.5	180.0	173.0	202.0	132.0	112.0	180.0	139.5	224.0	185.5	1615.5
7	Gonakana Halli	173	63.0	152.0	186.5	136.5	131.0	89.0	174.0	126.0	133.0	148.5	1339.5
8	Solur	192	0.0	130.0	192.5	213.0	257.5	232.5	215.0	308.0	332.0	277.0	2157.5
9	Orohalli	132	191.0	121.5	99.0	106.5	107.5	123.5	120.5	77.0	165.5	164.0	1276.0
10	Thavatalli	130	242.0	158.0	154.5	151.5	123.0	91.5	141.5	181.5	153.0	165.0	1561.5
11	Attivatta	229	0.0	219.5	202.0	314.5	188.0	130.0	286.0	273.5	320.0	300.5	2234.0
	Clean up drive	3					199.5	11.0	7.0		18.5		236.0
	Total	**1386**	**1097.5**	**1467.5**	**1649.0**	**1571.5**	**1477.5**	**1476.5**	**1799.5**	**1695.0**	**2013.5**	**2068.5**	**16316.0**

Month wise Dry Waste Collection Data (in Kgs)

Dry waste flow

- ➢ Recyclables weighing 1134.5 kg has been sent to recyclers.
- ➢ Load of 9.72 Tonnes sent to cement kiln for co-processing in the project year 2017-18.
- ➢ Revenue of nearly ₹ 7500 generated through the sale of high value recyclables in the project year.

Month	Waste Collected	Sent to Cement kiln	Sent to Sorting	Sent to Recycler	Revenue in Rs
Nov-17	1097.5	0.0	0.0	30.5	204.0
Dec-17	1467.5	0.0	0.0	46.5	291.5
Jan-18	1649.0	1300.0	0.0	0.0	0.0
Feb-18	1571.5	2620.0	0.0	270.0	1851.0
Mar-18	1477.5	0.0	0.0	122.0	805.0
Apr-18	1476.5	2760.0	0.0	195.0	1287.0
May-18	1799.5	0.0	0.0	339.5	2263.5
Jun-18	1695.0	3040.0	0.0	125.5	824.5
Jul-18	2013.5	0.0	2350.0	0.0	0.0
Aug-18	2068.5	0.0	0.0	5.5	0.0
Total	**16316.0**	**9720.0**	**2350.0**	**1134.5**	**7526.5**

Dry Waste in kgs

7. Project Impact

- ➢ Awareness on waste has been created among the residents of 11 villages of Orohalli Panchayat.
- ➢ Visible improvement in level of cleanliness and cleaner drains in the Panchayat limits
- ➢ Around 10 dumpsites are completely cleared since residents stopped littering and started storing and handing over dry waste to the staff on a weekly basis.
- ➢ Continuous community involvement, in order to involve villagers, to sensitize on waste and to make them aware of the health hazards and pollution, due to littering or burning waste.

➢ Clean up drives, Pledgethon to reduce/stop using single use plastics, Swaccha Sarvekshan jaatha, and various other activities conducted to involve volunteers, school children and villagers.

➢ Conducted awareness sessions on single use plastic usage and encouraged citizens and panchayat members not to use any kind of disposables.
➢ Employment has been created for 2 people at the panchayat level.
➢ Significant reduction in the usage of disposables in panchayat office, school and community events.
➢ Four truckloads of non-recyclable waste has been sent to ACC Cements for co-processing.
➢ 95% of collected dry waste is either recycled or used as energy source during cement production.
➢ Nearly 16 Tonnes of dry waste was prevented from littering, open dumping and from being burnt, thus preventing any negative impact on the environment.
➢ Greenhouse gas emissions amounting to nearly 1120 kg of CO_2 gas would have been released, if the above waste had been openly burnt or dumped.