

Study of a Waste management project in Chikkajala Grama Panchayat, a peri-urban area in Bangalore rural district

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1. Project summary

The waste management project in Chikkajala Grama Panchayat (GP), Karnataka, India covers the entire Chikkajala panchayat area. Chikkajala lies in the outskirts of Bangalore city, on the way to the Bengaluru International Airport. Nearly 2200 households, and a population of around 9000 people come under the project. Saahas NGO is implementing the project using Corporate Social Responsibility funds of a private company, ITC. The villages under the Panchayat had a mixed waste collection mechanism, leading to waste dumping and burning. With the project, segregated waste is being collected from households, dry waste is either recycled or used as fuel for cement industry, and wet waste is being handled locally, at household level, community level and panchayat level. Efficient waste management system saves energy, by increasing recycling of materials, and also efficient usage of waste as a resource is achieved.

Chikkajala Grama Panchayat area

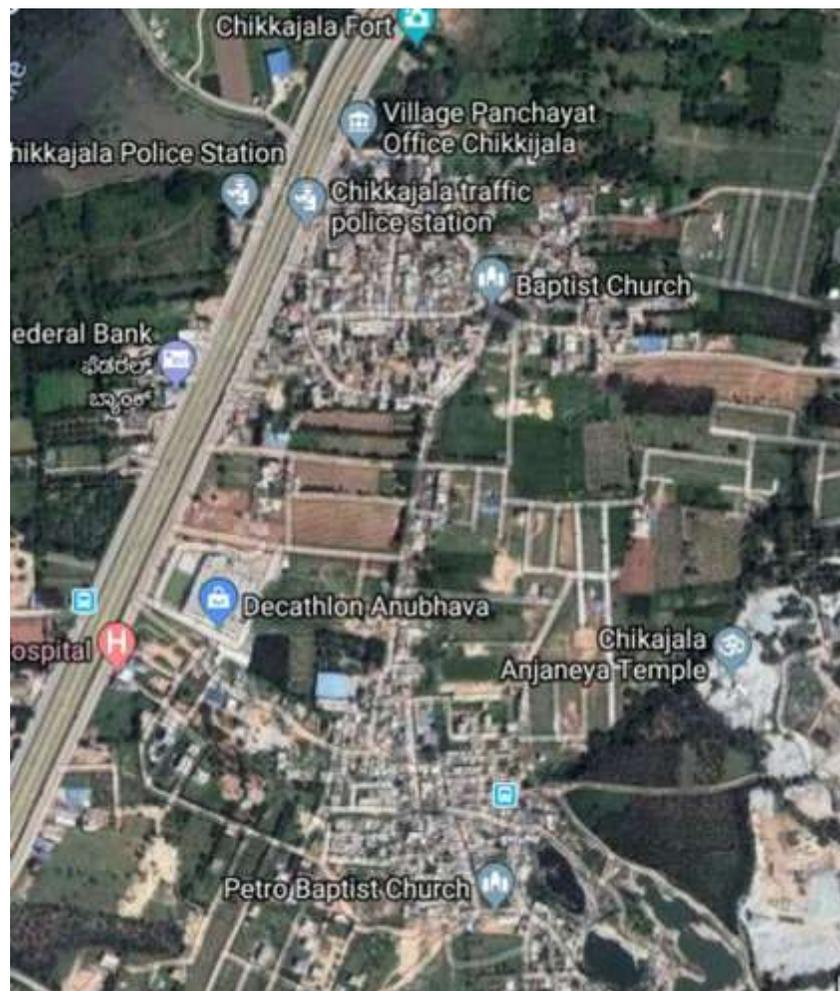


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2. Situation before Project Intervention

Most parts of semi urban India have either no waste collection system or a mixed waste collection mechanism in place. Waste is either dumped at street corners and empty plots or in the outskirts of the urban centres. Very often the dumpsites are set fire to, at regular intervals of time. In fast developing countries like India, the urban population is rapidly increasing, giving rise to semi urban pockets at its outskirts. This has led to improper waste management, leading to health hazards, pollution, and various other problems due to littering and burning of waste.



Chikkajala Panchayat was no exception, until January 2018. The Panchayat had a mixed waste collection system and the collection was not door-to-door from all households but from households which were accessible to the collection vehicle. The collection vehicle mostly picked up the waste from the dump sites along the street and at street corners. Mixed waste from households, shops, eateries and market area was either littered around streets and dump sites or burnt at the dump sites due to the absence of door-to-door collection system. Drains were regularly cleaned to avoid choking due to waste dumping, and residents were ignorant about the ill effects of open dumping and burning of waste. All the waste picked up by the collection vehicle was dumped at the outskirts of the GP area, and was burnt periodically, polluting the lake and the surrounding areas of the dump site.

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 waste
- To ensure segregated wet and dry waste collection from all households
- To reduce black spots and to prevent further waste accumulation in black spots
- To provide necessary infrastructure for sorting and disposal of dry waste
- To encourage wet waste composting at household and community levels
- To work with the panchayat to ensure regular segregated waste collection from households, market area and commercial establishments in the area
- To ensure supply of recyclables to recyclers and non-recyclables to cement factory for co processing

- To provide exposure about other ongoing waste management projects to panchayat staff and members
- To come up with decentralised ward committees comprising of 5-6 members, for every 250-400 households
- To facilitate integration of the project into the panchayat itself, by ensuring that a service fee model is introduced and to make the waste management project self-sustainable before handing over it to the panchayat

4. Steps in implementing the waste management program

The project started in January 2018. In the initial 3 months of the project, nearly 350 households of ward 3 and 4, were covered. In the financial year 2018-19, the project was implemented in 2 phases. From 350 households, the project was expanded to 850 households and shops in phase 1. The remaining 1200 plus households and shops of ward 1 and 2 were covered in phase 2. The steps taken in implementing the program were as follows:

- ITC, which is also implementing other social and developmental activities in Chikkajala Panchayat as part of their CSR initiative 'TTC Mission Sunehra Kal', approached Saahas to come up with a sustainable waste management program
- A stakeholder meeting was arranged where Saahas team, along with ITC officials met the Chikkajala panchayat President and other members to explain about the program and get their support
- Waste Audit was conducted in order to assess waste generation and flow of waste in the Panchayat
- A detailed project proposal, consisting of project implementation steps, manpower required, infrastructure for collection and sorting, appropriate end destinations, along with the detailed waste audit report was submitted to ITC from Saahas
- After project approval from ITC, Saahas team along with PDO, President and other Gram Panchayat members, held multiple stakeholder meetings along with the public, to publicise about the waste management programme
- Continuous IEC (Information, Education, Communication) sessions with schools, general public, households, shops, panchayat staff, members and collection staff, to bring everyone on board to achieve the project objectives
- Regular monitoring and follow up with the Panchayat collection staff on segregated waste collection, assessment of waste segregation at household level, reviewing home composting and community composting practices, monitoring collection, storage and transport of dry waste categories

5. Awareness Sessions

Awareness to people forms a very significant part of the project. Various awareness and training sessions were conducted for the different stakeholders in the Chikkajala GP. Training sessions were conducted for the waste collection staff of the GP, during the initial stages of the project, and continuous awareness sessions were conducted with school children, residents, women self-help groups, throughout the duration of the project.

- 1) Project introduction session with Panchayat members, PDO and villagers:
The project was formally inaugurated by the PDO and Saahas CEO, Divya Tiwari on February 15th 2018, at Palekamma temple, Chikkajala



- 2) Project awareness and training session with GP waste collection staff:
Introduction on waste and proper waste management practices. Basic information on the need for waste segregation at source and resource recovery from waste.



- 3) Door to Door waste awareness sessions to residents of Chikkajala



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



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



- 6) Door to door home composting awareness campaign:
 One of the objective of the project is to facilitate and encourage composting, both at household and community level, in order to reduce the quantity of wet waste being collected, on a long term

Smart bins, used for demo on Composting of wet waste



- 7) Continuous awareness sessions with Panchayat members, ward committee members and residents:
 Regular meetings with the Panchayat members and ward committee members in order to update about project updates and to explain future project activities



- 8) Jaatha, public rallies and campaigns to spread awareness on Waste management:
Plays, jaatha, public rallies and campaigns have been carried out, to spread awareness on cleanliness, segregation of waste, benefits of proper waste management practices



6. Ward level committees

Chikkajala grama panchayat consists of four wards, and four ward level committees have been formed to help coordinate with all the stakeholders of the GP. Each ward level committees consists of nearly 4-8 persons, comprising of local residents, panchayat members and woman self-help group representatives. The objectives of the ward committees is to make sure all households are segregating waste, to encourage home composting, to facilitate user fee collection from households, to ensure regular waste collection from their respective wards and for regular coordination and feedback from all stakeholders of the project.



7. Waste collection - transport - storage

The existing tractor and the collection staff employed by the Panchayat are used for collecting waste in Chikkajala GP limits. The residents are asked segregate wet and dry waste at source. The households, shops and schools store dry waste generated, in the blue bags provided to them. The wet waste is being stored at households or shops in conventional bins. Wet waste and dry waste is presently being collected on separate days. Door to door wet waste collection takes place alternatively for residents of ward 1-2 and ward 3-4 of Chikkajala, by the waste collection personnel, using the tractor, in the images below.



Dry waste is collected door to door from all households of Chikkajala, on a weekly basis, by the waste collection personnel, using the tractor. Dry waste is collected from blue bags on to the white bags, as shown below. Two days per week, of dry waste collection is presently taking place in the GP, one day each for ward 1-2 and ward 3-4.



An old Panchayat building in Chikkajala was renovated and repaired, and is being used as the dry waste storage unit. Dry waste collected, is stored and sorted in the Dry Waste Collection Centre (DWCC).



Dry waste is sorted into 5-6 high value categories, by a local scrap dealer in the DWCC. The high value recyclables go to the respective recycling facilities through the scrap dealer. The remaining non-recyclable dry waste is sent to cement factories through trucks, for co-processing, as a partial replacement of coal.



8. Waste collection system

Collection of segregated dry waste from wards 3-4 of the GP started in March 2018, after many rounds of awareness and campaigning. Presently, all four wards are under dry waste collection. Total dry waste collected, during the project period from March to December 2018 is nearly 6000 kg. Average of 600kgs of dry waste is collected per month in the Panchayat area.

For wet waste management, emphasis has been given to handle wet waste locally. Home composting and lane composting options are being tried out in the panchayat area, in order to reduce the amount of wet waste being collected. As of January 2019, nearly 100 houses are doing home composting in the Chikkajala Panchayat area. Lane composting is being practised at three places. One in a temple, and the other two at a street level.

9. Sustainability

The long term goal is to make the project sustainable and hand over the project to the Panchayat itself. The Panchayat can make use of its Swaccha Bharath funds to build storage space for dry waste and wet waste composting infrastructure. The capex costs for similar waste management programs in other Gram Panchayats can be borne by the Panchayat through their Swachh Bharath funds. The opex costs can be met by the Panchayat itself employing the waste collection staff if the Panchayats have sufficient funds, or by also levying a waste management service fee

to households and shops, as per SWM rules, 2016. The charging of service fee can be made mandatory by amending the bye-laws accordingly.

Service fee collection has started in May 2019, making this the first rural program of Saahas where user fee for waste management is being collected. It is recommended that in all waste management programs, the costs of operations are calculated, and a mutually agreeable service fee is levied, in order for the waste management program to be sustainable and run on its own, without any external constraints. Also, if the service fees can cover the salary of the collection and processing staff and also take care of the processing of the non-recyclables, along with the operation costs, the waste management program can run independently without any external funding, thus making it viable and sustainable on a long term. We are working towards the same objective in Chikkajala Panchayat.

10. Project Challenges

- The Chikkajala Panchayat had a mixed waste collection mechanism, where mixed waste was picked up from households twice a week, and segregated collection is happening only on two days of the week. Also, collection is not regular. As segregated collection is not happening daily due to shortage of manpower, increasing the number of houses doing segregation at source is a challenge.
- The Panchayat area, due to its proximity to the airport has a significant working population and moving population, who are very difficult to reach even with our continuous awareness and community involvement sessions.
- Many black spots still exist, as it was usual for the street vendors and residents without access to collection vehicle, to drop mixed waste at these black spots. Even though black spots have reduced, the collection staff still clears waste from black spots regularly.
- In spite of getting a buy in from the residents of the Gram Panchayat, permissions for introducing the service fee model has taken more than a year, due to delay in approvals from various levels of government machinery. It finally got implemented from May 2019.
- As the collection staff are Panchayat employees, they are also assigned other day to day activities by the Panchayat, so scheduled and segregated waste collection is still irregular. Also they are not always cooperative with our awareness staff.
- Community composting bins have to be regularly followed up, so that there is no mixed waste being dumped in to the composting facility.
- Convincing all households/shops, to hand over segregated dry waste, once a week, is still a challenge.

11. Project success story

Getting approval for service fee from people and initiation of actual collection is a big achievement of this project. This could be done due to the large awareness effort and sustained pressure from the project team in ensuring regular collection of segregated waste. Once the residents saw that the collection system was actually working and

there was reduction in black spots and littering, they were forthcoming in their support to the Panchayat in agreeing to a service fee being charged.

Another success story of the Chikkajala project is the community composting taking place in many parts of the Chikkajala Panchayat area. A community composting bin was installed in the temple premises of Palekamma Nagar, for composting the dry flowers, leaves and wet waste coming from the temple. Based on its success, two community composting bins have been installed. Four more of such composting units will be installed soon.



The households residing close to the composting bin area, regularly put their kitchen and food waste into the composting bins. Close monitoring of composting bins and regular follow up with households on waste segregation, is conducted by the project awareness team, to make sure that only wet waste is put into the composting bins. Our staff also put a layer of coco-peat powder or dry leaves regularly to facilitate composting process. Thus the burden on tractor load for transporting wet waste gets reduced significantly.

12. Project Impact

- Awareness on waste segregation has been created among the residents of Chikkajala Panchayat and there is good level of source segregation being practiced.
- Regular follow up with collection staff for timely waste collection.
- Better working and waste handling conditions for the collection staff.
- Significant reduction in dumpsites since the residents have reduced littering and started storing at household level. Residents handing over dry waste and wet waste separately to the collection staff, and composting of wet waste both at household and community level.



- Street plays, awareness sessions, Swaccha Sarvekshan jaatha, and various other activities conducted in the Panchayat, has succeeded in spreading the message of waste segregation at source, among households, shops and school children.



- Continuous community involvement, involving residents, has been able to sensitize people on waste and to make residents aware of the health hazards and pollution, due to littering or burning waste.



- Employment has been created for 2 people at the panchayat level.
- Due to the program, regular awareness to households, monitoring and follow up on waste segregation at households and composting at households and community level, is happening.



- A truckload 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 6 Tonnes of dry waste was prevented from littering, open dumping and from being burnt, thus preventing any negative impact on the environment.
- Significant amount of wet waste is being handled both at household level and community level, due to composting, thus reducing load on collection system.

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