



Impact Assessment Summary Report - FY 2021-22

Solid Waste Management Facility

Project Duration:
2019-20 to 2020-21

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Executive Summary

Industrialization is necessary for human development to meet the increasing demands of lifestyle change. This has given rise to multiple problems from public services and management perspectives. One such problem, being faced by the municipalities, industries, and communities, are the safe handling and disposal of waste. The government has been struggling to cope up with the increasing quantity of waste being generated by industries, industrial parks, and settlements around them. Industries and civil society organisations can play a greater role in supporting the Government to overcome this situation. In this regard, Bidadi Industries Association (BIA), a non-profit organisation, was formed on 21st October 2011 to manage infrastructure development, welfare, road safety, waste management and other environmental activities in and around Bidadi Industrial Area and adjacent villages engulfing the industrial area.

Toyota Kirloskar Motor Private Limited (TKM) (<https://www.toyotabharat.com/>) has supported BIA to establish Centralized Solid Waste Management facility (CSWMF) in Bidadi Industrial Area to collect, segregate and safely dispose municipal solid waste from industries and also 8 villages engulfing BIA, through Saahas Zero Waste Private Limited (SZW) (<https://saahaszerowaste.com/>), a registered waste management company. TKM has funded the establishment of a Centralised Solid Waste Management Facility (CSWMF) with 1.76-acre area provided by the Karnataka Industrial Areas Development Board (KIADB) in the industrial area and purchased by BIA. TKM contributions of Rs 55,00,036/- and Rs 44,99,964/- was under the Corporate Social Responsibility policy of the company, in pursuance to section 135 of the Companies Act, 2013 and the Company (CSR Policy) rules 2014 for the years 2019-20 and 2020-21. This project was supported to ensure the environmental sustainability of the Bidadi Industrial Area and engulfing villages.

One year since its establishment in October 2020, CSWMF has been segregating different types of dry waste collected from the industries and the villages. A transport vehicle provided by BIA collects the waste from the industries daily. The handling of waste has not been consistent in the last year due to COVID-19 pandemic restrictions and corresponding reduction in the workforce. However, the unit has handled about 1,05,809 kgs (105.8 tonnes) in 11 months, or about 9.6 tonnes per month, against installed capacity of 130 tonnes per month. The primary reason behind the reduced output is the partial functioning of industries due to the pandemic-induced lockdown and other restrictions enforced by the Government. Low uptake of BIA members to the waste management services offered, further limit the usage of the plant. Out of the 189 industries set up in the Bidadi Industries area, only 75 small and medium industries have enrolled for CSWMF project and are availing the waste management services offered by it. A waste management fee of Rs 7.5/kg is being contributed by the industries for the waste management services, which includes, (i) waste collection, (ii) processing and (iii) disposal. The service allows the management of all types of municipal wastes such as paper, cardboard, glass, MLP, plastic,



clothes, etc. At source segregation of the wet and dry waste is being conducted by the industries before handing it over to the SZW. Source segregation of waste has helped in efficient processing of the waste by the unit. Waste is being collected from the 8 engulfing villages with a long-term objective of keeping the villages clean and hygienic, while also ensuring improvement in the health & environmental indicators of the concerned communities at zero cost (free service extended).

The industrial waste is collected daily through a waste transport vehicle, while tractors are utilised for municipal waste collection from the villages on twice a week. The wet and dry waste are collected separately and brought to the unit. Dry waste is segregated by the staff and packed in plastic bags. The different dry waste categories are sent to another unit of SZW in Jigani, near Bengaluru. From Jigani, it is further transferred in bulk to the authorised recyclers. Wet waste, mainly from Industries canteen/kitchen, is pulverised and composted to produce manure. This is conducted with the help of Bioculums to accelerate the composting. The pulverized mixture of wet waste is placed for decomposition in 4 Bio-bins made from steel. The decomposed material is removed from the bins in 15 days and can be used as manure. Presently, the unit is harvesting 150 Kg manure per day against the full capacity of 500 Kg/day. The manure is being used by BIA for the trees planted in the avenues in the industrial area. In the 10-month period, there is a monthly variation of 15-33% towards rejects from the dry. Non-recyclable, mixed waste and soiled waste consist of Reject waste.

BIA and SZW have conducted door-to-door awareness training sessions with the industry members and village community. They have been explained about the benefits of waste management, waste segregation at source, keeping house and surroundings clean and hygienic. Coloured cement bins have been placed by the community in the villages for depositing the dry and wet waste respectively. Blue bin is kept for dry waste, while green bin is kept for wet waste. This service covers 368 households and 93 establishments such as shops, hotels, and other commercials in the 8 villages located close to the industrial area.

The impact study undertaken by BIA and TKM is as per the mandate of CSR activities under the CSR rules of the Government. BIA and TKM have appointed Goodera to carry out impact assessment of the Centralised Solid Waste Management Facility. The primary objective of the study is to assess the effectiveness of the unit with regards to waste processing, the cooperation of the BIA members, and the village community in utilising the facility. Methodology of the study included conducting sample survey of different stakeholders such as industries, BIA personnel, village community, Saahas personnel and waste workers. Survey formats were prepared separately for each of the stakeholder for collecting both quantitative and qualitative data.

The sample survey included 100 households in 8 villages, 110 villagers in Focus Group Discussions, 25 industries through online responses, 20 industries through online meeting, and key informant interviews of BIA & SZW personnel (one person each), and 8 waste workers of the CSWMF. The sample surveys conducted in October 2021



were tabulated and analysed for deriving results in terms of number of responders benefitting and the percentage of the benefits.

Key Findings

- 275 beneficiaries contacted to document project impact.
- 100% of the household's segregate waste
- 67% of the respondents received waste collection bins
- 88% of the villagers are satisfied with BIA services
- Facility has processed about 1,05,809 KGs (105.8 tonnes) in 11 months
- Optimization of benefits through convergence of institutions and agencies has been effective

Recommendations

The Solid Waste Management unit established by BIA through CSR contribution from Toyota Kirloskar Motor for the benefit of all members is a great step towards addressing environmental and health concerns. BIA has been applauded and awarded by many institutions for its social and environmental activities. Placing waste collection bins in common areas and roadsides showcases its priority in keeping the area clean, neat, and hygienic. Members are also responding equally to the efforts of BIA by cooperating and extending resource support.

In the light of the foregoing outcomes and conclusions, the following are recommended:

- Enrolled members are responding positively to the CSWMF establishment. However, the full capacity of the waste handling as designed is yet to be achieved. This could be done by increasing the enrolment of BIA members (both SMEs and Large Enterprises). There are opportunities to extend the services to a few more nearby villages.
- Respondents are appreciating the waste collection service by Tractor. However, the purpose is fulfilled when people are made aware of the timing of Tractor stationed in the village for waste collection. This could be displayed in common places in the villages and timings followed for building confidence of them to make use of the service fully.
- Establishing a SWM monitoring and action group at village level to address the problems. The group formed out of people who volunteer (especially youths) to monitor the waste collection by the service provider, any problems in the community regarding littering, timing of visit by the Tractor and burning of wastes. This could be communicated to BIA/Service Provider for immediate action. This may improve the services and build confidence among the beneficiaries. The volunteers may be honoured for their service contributions to encourage them.



- BIA should ensure zero littering in the industrial area, avenues, roadsides, in front of shops and villages through regular inspections and imposing fines. (*Waste Littering in the villages and around the bins could be due to the commuters.)
- BIA may establish a system to share the quantity processed in CSWMF on a regular basis with the members. This will build confidence in contributing to the facility through their CSR fund. Additional fund from industries through CSR fund may support BIA to enhance services and add additional infrastructures to handle more quantities.
- Awareness and training should be a continuous process as repeated interaction would enhance interest to take part in the process and system of ultimately making waste-free villages. Information and knowledge sharing with both, industries and villagers should be regular and continuous. Various methods such as village meetings, video-shows would encourage them to contribute to the cleaner environment as envisaged by BIA.
- Technology improvements such as IoT enabled weighing machines, server linked GPS in the transport vehicles, particularly in the hired Tractor for the villages, sharing the activities with all stakeholders through appropriate media may enhance effectiveness of the services.
- BIA has maintained very good rapport with the government departments and service providers. Sharing the activities and targets and exploring solutions for the problems encountered through consultation with the stakeholders may help in overcoming shortages to improve the effectiveness of services.

The impact assessment study has identified short term results of waste handling practices and awareness about safe disposal. The cooperation and contributions to the establishment from the stakeholders are quite complementary. Social and environmental concerns extended to the nearby villages have shown BIA's commitment as a non-profit organization to contribute to the society for improvements in health and hygiene. Further strengthening of the multi-stakeholder contributions and commitments will lead to achieving the vision, demonstrating one of the best practices that can be adopted by others, including the local governments.

THANK YOU

Study Partner



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