



FROM SANITATION TO LIVELIHOOD GENERATION: SOLID AND LIQUID WASTE MANAGEMENT UNDER SWACHH BHARAT MISSION–GRAMIN IN HIMACHAL PRADESH

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Abstract

The management of solid and liquid waste has emerged as a major challenge for nations across the world, significantly affecting the ecological balance of the planet. Solid and Liquid waste management represents one of the biggest challenges present before the state of Himachal Pradesh, as the state pushes towards development. In Himachal Pradesh, waste management must overcome issues such as low population density, hilly areas, transportation issues and protecting sensitive local ecosystems. The present paper has examined the link between the Swachh Bharat Mission (Gramin) [SBM-G], solid and liquid waste management and local employment opportunities in the state of Himachal Pradesh. The data has been collected from the household survey of 153 households, local stakeholder interviews and information from the selected waste management projects in Nauni-Majhgaon and Kaloond panchayats. Data collected from households shows there was a high awareness of the SBM-G and people were keen to sort their waste and take part in local schemes. However, there was an inconsistency in services provided and still some reliance on informal methods. This demonstrates rural waste management can provide local employment and improve sanitation however it cannot be expected to be fully self-sustaining and may not always be accessible.

Keywords: *Swachh Bharat Mission (Gramin); Rural Sanitation; Solid and Liquid Waste Management; Rural Entrepreneurship; Community Participation.*

Introduction

Rural sanitation remains a significant concern because it is closely connected with public health as well as human dignity. Poor sanitation conditions not only create unhealthy living environments but also contribute to the contamination of nearby water sources. Sanitation is more than just having a toilet. What happens to waste, plastic, food waste and sewage in your homes will impact how the whole community deals with this. If these materials are dumped along roads, burnt or put down drainage systems then the problem has been shifted onto the rest of the community. This can affect the quality of the water, ecosystem, health and general living conditions within the village. Sanitation will be an ongoing service for rural areas.

The management of solid and liquid waste has emerged as a major challenge for nations across the world, significantly affecting the ecological balance of the planet. Maintaining proper hygiene and sanitation is a complex issue, particularly in rural areas of India where sanitation conditions vary widely. A large section of the rural population has limited awareness about waste disposal methods, sewage management systems, and the importance of improved hygiene practices. As a result, many villagers continue to live in unhealthy and environmentally unsafe conditions (Saiyad, 2022).

In India, particularly in rural regions, waste management has become a serious issue affecting public health and environmental cleanliness. Although the waste produced in villages, including both solid and liquid waste, is largely organic and biodegradable in nature, it still poses a significant challenge to



ecological sustainability when not managed properly. For example, rural communities in India generate an estimated 15,000 to 18,000 million litres of liquid waste (greywater) along with substantial quantities of solid waste such as organic and recyclable materials (Government of India, 2007).

Rural sanitation in India has caught the attention of government after the 1981 Census rural sanitation coverage was reported to be only 1 per cent. Government of India has introduced various programmes like Central Rural Sanitation Programme in 1986, demand driven Total Sanitation Campaign (TSC) in 1999, Nirmal Bharat Abhiyan” (NBA) in 2012 and finally the Swachh Bharat Mission on 2nd October 2014 to make better the poor state of sanitation in India.

The mission was divided into two sub-missions, namely Swachh Bharat Mission (Gramin) and Swachh Bharat Mission (Urban), with the goal of achieving a cleaner and healthier India by 2019. Within the framework of this programme, toilets and sanitary facilities would be provided in all villages, towns and cities of India, including proper water supply, waste water management and also keeping clean roads and streets. The idea is to stop completely the open defecation that is prevalent in our country even today. After the implementation of the programme, the Government, private organisations, corporate houses, celebrities, NGOs, including the public, are coming forward to make this mission a success.

The primary emphasis of Swachh Bharat Mission (Gramin) has largely been on the building of Individual Household Latrines (IHHLs). The programme has significantly improved the availability of toilet facilities in rural regions, with the proportion of households having availability of household toilets from 37.2 per cent to 76.42 per cent after its implementation. However, the Solid and Liquid Waste Management (SLWM) component has received comparatively less attention from various State governments, despite its considerable potential to create employment opportunities for the rural population (Economic Survey Himachal Pradesh, 2021; Economic Survey Himachal Pradesh, 2023).

Swachh Bharat Mission (Gramin) has vast scope for creation of rural entrepreneurs who can cater to provide affordable sanitary material to people. There is a provision of Rural Sanitary Marts in Swachh Bharat Mission (Gramin) to provide easy and affordable solution to rural population for building toilets (Ministry of Drinking Water and Sanitation, 2015).

Solid and Liquid waste management represents one of the biggest challenges present before the state of Himachal Pradesh, as the state pushes towards development. In the state’s pursuit for economic and social development, the Government of Himachal Pradesh gives due priority to environmental aspects in line with its commitment to pursue sustainable development. State government in its pursuit of an effective state-wide solid waste management system presents solution to control menace of Solid waste in state effectively.

Rural areas of Himachal Pradesh became Open Defecation Free on 28th October 2016. Thereafter, major concern under the Swachh Bharat Mission – Gramin has shifted to ODF sustainability and Solid and Liquid Waste Management (Statesmen News Service, 2019).

For this paper, Nauni-Majhgaon and Kaloond have been taken as examples. Both are within Solan and Kangra districts and have been mentioned as initiatives taken at a local level in relation to the SBM-G. Nauni-Majhgaon focuses mainly on the market area and rental buildings nearby while Kaloond focuses on collecting and processing plastic from a large number of panchayats.



The primary objectives of the study is to understand the impact of SBM-G on rural sanitation and solid and liquid waste management through comparative analysis of Nauni-Majhgaon and Kaloond waste management models. Further, an effort was made to analyse the implications of the findings in terms of community involvement, gaps in service provision and employment opportunities.

Research Methodology

The present study has been conducted in two panchayats of Himachal Pradesh—Kaloond Panchayat in Kangra district and Nauni Majhgaon Panchayat in Solan district. These panchayats have been selected purposively for the study as they represent rural areas where Solid and Liquid Waste Management (SLWM) initiatives under the Swachh Bharat Mission (Gramin) are being effectively implemented and studied for their entrepreneurial potential. The universe of study includes 710 households in Kaloond and 165 in Nauni-Majhgaon whereas 71 households from Kaloond and 82 from Nauni-Majhgaon were selected through random sampling, giving a total sample of 153 respondents. The household survey used structured interview schedules to examine awareness, waste practices, sanitation and participation. The study also reports interviews or interactions with panchayat representatives, government officials, NGOs and other stakeholders.

Secondary material included policy documents, government reports and academic literature. The analysis in this paper is descriptive and comparative. It draws on reported percentages where they help clarify the household findings, and uses the two plant descriptions to compare service area, processing activities, employment and funding arrangements. The available material provides a full audited financial statement, a measured waste-flow dataset or independent laboratory evidence of environmental improvement. Therefore, statements about health and cleanliness are presented as respondents' perceptions, not as proof that the plants alone caused a measurable change in disease rates.

Study Area and Case Context

Case 1: Kaloond Panchayat, Kangra District

Kaloond falls under the Bhawarna Block of Kangra District under the Palampur region. The village currently has a population of 971 people according to the census (with 464 males and 507 females) and has a literacy rate of 71.37%. The panchayat waste management plant was set up in 2023 and is still in its early stages. The plant handles waste from roughly 25-30 surrounding panchayats. This is much larger than just a small community as it handles a large amount of plastic waste. The waste is cleaned using a dust removal machine and then it is put through the baling machine to make the plastic into bundles. The panchayats pay roughly ₹5000 per year to help pay for this plant. Overall, roughly ₹50,000-60,000 is collected per year to help pay for running costs and staff wages. There are 18 staff members involved in collecting and processing. However, no information was given about their payroll or exact income and costs so this should be looked into to give accurate figures.

Case 2: Nauni-Majhgaon Panchayat, Solan District

Nauni-Majhgaon falls under Solan Block of Solan District. According to data from 2011 there are 482 people living there with 84.85% literacy rate. This area has a Dr. Yashwant Singh Parmar University of Horticulture and Forestry which helps provide education and therefore businesses and housing. The number of shops, rental properties and people increases waste production. The waste management plant in this panchayat was set up around 2020-21. Waste is collected within two of the nine wards (mainly the market area). There are around 50-60 shops and multiple rental properties in this area. Waste is collected door-to-door by a panchayat owned truck. Residents are encouraged to sort their waste into wet and dry. Plastic bottles, packaging and bags are washed and baled ready to recycle. Biodegradable



items are composted. Paper and other waste is burned using a burning machine. When burning waste, it should be considered if there are any rules in place and that environmental protections are in place. This site employs between six and seven people, some on a part-time basis. They earn between around ₹6,000 to ₹15,000 per month depending on their position. Waste management fees are charged to shops, rental properties and residents. Some residents pay around ₹100-200 for some of these services. In areas where waste is not collected some residents still burn plastic. Some residents sell on waste that could be reused. Approximately half of residents had a soak pit for liquid waste. However other residents use open drains. Around 90% of residents in the wards where waste is collected are connected to drainage channels to allow natural filtering. This site does not directly provide income to the panchayat but helps keep the market and surrounding areas clean.

Findings from the Household Survey

From the data collected, we can see overall that there is a high level of awareness around sanitation policies. All 153 of the respondents were aware of SBM-G. Most respondents said they became aware of SBM-G through watching TV, Radio and reading newspapers/social media. However, some were aware due to attending local panchayats and government officials. This shows that there has been good public awareness and communication within the community; however we cannot be sure that every household has access to a reliable service for waste.

79.08% of respondents felt that the area was very clean meaning the streets and environment of the village are clean. 20.92% of respondents felt that it was somewhat clean. All respondents said that there were toilets available for use in the home. These results align with the idea that they have access to toilets and are now moving on to the next step of sanitation.

Overall, most respondents are happy to engage in better waste management strategies. 100% of respondents were willing to sort their solid waste. 96.73% were willing to attend compost training.

98.69% were willing to engage in waste collection. 51.63% said they would be willing to buy less single-use products. However, many mentioned that there are not many alternatives available to buy in local shops. This shows that there is an opportunity to implement community driven strategies. However, it is important to note that this is just what they are willing to do and regular check ins would be required to ensure that they are sorting their waste. There was a positive view on health. 92.82% said that common illnesses such as diarrhoea, typhoid and malaria had decreased a lot. 7.18% said it had decreased somewhat. Whilst this is an important aspect for the community to know, the research carried out does not show directly that the waste management plants have caused a decrease in illness. Many factors can affect health including access to clean drinking water, healthcare, drainage and household habits. There are areas to improve around waste collection and management. Some households dispose of their waste into pits and if there is no collection in place, plastic can be burnt. Private/informal collectors are still in place.

Over three-fourths of respondents had some method of managing their wastewater such as a soak pit or drainage. However, many areas do not have full drainage systems in place. Over three-fourths of respondents were willing to pay for better waste services. Many were willing to pay a small amount each month (between ₹25-₹50). However, the case studies showed that certain services can cost quite a bit. A feasible policy should ensure that there are clear charges and what they cover. Consideration should be given to affordability.



Comparative Case Analysis

Two Different Operating Models

Although both models are public, they differ in size and focus. The Nauni-Majhgaon model focuses on a closely integrated waste collection system within a local market area. Waste is collected from local shops, rental properties and households and sorted for composting, recycling or further processing. The advantage of this model is that waste can be collected regularly for a clearly defined group of commercial and domestic users. A disadvantage is that some households not served by the collection scheme will be left using informal methods particularly those located in more remote areas of the panchayat. Kaloond acts as a regional collection point for plastic waste. It takes in waste from several panchayats which means the overall service area is larger than a single village-based plant. In hilly regions it can be beneficial to have shared resources as several small panchayats may not produce enough recyclable materials to warrant their own machinery. This can cause issues with co-ordination as each panchayat needs to ensure that the plastic waste is separated and transported correctly. They also need to ensure payments are made on time. If there is inconsistency in waste collection or changes in the market price for recyclable plastic this can impact the plants finances.

Employment and the meaning of Rural Entrepreneurship

These examples show how a sanitation programme can create employment opportunities. There will be jobs involved in waste collection, separation, cleaning, baling, composting, transportation and plant maintenance. This scheme has created 6-7 jobs in Nauni-Majhgaon and more jobs in Kaloond. As these jobs are local, they may help provide an income for the people without them having to move away from the area. This example also shows how rural businesses can be formed through collaboration between panchayats. This should not just be looked at in terms of how many jobs have been created but also the quality of the jobs. Factors such as pay, regular pay, safety equipment, safety in the job, training and social security should be considered. Workers may be subjected to cuts, contact with contaminated waste, dust and other dangers. If employees are not receiving adequate safety equipment, then although the village will be cleaner there will not be full achievement of sustainable development targets. However there is not enough information to judge how good the working conditions are so this would be an important factor to investigate further.

Community Participation: From Awareness to Routine Practice

The survey shows positive responses from people in terms of willingness to segregate, train and participates in waste collections; however, as shown in the case studies there is still some way to go in getting everyone involved and old habits remain. This is typical of many public schemes; even though householders are supportive of the idea, they often struggle to engage with the scheme due to issues like unreliable bins, collection times and transport.

There is a need to think about building a long-term engagement with participation. Panchayats can provide information such as collection times, demonstrate segregation, explain what happens to the waste and show how user charges are used. Information can be shared using schools, self-help groups, women's groups, youth groups and local businesses. It is also important to have feedback in place. If residents consistently segregate their waste but then find that it has not been segregated during collection this could cause a loss in confidence in the scheme.

Geography and Unequal Service Coverage

This provides an insight into the importance of the location. The service provided for Nauni-Majhgaon focuses on providing services to the market wards. This provides a consistent stream of waste due to



the shop and rented buildings. Kaloond provide a service which can cover multiple Panchayats but relies on the co-operation between the Panchayats. Both locations are also likely to be costly to provide for all settlements due to their remoteness and transportation issues.

Therefore, it is important to consider the percentage of households being served by the service, the consistency of collection, how far away people have to go, the amount of waste being recycled and how it is safely managed. If these factors are not considered it can seem like a successful plant when in reality some households are still burning their plastics and discharging the wastewater. A gradual approach to expanding the service taking into account distance, population and environmental risks could be a more realistic option.

Discussion

These examples illustrate that the sanitation system is an institutional element. It needs good information to be given to households, reliable collection. Panchayats will need workers, funding and technical understanding. Recyclers will need quality materials and workers will need fair working conditions. If any element of the sanitation system is poorly managed then the overall efficiency can be affected. The waste-to-resource idea can be applied to rural areas. Organic materials can sometimes be turned into compost and recyclable plastics can be sold to processing units. However, it does require a lot of labour, equipment and energy for sorting, cleaning, baling and transporting. Not all materials will have a reliable market so safe disposal of certain residues will still be an issue. It is important to ensure that realistic figures are used when calculating finances. This will include the amount of material, price, transport costs, repair costs and wage costs. Just because a plant is collecting user charges and selling some recyclable material does not mean it is sustainable. From a sociological perspective waste management is influenced by individual knowledge, daily routines, availability of materials and local expectations. If there is no regular collection for households they might continue to burn waste openly even if they know the negative effects. If waste workers are not visible in local decision making then they might be forgotten about in the system due to lack of practical knowledge. If user charges are perceived to be unfair or unclear then households might refuse to pay. Institutions need to be responsive, clear and inclusive for community involvement.

Recommendations

1. **Increase the Coverage:** All houses and settlements need to be mapped; any areas with issues around collection or drainage should be identified. Develop a clear and practical strategy to increase coverage. Remote hamlets should not be excluded.
2. **Increase Segregation at Source:** Provide clear information on how to segregate wet, dry, recyclable and hazardous household waste. Ensure vehicles and staff keeps segregated waste segregated.
3. **Be Transparent With Finances:** All plants will have clear records of what users are being charged, contribution from the panchayat, sale of materials, salaries, fuel, maintenance and other running costs. Any fees should be clearly explained and set at an affordable level for the local area.
4. **Improve Staff Safety and Training:** Provide gloves, masks (where needed), wellies, safe handling, first aid and regular training. Keep clear records of staff conditions and ensure they are paid on time.
5. **Support Compost/Recycling Market:** Ensure good quality compost by identifying local agricultural users. Have reliable links with licensed recyclers. Have plans in place for price fluctuation and waste not sold.



6. **Liquid Waste:** Map soak pits, drains and outlets. Identify areas with unsafe open drains. Choose treatment methods which work with the local landscape and water. Ensure monitoring of natural filters.
7. **Ensure Real Community Involvement:** Involve the community through Gram Sabha, women's groups, schools, youth groups and local businesses to develop collection times and awareness. Provide feedback and explain how complaints are dealt with.
8. **Coordinate Between Panchayats:** For the regional model in Kaloond ensure clear roles, contribution each year, collection standards and reporting. Shared facilities require clear agreements.
9. **Monitor Outcomes:** Track how many households are being served, how often waste is collected, how much is segregated, recycled, composted, how many times waste is missed, user satisfaction, staff safety and overall running costs.
10. **Increase Research for The Future:** Survey households again, break down results by panchayat, gender and remote areas. Ensure accurate records of staff and finances. Where possible measure waste quantities and quality of wastewater.

Limitations

As the two panchayats were specifically chosen, it would be inappropriate to draw conclusions about all rural areas in Himachal Pradesh. The statistics shown in the survey are what the participants said and intend to do, it may not correlate to how they actually act. In the study there is no full cost benefit analysis, no audited plant accounts, no consistent waste quantification and no lab results on the wastewater. There is also inconsistency in the data provided, especially in regards to the number of employees and income from the plant.

Conclusion

Case studies were conducted in Nauni-Majhgaon, Solan district and Kaloond, Kangra district. The case study in Nauni-Majhgaon shows how waste management can help improve sanitation in rural areas whilst creating jobs through the SBM-G. This was achieved as the panchayat managed collection and processing of waste in the market wards. They managed to do this through composting and plastic collection but the remote settlements were not fully covered. This second case study shows how waste management can be improved across multiple panchayats. Plastic was collected, cleaned and baled within this area. It demonstrates that the local government can be a key player in managing waste. The data collected from the household survey was positive as many were aware of the project and willing to partake in segregation, training and supporting collection. However, the fact that people still dispose of their waste informally, only some have drainage and collection was inconsistent all suggests that waste management infrastructure must be reliable, cheap and suitable for the area. Although the jobs created are important, this should be considered in relation to pay, safety and sustainability of the plants. Overall, the key message is that you shouldn't just copy what has been done, but other panchayats can learn from the principles of what has been done. Waste collection should be managed to suit the local area, segregation should occur and materials should be collected if it can be safely used. Involving the local people in decision making, providing support to workers and keeping records of what is happening should all be considered. Waste management can help encourage entrepreneurship within rural areas but firstly it must ensure that the public service provided is safe and fair. To create a sustainable model for Himachal Pradesh, collaboration between households, Gram Panchayats, district institutions, workers and recycling markets will be required. Ongoing monitoring and evidence-based planning will be required.



References

1. Government of Himachal Pradesh, Department of Economics and Statistics. (2022). Economic Survey 2021-2022. Himachal Pradesh Economic Survey 2021-2022.
2. Government of Himachal Pradesh, Department of Economics and Statistics. (2024). Economic Survey 2023-2024. Himachal Pradesh Economic Survey 2023-2024.
3. Government of India. (2007). Technological options for solid and liquid waste management in rural areas (Source book).
4. Ministry of Drinking Water and Sanitation, Government of India. (2015). Solid and liquid waste management in rural areas: A technical note.
5. Saiyad, R. S. (2022). A study on open defecation free protocol and evaluation of solid and liquid waste management with reference to Swachh Bharat Mission Gramin Gujarat. Unpublished Ph. D thesis.
6. Statesman News Service. (2019, June 2024). 500 Gram Panchayats in Himachal Pradesh to be made 'Zero waste' by 2 October. The statesman.