



Report

Decentralised Solid Waste Management In the Slums of Gautampuri, Molarband New Delhi

Collaborative Efforts

Of

Arpana Charitable Trust

And

Toxics Link (Environmental NGO)

(2005-2006)

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1.0. Introduction

1.1. Introduction to the Implementing Organisations

1.1.1. About Arpana Charitable Trust

Arpana Trust is spiritual and charitable organization The Government of India's Ministry of Science & Technology has given special recognition of Arpana as a research body of social sciences.

Arpana's headquarters are located in Madhuban near Karnal Haryana. The purpose of the Trust is to disseminate the external values of Love, Compassion, and Service etc., which are of supreme importance in our nation's heritage as well as constituting the essence of all religions throughout the ages. In Delhi slums Arpana is working on the various theme like Education, Livlihoos, Family planning, Health Care and Environment

1.1.2. About Toxics Link:

Toxics Link is an environmental NGO working on issues of different kinds of waste. Our goal is to develop an information exchange and support mechanism, along with research and advocacy that will strengthen campaigns against toxics pollution, help push industries towards cleaner production and link-isolated groups working on toxics issues. Toxics Link is also dedicated to bringing toxics related information into the public domain, both relating to struggles and problems at the grassroots as well as global information to the local levels. Our programme areas are Toxics Free Health Care, Communities and waste, Clean Industry, Chemicals and Health, Information and communication.

Toxics Link engages in on-the-ground work especially in areas of municipal, hazardous and medical waste management and food safety among others. Driven by the increasing problem of waste resulting to environmental and health implications, we engage ourselves in finding means of sustainable waste management.

Toxics Free Health Care Program's aim is to encourage the healthcare sector in India to become toxics free. Recognizing that health care delivery can lead to serious problems on medical waste, the use of toxics materials like mercury and other chemicals at the workspace.

Communities and Wastes Program aims at to simplify the problem by working with communities and educational institutions and help facilitate in establishing a zero waste management in the respective campuses. It has been our constant endeavor to sensitize communities including schools for participating in the development of sustainable municipal waste management practices and to help to create a sustainable urban waste paradigm with

the involvement of various stakeholder communities, and their participation along with industry responsibility.

Clean Industry Program works for the elimination of toxic technologies, materials and products, through campaigns, networks and awareness building.

Chemicals and Health program's aims to collaboratively raise awareness and create knowledge about the harmful effects of pesticides and POPs on the health, food and environment, in order to reduce their usage and shift towards safer alternatives.

1.2. Introduction to Solid Waste Management

Since the beginning, humankind has been generating waste, be it the bones and other parts of animals they slaughter for their food or the wood they cut to make their carts. With the progress of civilization, the waste has become of a more and more complex nature. The increase in population and urbanization was also largely responsible for the increase in solid waste. Anything that is rendered useless by us is waste. So, generation of waste is linked to human activities. What we discard, reject, abandon or otherwise release into environment become waste. This could be as simple as throwing packaging material of the clothes we buy or the routine vegetable wastes and as complicated as disposing of households electronic appliances, which may have hazardous components.

India's population has expanded from 342 million in 1947 to 1027 million in 2001. The urban population is expected to grow to 470 million by 2015 A.D. Over the years there has been a progressive decline in the availability of essential services as well as in the quality of life in urban as well as rural areas.

With the growing population, urbanisation and demand for consumer goods, both quantity and quality of urban solid waste has changed significantly. This is causing serious environment problems. Urban Solid Waste is a major contributor to global warming; it leads to surface and ground water pollution through run-off from dumpsites and unhygienic unsanitary surroundings resulting in epidemics and has adverse impact on rag pickers & sanitary workers. Solid Waste collection and disposal are an important part of environmental hygiene and need to be integrated with environmental planning and policies. Improper collection, storage, treatment and disposal can lead to massive environmental damages leading to serious health hazards. On the other hand much of the waste can be a valuable resource through proper recycling.

1.3. Rational of the Intervention

Urban poverty and the growth of slums and resettlement colonies in India especially large metropolitan cities like Delhi has come to reflect a skewed development process, one in which the seats of enterprise and industry are located largely in urban areas leading to large-scale migration of the workforce, unskilled and skilled, to the urban areas who lives in poor living conditions. With the poor state of basic services such as education, health, communications and waste management in towns and cities these communities are further marginalized.

The issue of urban solid waste in India is critical one in this growing urbanization pattern. This needs an immediate response to help communities to create a sustainable waste management system with the involvement of various stakeholders and their participation.

In this context it is important to promote the strategy of community based solid waste management along with composting and recycling in order to improve the living conditions of communities and also generate livelihood opportunities for the urban poor.

1.4. Area of Intervention

Gautam Puri is a resettlement colony situated in the South East of Delhi near Badarpur. Narrow lanes, common open spaces and buildings still in construction constitute the core of the settlement and a small market is hold at its outskirts. Its inhabitants belong in their overwhelmingly majority to lower income groups. The 3,500 households of the resettlement colony represent a total population of approximately 24,000 persons. This colony was displaced from its former inhabitants of Gautam Nagar (a slum situated between Safdar Jung and AIIMS).

1.5 Pre Intervention Scenario

The population suffers from a low literacy rate, a high rate of unemployment and rather filthy and unhygienic living conditions. Because of the poverty and lack of awareness towards the harmful impact of not managing the household waste, generally people are reluctant to pay anything for waste management in the community in terms of the door-to-door waste collection. In such kind of communities the burning of waste or open dumping waste into waterways and open plots near the juggies are the common practices to dispose of the household. Waste. The open plots were coming up with the Open drains, open landfills

and dhalaos, in which all kind of street animals roam around round the clock, are indeed a common sight within the colony's borders.

Arpana Trust, an NGO mainly funded by UK citizens, was already working in Gautam Puri providing health services, education programs, entrepreneurship, and group organization. Its first preoccupation was sanitation and hygiene, first concerns of most of the Gautam Puri residents. Aware of the links between general waste mismanagement (open drains, open landfills, erratic collection of waste by the MCD's agents) and health hazards, it was interested by the TL's model of decentralized community-based waste management system and so contacted TL to establish a partnership and implement such a system in some blocks of this area.

2.0 Programme Goal and Objectives

2.1 Goal

To develop a demonstrable Community Based Zero Waste Management Model for managing their own solid waste in a sustainable manner through capacity building and awareness rising of all stakeholders.

2.2 Objectives

- To set-up a participatory, decentralised, and eco-friendly system of household Solid waste management
- Create awareness regarding solid waste management
- Generate employment opportunities for the unemployed youth of the area
- Promote the usage of manure produced at community level in maintaining the park
- Divert the waste from the landfills through composting and resource recovery

3.0 Intervention Activities

Introductory meeting with the Arpana Trust to develop a Memorandum of Understanding (MoU) for an effective work in the area

Situational analysis: Before the initiation of the programme a base line sample survey was conducted. For this an interview schedule was used. The aim of the survey was to understand the generation of waste, type of waste generated at household level, knowledge, practice and attitude towards the municipal solid waste.

Base line survey was conducted through door-to-door meeting with residents to understand the existing waste management system and other related issues in the area. Under

this activity door to door data collection took place and around a sample of 400 households were interviewed

Rapport building: awareness raising amongst the residents and waste collectors to prepare them to anticipate in the community based solid waste management programme. Awareness raising: With the aim of mobilizing the community and to get the more and more community participation the door-to-door meetings, lane meetings and community meetings, mass awareness programme and rally were organised on solid waste management issues. Awareness raising on Solid Waste management amongst the residents through door-to-door meeting and by distributing the IEC material

Distribution of IEC materials: The Calendars of the year 2005 and 2006 have been circulated among the residents of colony. The contents of the calendar emphasize on importance of source segregation, specifying elements that fall under the category of recyclable and organic waste. Door-to-door awareness campaign on importance of source segregation has been going on in both the communities in order to educate housewives and other members of the family.

Communities & Waste team of Toxics Link-Delhi along with the Arpana's team has also distributed Information Education & Communication materials in Guatmpuri. The IEC material includes poster on segregation of waste, leaflet on "Kooda Kahan Se Aaye Aur Kooda Kahan Jaye", Flyers on "How to become a Zero Waste Community by implementing Supreme Court rulings on waste management?" As per requirement, both English and Hindi IEC materials have been utilized in these implementation sites.

Capacity building of waste collectors and other stakeholders: Capacity building is the important component for the success of any programme. As an integral part of the programme capacity was built of the waste collectors, staff of the partner NGO and Self Help Groups (SHGs) regarding the municipal solid waste management. For this Toxics Link in the partnership with Arpana Trust organised the mass awareness programme, workshop and group meeting with stakeholders.

Capacity building of the stakeholders: Since Arpana Trust is also working on livelihood issues and formed some active self-help groups (SHGs) with in the community. In the view of increasing community participation and active involvement solid waste management Toxics Link with the support of the partner NGO regularly conducted the capacity building programme for the groups.



Capacity building of school children at Gautampuri

Mass Awareness Programme: In order to have the active participation of all stakeholders, three mass awareness programmes were organised in the area where in the all stakeholders including municipal staff participated. In this programme the community problems in the solid waste management programme with the NGO



Community meetings and mass awareness programme on Solid Waste Management at Gautampuri

Community Empowerment: Organised meeting of the community people male as well as female member with Deputy Commissioner, Central zone to discuss the obstructions and waste related issues in the area. The aim of the activity was to empower the groups and to seek the active community participation in the programe

Linkage building with Municipality: Since, the municipality is constitutionally obliged to take care of the municipal solid waste and the sanitation in the area. In order to get the active participation of the municipality the implementing agency built linkages with municipal sanitation staff through the regular meetings.

Competitions: Painting / drawing competition was organized amongst the school children of the community on the relevant issues Solid Waste Management. Around 150 students participated in the competition. The first three successful candidates were awarded with the 1st, 2nd and 3rd prizes. Apart from these consolation prizes were also distributed.



Drawing competition on health and environment at Arpana's school in Gautampuri

Rally: The organisations also organized a rally with the school children. Around 100 school children and 10 local teachers participated in the rally. The rally was passed through all roads and streets of the locality. Some banners and posters were also used to make the rally attractive and informative.



Mass awareness rally with local school children

The children used some of the slogans on environment and solid waste management like “Aao milkar Karen shram dan, geele - sookhe koode ka ho alag- alag koode daan” , Aao milkar qasam hum khayen, Apni basti ko swarg banayen” “ Ghar ke bahar na dher lagayen, Makkhi Machar ko na sher banayen” etc. The rally was followed by half an hour discussion on solid waste management with the children and also discussed about waste, segregation of waste, reduce, reuse & recycle of waste and composting etc. The IEC material was also distributed among the children and at the end they were served refreshment with some snacks.

Exposure visit to the community based composting sites: An exposure visit was organised for the waste collectors of Gautam puri to D Block Sarita Vihar (First Zero Waste Model developed in the partnership of the Residents Welfare Association and Toxic Link) and had meeting with the waste collectors of Sarita vihar. The need of this activity was to make the waste collectors of Gautampuri aware of the types of waste and segregation of waste. And also to let them aware about the step and the process to be followed in the community based waste management and composting. This activity helped in to bring the workers more closure to the implementing agencies and to actively participate in the programme.

Community Based Composting: Though there are various methods of disposing of the solid waste like open dumping, Incineration, landfill, sanitary landfill and composting. Out of them composting is the most preferred method. Under this programme the composting was done through Effective Micro-organism (EM) composting. EM is an bacterial organic solution which helps in reducing the foul odor and fasten the composting process.



Drying and Sieving of organic compost at Gautampuri

Monitoring: Regular joint monitoring of the programme by Toxics Link and partner NGO Arpana Trust through the regular door to door meetings with the residents and the waste collectors

4.0 Post Intervention Scenario/Impact of the programme

After continuous efforts the door-to-door waste collection system has been developed with approx 1500 households out of 2400 households (Total Number of HHs of the colony). Currently eight workers are involved in the solid waste management programme. Four out of them are taking care of door to door collection of waste, secondary segregation and transportation of waste from household to community collection point i.e. dhalao and

remaining four workers are into cleaning of street drains on regular basis which has greatly helped in avoiding the unhygienic and unsanitary condition in the area.

For this work every households is charged rupees 10 per month as a user fee. Currently, the monthly revenue generation through solid waste management system is around rupees 10,000 and this amount contributes to the monthly salary of the workers. Segregation of waste is also being emphasized at household level as well as on-site segregation of waste.

Being a lower income group community the generation of solid waste is not much higher as compare to the middle and higher income group community. Findings of the baseline survey done by the organisation reveal that an average generation of household waste is approx 400 g/HH/day. The generation of wet waste (biodegradable) and dry waste (recyclables) is 180 – 200 g/HH/day and 90 –100 g/HH/day respectively. The generation of inert waste is comparatively higher than that of organic waste and recyclables.

Based on above data through the community based solid waste management system, the organic waste and the recyclables generated by 1500 households are being diverted from the landfill, which is 400 – 450 kg/day. By this small efforts approx 155 tonnes per annum, of solid waste can be diverted from the landfill.

Both primary and secondary segregation are done in order to recover the recyclable and reusable things while the kitchen waste is taken to the composting pits. The community based composting (Effective microorganism composting technique) is converting the biodegradable waste into manure with in the community itself and the recyclable is sold to kabadiwala (person who buy the recyclables). The ready compost is used to maintain the MCD parks, flowerpots and plantation in the area.

Before the intervention began, There was no door-to-door collection of waste in the area and people were not aware about the segregation and Dry & Wet waste and the MCD dhalao overflowed making the area filthy and unhygienic The community was not aware of the harmful impact of the littering of the waste. The dumping of garbage into the open plots and the drains were the common methods of disposing of the garbage.

This has to a great extent helped in reducing the dependence on MCD dhalaos, leading to diversion of waste from landfill. It is encouraging learning that households and the waste collectors earn an additional income by selling the valuable dry wastes to kabariwalas. The whole exercise has led to least amount of waste being actually dumped into the MCD dhalao.

The initiative shows a significant impact on the cleanliness and the aestheticism of the community.

5.0 Major Achievements:

The initiatives undertaken in Gautam puri slum on Solid Waste Management have shown visible outputs. The various achievements are -

- Before the intervention no door-to-door collection was happening in the area and open dumping into the drains, throwing into the streets and the neighborhood open plots were the common practices. As an output of the intervention approx 1500 out of 2400 households have started to participate in waste collection services and streets and the drains in the project area are much cleaner comparatively.
- Diverse capacity building exercises in the form of training, workshops; and exposure visits have promoted informed participation and compliance at different levels.
- Accountability and performance of the field staff associated with the SWM services
- The planned, decentralized, segregated house-to-house collection of Solid Waste is working properly in more than 1500 out of 2400 households in the area.
- Sustained IEC and Capacity Building inputs have facilitated community participation in SWM programmes.
- People have started taking keen interest for the successful implementation of the programme integrating with the health issues in the community
- Improved services of the municipal staff in the area results more frequent clearing of community dhalaos and big drains
- The small intervention has provided employment to the eight unemployed youth of the community. That can be a replicable model for the community like Gautampuri.
- By small intervention efforts approx 155 tonnes per annum of solid waste (organic waste and recyclables) can be diverted from the landfill, which leads to the less burden on landfill.
- Revenue generation in the form of monthly user fee is one of the major impact of the programme which has contributed a lot towards the livelihood of the waste collectors

Detail door-to-door waste collection monthly revenue generation through the community based solid waste management programme

| S. No. | Month | Total Collected as a user fee (Rs.) |
|---------------|----------------|--|
| 1 | October 2004 | 7,509 |
| 2 | November 2004 | 7,025 |
| 3 | December 2004 | 8,270 |
| 4 | January 2005 | 8,135 |
| 5 | February 2005 | 9,280 |
| 6 | March 2005 | 9,915 |
| 7 | April 2005 | 7,990 |
| 8 | May 2005 | 8,350 |
| 9 | June 2005 | 7,700 |
| 10 | July 2005 | 7,105 |
| 11 | August 2005 | 8,705 |
| 12 | September 2005 | 8,295 |
| 13 | October 2005 | 8,425 |
| 14 | November 2005 | 9,010 |
| 15 | December 2005 | 9,600 |
| 16 | January 2006 | 9,635 |
| 17 | February 2006 | 9,565 |
| 18 | March 2006 | 9,780 |
| 19 | April 2006 | 9,690 |
| 20 | May 2006 | 10,100 |
| 21 | June 2006 | 9,990 |
| 22 | July 2006 | 9,825 |
| 23 | August 2006 | 9,925 |
| 24 | September 2006 | 10,125 |
| 25 | October 2006 | 9,960 |
| 26 | November 2006 | 9,625 |

6.0 Constraints

- Since Gautampuri represents a low income group, people show some reluctance to give the monthly user fee and active participation
- Poor collection of waste and segregation of waste hinders the decentralized composting
- Poor segregation of waste at source leads to the extra work over the waste collectors
- Throw and forget attitude
- Lack of municipal services in terms of cleaning of drains, cleaning of dhalaos and sweeping of the roads in the area

- Improper positioning and designing of dustbins people hesitate to put their garbage in the dustbins.

7.0 Lesson learnt

- Required political and administrative will as well as support for the cause.
- Solid Waste Management may be improved to a significant extent through streamlining existing human and physical resources. Institutional and managerial reforms contribute a lot for improved performance.
- The stakeholders such as SHGs, NGOs, pradhans and various community groups are willing to participate and cooperate in the activities for Solid Waste Management.
- Workshops, training programmes and exposure visits have widened the vision and capacities of waste collectors, key persons of the community as well as representatives from Municipal Corporation. This is reflected in their attitude and behaviour in matters concerning SWM.
- It is possible to make SWM a people's programme by launching comprehensive IEC activities for awareness generation
- For an effective solid waste management there is a need to integrate with other developmental issues like community health and personal and environmental hygiene & livelihood and also with Sanitation for the sustainability of the project
- Stakeholders like community, MCD, NGOs and other government department partnership is the crucial factor
- In slum colonies cleaning of big drains as well as street drains is the major issue to be focused on to maximize the community participation.

8.0. Recommendation:

- Since this is a people's programme, the implementing agencies should adopt the participatory approach during the entire course of implementation, which can create a sense of ownership among the community people and towards the sustainability of the programme.
- Involvement of local school children who can take the message to their families and the community as a whole

