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Formal and informal swm in Hyderabad (India)



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INDIA IS FACING serious environmental problems such as waste¹, water and air pollution due to the fast growth of urbanisation and industrialisation. The subject of solid waste management (SWM) in Hyderabad (India) represents one of particular interest for this 23rd WEDC conference on 'partnership and innovation'. This paper will represent a unique scheme which is based on a combination of partnership and innovation between the Municipal Corporation of Hyderabad, Non-governmental Organisations and the citizens in providing SWM services to the city.

The post-independence period of India, which will mark its fiftieth anniversary this year, has brought much prosperity, but also an increase in the generation of waste without a simultaneous adjustment of waste management services, resulting in much uncollected waste. This has been one of the factors which has finally led to the emergence of a public health crisis. The steady increase in municipal waste management cost, however, has prevented national and local governments from solving the crisis with traditional methods used since the colonial times. Although technocratic solutions still prevail in India today, the national and some local governments are looking at other alternative methods to the current waste crisis.

In India in addition to the formal municipal waste management sector, there is also a thriving informal recycling sector which enables a large portion of the urban poor to make their living. The potential of integrating these two sectors, I believe, holds the key to solving the existing crisis. This paper therefore examines both the formal waste management and informal recycling sector in Hyderabad (India). This is done through a case study of the community-based waste disposal scheme which is one of the first to be pursued by a local government in India.

The case study reveals a new model of solid waste management emerging through the waste disposal scheme in Hyderabad. This scheme promotes the recycling of organic and non-organic waste at the neighbourhood level. It represents a more ecocentric approach to waste management which is based on low-impact technology and small-scale production. The scheme specifically intends to integrate street waste pickers into the municipal waste management system by employing them for door-to-door collection, separation of waste and organic waste recycling. The attitudes of citizens towards the scheme and especially towards the role of waste pickers in assisting the scheme are essential points that are analysed. For this

reason a survey of middle-income households and low-income households in Hyderabad was conducted during 1993-94. The results from this survey reveal new views on waste management emerging in contemporary India.

The formal sector of SWM in Hyderabad

At present Hyderabad, (actually the twin cities of Hyderabad and Secunderabad) covers 194.25 Km² (Hyderabad alone covers 175.53 Km² and the remaining 18.72 Km² is under the jurisdiction of Secunderabad, Census of India, 1981). The Hyderabad Urban Development Authority (H.U.D.A) spreads over the entire extended area under the Corporation, together with the areas of the Malkajgiri Municipality, and 13 villages of Medak district which is approximately 1864.87 Km².

Since the first Census in Hyderabad in 1881, there has been a constant population growth within the city, except during the period 1911-1921 which could be due to epidemics of plague and cholera. With the formation of Andhra Pradesh State in 1956, Hyderabad became the administrative centre with educational and industrial activities, consequently causing an additional influx of people. In 1991, the total population of the twin cities was estimated to be around 3.1 million (Census of India, 1981). Today Hyderabad Urban Agglomeration ranks as the fifth largest city in India with a total population in 1991 of 4.3 million.

In 1931, the city comprised of an area less than 150 Sq.Km² and a density of 3,563 persons per Sq.Km² as compared to 3,205 per Sq. Km² in 1921. By 1991, Hyderabad was estimated to have 18,000 persons per Sq.Km² in an area of 199.40 Sq.Kms². The density of Hyderabad has therefore undergone major changes.

An overview of the formal Municipal Waste Management (MWM) sector² as it is presently functioning under the Health Department of the Municipal Corporation of Hyderabad (M.C.H.) first needs to be examined. In order to understand the nature of the formal sector of MWM in Hyderabad, it is therefore essential to briefly comprehend the technocentric approach³ to MWM and existing problems in this area.

Since colonial days (late 18th century) the city of Hyderabad has developed into a major industrial city with a growing population now exceeding 3 million. As a result current quantities of municipal waste generated per day in Hyderabad have reached an estimated height of approximately between 1,300 and 1,500 metric tons⁴ with the presumption that an average middle class household daily

disposes of around 350 grams of waste into the dustbins provided by the M.C.H.. At present only between 1,000 to 1,200 metric tons of waste are cleared by the Municipality. This accumulated waste is officially supposed to be collected every other day, therefore a daily backlog of between 100 and 500 metric tonnes disposed off in various other ways such as collected by waste pickers, burned by residences or simply left to decay.

The overall physical composition of waste in Hyderabad, as recorded by the Centre for Economic and Social Studies, reflects that between 60 to 80 per cent is considered to be organic waste. As will later become more clear, this biodegradable waste can be reused with both social and economic benefits.

Dilemmas facing the formal sector of MWM in Hyderabad

The MWM department in Hyderabad is confronted with numerous organisational and resource problems. The crisis in MWM faced by the local government of Hyderabad can be summarised as having the following aspects:

- administrative, organisational, legislative and financial stagnation with ever growing increase in population, operational inefficiencies of municipal SWM services (i.e. insufficient vehicles and management (e.g. lack of staff);
- a tax raising structure and level which falls short compared with similar cities;
- lack of proper coverage of residential areas, especially low-income areas;
- lack of adequate final disposal of solid waste (e.g. illegal dumping grounds);
- lack of management of hazardous waste (e.g. including hospital waste, etc); and
- lack of adequate working conditions and of motivation on the part of staff which makes it difficult to fight corruption.

With the ever increasing quantities of waste and a limited budget, the Corporation has been looking into new *innovative solutions* in solving its 'waste crisis'. Currently there is a focus to enforce the privatisation⁵ of MWM services. The privatisation of these services would partially free the Corporation of its responsibility. It however would mean that the Municipal Corporation would take on a more monitoring role to ensure the work is being done adequately. In addition, the Corporation is presently also focusing on citizen participation schemes as a possible solution. The Corporation, with the help of UNICEF and local NGOs/CBOs, has designed a house-to-house collection scheme requiring the co-operation of waste pickers and citizens alike.

An innovative community-based waste disposal scheme

A newly implemented community-based voluntary waste disposal scheme, implemented in 1993 in Hyderabad is

one of the first of its kind in India being launched by an urban civic body with the assistance of NGOs and CBOs. Although the expenses for the project are funded by the Corporation and United Nations Children and Education Funds (UNICEF), the work depends partly on the co-operation of local NGOs, CBOs and citizens of the city.

The purpose of the newly implemented voluntary waste disposal scheme is to help keep neighbourhoods (or colonies, as they are often called by Indians) clean as well as to make the lifting operations of waste quicker and more effective with the help of employees of neighbourhood and community-based organisations; *to involve waste pickers* who collect waste in the schemes and in order to develop a favourable social climate to educate citizens on the importance and economic value of waste.

The inclusion of waste pickers from the informal sector of MWM provides a main interlinkage to the formal sector of MWM. They are not only capable of handling the collection of waste from each household (where M.C.H. trucks cannot reach it) and transport it to the municipal waste bin but also of integrating the collection of waste with the existing recycling activities of the informal sector. This scheme could therefore potentially provide a large portion of these waste pickers with sustainable work that is not only economically but environmentally viable (Refer to Figure 1).

Labour-intensive segregation of waste by informal sector workers for recycling by factories and also the establishment of compost plots at the local level, designed and organised by the Municipality and the NGOs/CBOs represent more realistic steps towards the use of more ecocentric approaches in future MWM which at the same time are cost-effective in terms of natural resources (Ministry of Environment and Forest, 1993 and Shukla, 1992).

The economic objectives of the scheme are not only to make waste management more effective, and to link up

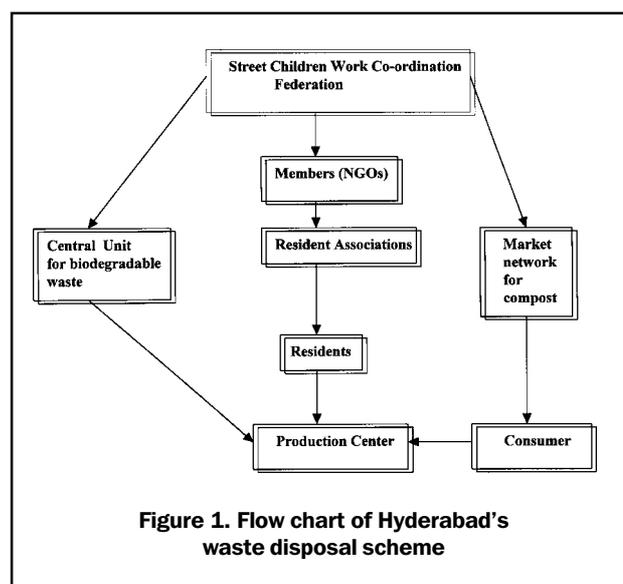


Figure 1. Flow chart of Hyderabad's waste disposal scheme

Source: M.C.H. 1994

with the informal recycling activities but also to increase the utilisation of biodegradable waste collected for the production of compost by introducing vermiculture/composting with the help of earthworms.

The M.C.H. has estimated to produce around 660 tonnes of organic manure per day during 1994; by the year 1999, it expects to produce 1,800 tonnes of organic manure per day. Other possibilities such as the future production of fuel pellets are also being looked at. Social objectives include the rehabilitation of between 10,000 to 20,000 of the approximately 35,000 waste pickers in Hyderabad. This will be done by providing them with work, free medical treatment, allowing them to sleep in night shelters, and providing non-formal education and vocational training (Newstime, 1994).

The scheme under the jurisdiction of M.C.H., is managed by community-based or neighbourhood-based organisations (CBOs or NBOs) within middle and upper income areas. At present 167 colonies with around 100,000 households, are involved in this type of scheme. The scheme is also taking place in 217 slum areas, some of which are managed by the Overseas Development Agency (O.D.A.) (for simplicity's sake all these areas are called O.D.A. slum areas). This type of scheme also functions with the help of CBOs or NBOs and comprises a total of 190,000 households (M.C.H. 1994). In addition to colonies, and slums involved in the scheme, 12 vegetable markets with biodegradable waste have been selected to take part.

The present waste disposal scheme entails the employment of one or two unemployed youths (or adults) in each residential area, usually belonging to the area; at present they are recruited from among unemployed people and not yet from the group of people already active as waste pickers (further elaboration on this employment generation aspect is cited on page 16). Every day between 06:00 am and 09:00 am, the youth or 'waste collector' visits the homes involved in the scheme to collect their waste. The waste is dumped in a box (200 Kg capacity) that has been fitted on a tricycle, (the scheme therefore is often called the Tricycle scheme). Once all the waste is finally collected from each household it is dumped in one of the M.C.H. bins or in one of the "garbage houses" (at present an extra one hundred are being constructed). The waste dumped in either place is then cleared by the M.C.H. conservancy staff on a day-to-day basis.

To encourage the residents in middle and upper income areas to join the scheme, the M.C.H. pays a subsidy of Rs.5/- per household per month as an incentive to the CBO or NGO for maintaining daily operations. An average of about Rs.10/- per month is charged to each household as a membership fee for the CBO or NGO and Rs.5/- at the time of enrolment as an admission fee. The monthly fee plus subsidy gives the CBO or NGO an income of Rs.0.50 per day from each participating household.

No subsidies for the waste disposal scheme however are given for households in any of the O.D.A. slum areas.

O.D.A. participants themselves must pay the additional fee of Rs.5.00 per household, but neither the O.D.A. nor the M.C.H. give funds for the waste disposal scheme in these areas. Officials say that these areas are not paying any property taxes and that already enough additional finances are being funnelled into the slum areas.

The proposed scheme also intends residences to segregate their waste into two containers, one for non-biodegradable and one for biodegradable waste. The non-degradable waste will be disposed of in the 'garbage house' in the residential area. The biodegradable (organic) waste will be taken to a plot in the residential area, usually half an acre in size, for the production of compost. This is made with the help of earthworms given by the M.C.H. free of charge. The organic manure produced in each of these plots will be brought to a central unit, which will be under the supervision of the Street Children Work Co-ordination Federation, where it will be collected, packaged and marketed.

A total of seven vermiculture centres have been identified namely; Yousfguda, Imliban, Indira park, Jyothi Nagar, Chacha Nehru part, Banjara park and Sanjivaiah park where biodegradable waste collected from residential areas will be turned into organic manure. So far pilot studies for vermiculture have taken place in Indira Park with success.

At present, in the M.C.H. areas (middle and upper income) a total of 301 people have been appointed by the various NGOs or CBOs to collect waste from households using the tricycles. M.C.H. has estimated the saving in the collection of waste from households to be approximately 8.04 million Rupees per annum (after subtraction of subsidies). Within the O.D.A. slum areas, the scheme has employed a total of 217 people and with an estimated savings of 13.63 Rupees per annum (M.C.H., 1994).

Survey

In order to assess the potential success of the scheme, a survey was conducted in Hyderabad specially focusing on whether or not community participation is a realistic response to solving the problems involved in municipal waste management?

Two surveys were administered to monitor the effectiveness of the schemes within the seven administrative districts or circles as they are often called, each of which contains some areas in which NGOs or CBOs are involved in the waste disposal scheme. In the first year of surveying, which took place in October 1993, was a pilot study where only a certain number of questionnaires were administered in each of these circles. A total of 100 questionnaires were administered with respect to M.C.H. areas of which 50 were to households which were part of the scheme (participants), and another 50 questionnaires were administered around the same areas to households whom did not participate (non-participants), as a control group. The same methodology was used for the O.D.A. slum areas in which a total of around 25 surveys were administered each

to the participating (experimental) group and to the non-participating (control) group.

The second survey was based on a larger scale with some additional questions regarding specific issues. During the second year of the survey a total of around 210 questionnaires were administered around the M.C.H. areas and 122 to the control group. Within the O.D.A. slum areas a total of 100 surveys have been undertaken but this year only to those who were part of the waste disposal scheme.

Survey conclusion

The overall conclusion revealed that community participation is a realistic response to solving the problems involved in SWM. However, if the M.C.H. and citizens want to solve its SWM crisis and to clear away its backlog of uncollected waste, it has to abandon its conventional methods of waste management and its 'old' mainly technocratic model. That approach relies largely on the public bureaucracy and on complicated and costly technologies such as machinery to provide its services. Although the M.C.H. needs to adjust its organisation to changing demands and to alter its financial management, especially by extending its tax structure, it can no doubt save financial costs by applying more appropriate technologies, a move towards a 'new' model in solid waste management based on community participation. Applying this 'new' model—although still at an experimental stage—reflects the acknowledgement by the M.C.H. of the importance of the recycling sector, and implies a more ecocentric approach for solid waste management services combined with more effective labour-intensive means of providing them.

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¹ Waste refers to any substance or object which the holder discards, intends to discard or is required to discard. This definition excludes gaseous effluent and waste water. Inevitably, the term 'waste' will have different connotations, depending on the individual country's socio-economic situation. The various categories of waste included in this paper refer mainly to domestic waste, such as those items generated by households and other waste such as commercial, industrial, institutional and hospital waste.

² Formal sector of solid waste management refers to public bureaucracies or private sector corporations and registered businesses, with an organised labour force governed by labour laws, and with capital investment and modern technology (Furedy, 1989, p.14).

³ Technocentrism is based on a scientific, rational approach focusing specifically on the concept of efficient environmental arrangement through technology (O'Riordan, 1981).

⁴ There are two methods used by the Health Department of the M.C.H. for measuring the community's waste. The method to measure waste generated per person is a mathematical method used by the National Environmental Engineering Research Institute (NEERI). They concluded that each person produces approximately .33 Kg waste per day (NEERI, 1973). The method used to calculate domestic waste by M.C.H. is based on MWM vehicles; this is done by random sampling of MWM vehicles approximately every six months. Around ten vehicles in each circle are weighed before and after waste is collected (Reddy, 1994).

⁵ Privatisation in this paper means the contracting out of essential MWM services to private companies, which is the integration of commercial management principles into the public sector.

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