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REACHING THE UNREACHED: CHALLENGES FOR THE 21ST CENTURY

Solid waste management in Mohal

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THE HIMALAYAN REGION abounds in areas which are largely rural but are rapidly urbanising and have to contend with the problem of waste without any mechanisms whatsoever to deal with it. For instance, the scenic beauty in Kullu valley — a well known tourist destination — is beginning to be threatened by the problem of waste in non-municipal satellite towns / villages.

The study area

Mohal is a small settlement between Kullu and the airport located at Bhuntar. Though outside municipal limits, the area has experienced substantial growth over the past decade. The problems of infrastructure and management at Mohal are unique as there are no municipal mechanisms for waste collection, transportation and disposal. Average altitudes ranges from 1000 m to 1300 m. A map of the study area is available with the authors.

Objectives

The objectives of the Mohal study were:

- To assess the general state of cleanliness in the study area.
- To carry out a general census and land use survey and to document growth of settlements over the years to assess the degree of urbanization.
- To survey house holds to document prevalent solid waste disposal practices.
- To carry out the survey with greater emphasis on the views of women to ascertain their perceptions on wastes and level of participation in its management.

Methods

During the Mohal study a number of field surveys such as cleanliness survey, growth of urbanization and land use surveys, a general census survey, etc, were carried out to document various parameters and map the area. Mapping was done by field verification and survey. All households and commercial establishments were physically located and documented.

One of the surveys documented household level waste disposal practices to ascertain existing practices. This survey covered 225 households or ~70 per cent of all households. A cattle and owner census was also carried out in the study area to assess feasibility of co-composting options at household level.

During the second phase of the work, a perception survey was carried out amongst women in households and commercial establishments to ascertain peoples perceptions about the problem and their expected level of participation etc. Preliminary estimates of garbage generation were also made.

Results

Out of the results obtained so far, a few samples have been outlined below:

- Out of 206 places rated, ~ 62 per cent were found to be under the "not clean" rating, confirming large scale need for solid waste management initiatives.
- An analysis of the data collected confirmed the general hypothesis of rapid urbanisation of satellite rural pockets.
- As municipal facilities are not available, it was found that a number of final disposal practices such as dumping into the river, composting, burning or land filling were practiced by the population, often in combination. (Table 1)
- A relative ranking of final disposal practices indicated that composting is being carried out by about 45 per cent of population. Dumping into River / Water bodies is being done by 32 per cent population with Burning, a close third at 31 per cent. Land filling is being practiced by only 4 per cent population.
- The survey indicated that ~92 per cent of the households and ~96 per cent of commercial establishments perceived solid waste in the area as a problem. ~90 per

Table 1. Household level waste disposal practices in Mohal

Disposal practice	*No of practising households*	*Percentage*
Composting	102	45
River dumping	72	32
Burning	70	31
Landfilling	9	4

Source - Primary survey, 1995

Note:
1. Total sample size - 225 households.
2. More than one disposal practice is prevalent in some households.

cent of households and 100 per cent of commercial outlets admitted that they had a problem in terms of where to throw their garbage.

- When asked about their current place of throwing the garbage, ~42 per cent of households and ~46 per cent of commercial establishments were found to be throwing it immediately outside their premises. ~9 per cent of households and ~38 per cent of commercial establishments stated they were throwing it in a common area, whereas, ~49 per cent of residences and ~17 per cent commercial establishments were reported to be using / disposing garbage within the premises.
- On the very important aspect of willingness to segregate their own garbage in bio-degradable and non-biodegradable fractions, the willingness in both segments was found to be > 95 per cent.
- On a question of willingness to compost their own garbage, the willingness was found to be ~96 per cent amongst women and ~92 per cent in the commercial establishments.
- If provided with a common collection point, ~96 per cent of respondents in both categories were willing to ensure that their garbage was thrown into it.
- The preliminary estimates of garbage generation are ~427 gm / day / household and ~5 TPD.

Conclusions

a. The study area clearly requires interventions to manage the waste generated. Low overall volumes will limit choice of a centralised system.
b. In Mohal, the problem appears to be essentially of micro-level solid waste management. Basically, it is an exercise in devising a system independent of government mechanisms. This approach clearly influenced the choice of going in for a perception and participatory survey in the second phase.
c. The residents and commercial establishments should resort to segregation of their garbage in bio-degradable and non-biodegradable fractions.
d. The common bins may be located within 50m and 25m distance for residences and commercial establishments.
e. The large scale willingness coupled with the fairly wide prevalence of composting indicates that household level composting is the best option for the settlement.
f. Households practicing river dumping etc. will require education and awareness about proper disposal.
g. The non-biodegradable fraction can be taken away by Waste Handlers visiting the area regularly.
h. Hotels may be asked to look into in-house management of waste and increased internalisation.