

CHOOSING OPTIONS FOR WASTE MANAGEMENT

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Keywords: waste management, waste planning, sustainability, acceptable risk,

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1. The Purpose of Waste Planning

Planning is not an abstract concept but a procedure to schedule different activities and sort out conflicting options. It is a capability that is innate within every human. People plan both consciously and unconsciously regularly throughout their lives at home and work. Plans can be for a few hours in advance or cover several years in the future. Some plans are written and others held in memory but all involve the same basic six elements:

- Identify the current problems to be overcome
- Assess the tasks to be done
- Put the tasks in an order of priority to be tackled
- Consider the different ways to complete each task, possibly asking others for suggestions
- Consider the costs and other resources needed from local sources or elsewhere
- Prepare a preferred strategy to follow and subsequently, implement it.

Preparing a waste plan is an obvious approach in municipalities that seek to organise themselves to overcome their prevailing waste-related problems, consider the choices available and develop a set of sustainable and affordable improvements in the waste service. Improving a waste service takes time and sustained effort and should start with an honest, critical examination of the present weaknesses. It should follow the six basic

elements and conclude with a written presentation on a series of changes that could be introduced over a five to ten year timescale. A plan should also define the standard of service a municipality is seeking to achieve and explain the financial and physical resources that would be required to put the suggested changes into practice.

No one model of waste collection and disposal is applicable everywhere. This section describes some of the differences that are found in the way waste services can be organised and operated in various places. These differences, sometimes known as the *prerequisites for waste planning*, should be properly understood before a waste planning activity is started in a particular locality.

1.1 Evolution of the waste service

Historically, waste collection and disposal was a personal matter. It evolved in a haphazard manner in and around houses as a necessity to remove the debris of everyday life from living areas. Waste disposal was not planned and local municipalities provided no collection service. Over time, the combined pressures of rapid urbanisation, population growth and industrial expansion led to the creation of more waste than the locality around houses could assimilate. Waste accumulations occurred and the amount of filth and squalor in urban areas increased. Removal of the waste away from residential areas then becomes a public health necessity. The municipal response is invariably to begin a formal waste collection and disposal service. The purpose of such a waste service is primarily to move waste away from residential area, where the risk of disease and pests is highest, to outside the town. In the past there have been several documented cases where high levels of disease spread through cities due in part to the presence of uncollected wastes (Macfarlane et al, 1998), for example:

- 1840s Manchester, UK – urban conditions had deteriorated to a point where the lifespan of labourers' families was an average of 17 years compared to 39 years in rural areas
- 1890s New York City and Chicago, USA
- 1987 Karachi, Pakistan

Significant major advances in the standards of waste management have tended to follow in the aftermath of major social shocks from obvious public health failures (e.g. uncollected waste accumulations in the streets and rodent infestations) and environmental disasters (e.g. landfill collapses, water pollution incidents and smoke emissions from waste burning). It is only a relatively recent phenomenon, largely in the more affluent countries, that advances in waste standards and the technologies available have been achieved through political lobbying before further waste-related problems emerge.

From the outset of municipal involvement in waste management, most priority was given to collection and street cleaning and once out of sight beyond the town far less attention was given to disposal. Consequently, the practice of municipal 'open dumping' was created. At present only around 25% of the countries in the world have a regular, well-organised waste collection service, in all or most of their urban centres, and a moderate to good standard of waste disposal. The remaining 75% are unable to

provide a reliable waste service to their citizens in general, although perhaps some prosperous districts may have sufficient resources for an organised service.

Traditionally, waste management has been an unfashionable topic for municipalities to address until absolutely unavoidable. This is particularly apparent in those places where the resources available are severely limited (i.e. middle and lower-income countries). There are various reasons for this but Briggs (1971) commented that a common situation found in many places is a reluctance by municipalities and citizens to pay for improved waste management. The complexity of operating a waste service properly means that lasting improvements usually rely on additional resources being found by the municipality. This tends to be overlooked by many public officials and elected representatives who prefer to favour municipal initiatives that lead swiftly to obvious improvements whilst keeping expenditure to a minimum.

1.2 Issues to be resolved

Managing solid wastes safely is not a simple task. If it were then improper waste disposal would be a relatively straightforward issue to change. The environmental and public health issues created from the production of waste would be negligible and most places in the world would enjoy a high level of cleanliness. Unfortunately, the opposite situation is true. When the first steps towards improving a waste service are made it is usual to focus on one issue, e.g. upgrading disposal site or supply of more collection vehicles. Providing a better engineered landfill or a fleet of new trucks are likely to be only two of several related deficiencies that need to be tackled before an improved waste service can be achieved. The inter-related difficulties most frequently found in municipalities, depending on local circumstances, are:

- Poor or insufficient waste storage containers in residential areas resulting in waste overflows
- No provision for bulky wastes (e.g. mattresses, televisions, broken furniture) collection and construction wastes leading to indiscriminate dumping along roads
- Insufficient waste collection vehicles and carts in operation to cover the entire municipality
- Low levels of vehicle maintenance and inefficient route planning for waste collection
- Inability to provide a waste service to all of an urban area or municipality
- Insufficient effort to encourage waste reduction and realistic recycling opportunities
- Unsanitary open dumping and waste burning practices
- Inadequate management skills and procedures, weak supervision of waste workers and
organisation of their working day
- Inappropriate siting of treatment and disposal facilities
- Small budgetary allocations to operate the waste service combined with low rates of cost

- recovery from commercial waste producers and municipal taxes
- Absence of a forward planning capability to begin to address the prevailing waste management
- deficiencies in an organised and structured manner
- Relatively low status of waste management staff in the municipal hierarchy

Waste management is a field of activity where the ‘outputs’ (e.g. waste) are produced over a wide geographical area on a continuous basis and the ‘resources’ (e.g. labour, equipment and finance) needed to gather them are large. Consequently, if it is to be undertaken in an acceptable way waste management is always an activity that involves a relatively high degree of commitment by municipalities to achieve a reasonable standard of operation. Generating this commitment and the resources needed is not easy when there are competing demands from other public services.

1.3 Value of waste

A fundamental point underlying many waste services is the public and political perception that waste has no value. Continuing this perceived argument, it follows that municipalities argue they have more valuable issues to address and the waste service should be undertaken as cheaply as possible, given correspondingly low priority for investment and frequently a low departmental status too. This is an understandable attitude but also a surprising one. Between 20 and 40% of the total budget is spent on waste management in most municipalities, largely on the collection service (Cointreau 1982). It is incongruous that such a high spending department should be considered, most often in middle and lower income countries, as a relatively low priority operation where the usual expectations of productivity and efficiency are not pursued vigorously.

Problem	Health/safety	Productivity	Amenity value	Ecological value
Pollution				
Indoor air pollution	X	X		X
Ambient air pollution	X	X	X	X
Freshwater pollution	X	X	X	X
Lake, coastal water pollution	X	X	X	X
Solid waste pollution	X	X	X	
Hazardous waste pollution	X	X	X	X
Faecal Contamination	X	X		
Noise	X	X	X	
Congestion				
Traffic congestion	X	X	X	
Congested urban amenity			X	
Occupation of high-risk land	X	X	X	

Degradation of natural support systems	X	X		
Freshwater depletion	X	X		
Degradation of land and ecosystems				

Source: Bartone 1990

Table 1: Urban Environmental Problems and Their Impacts

Waste *itself* probably has little or no monetary value, except where *profitable* materials recovery is possible. Aluminium is often the most profitable and in some places markets for steel, glass, textiles and plastics may be available. Other waste materials require final disposal. Conversely, starting and maintaining a waste service that collects and disposes of waste does have an economic value. The cost of a good service is expensive but this may be counterbalanced by the benefit to the public sector through avoiding other public expenditures, notably lower health costs, reduced social and commercial disruption and delays and less pollution damage to the urban infrastructure, food sources and land. Where land and buildings are owned privately then an improved waste service and cleaner streets also improves property values. Furthermore, a good waste service contributes to strengthening the local economy through improving the attraction of an area for new commercial investment, state-sponsored developments and tourism.

The most frequently identified municipal infrastructure and environmental problems (including solid and hazardous wastes) are summarised succinctly in Table 1, together with the types of social and economic costs they cause.

There are several ways to calculate the economic benefits from investing in an improved waste service and these are addressed in various specialist publications, for example Bernstein (1991), McMaster (1993), UNCHS (1993), Shin et al (1997).

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Biographical Sketch

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