

Guest editorial: institutional development for waste management in developing countries

Introduction

The institutional framework which underpins the existing waste management infrastructure in industrialized countries has been developed over many decades and is often taken for granted. Attempts to transfer directly the same types of structure and understanding, in support of implementing projects designed to improve waste management practices in developing countries, will invariably fail to achieve the desired result. Equally, failure will almost inevitably occur where national or municipal government departments believe that all current waste management problems may be solved simply by introducing the latest or best technological solution(s). To ignore any need for change to some or all of the existing diverse institutional roles may hinder the sustainability of any otherwise practicable waste management plan and/or introduced technology. It must be emphasized that there are also specific factors and circumstances which may over-ride all other considerations. Not least of these might be local cultural and religious customs and social factors, as well as the often very limited potential resources available.

Problems with operational practices, as perceived by those more familiar with the standards and practices adopted in industrialized countries, include:

- inadequate and apparently inefficient waste collection, often even within urban areas;
- ineffective transportation for wastes whether taken to designated treatment facilities or disposal sites or not;
- very poor disposal practices, often uncontrolled;
- limited monitoring of any part of the service, and especially potential solid, liquid or gaseous emissions;
- poor practices and facilities for the management of industrial and hazardous, including clinical, wastes;
- evidence of (apparent) over-deployment within various parts of the system;
- inadequacy of plant or other essential equipment, including evidence of poor repair;

- adverse health and safety impacts; and
- consequential adverse impacts to other essential infrastructure services, notably water supply and waste-water management.

Some deficiencies (and undoubtedly others not listed) may not actually contribute significantly or directly to environmental problems. Equally, further investigation may well demonstrate that the primary cause for some of the perceived problems is directly attributable to a deficient management structure, to a lack of resources, and to inadequate or inappropriate legislation and enforcement measures. In other words, the deficiencies can be attributed ultimately to a range of deficient institutional factors. If not rectified many if not all of the above perceived problems will perpetuate even where attempts are made to introduce some of the more practical options associated with better service provision.

The most important message is that personnel in existing waste management units within national, regional and/or local municipal authorities must want modification to existing institutional structures and full involvement in making recommendations and for taking the decisions leading to their implementation. This local commitment to provision of the necessary human and/or financial resources for the developmental introduction of an integrated institutional framework, quite separate from other municipal government functions, is critical to the success of long-term and sustainable waste management, and thus to the achievement of environmental improvement.

Institutional change

What then are these critical institutional issues which, without change, may present barriers to technical and environmental improvements? Firstly, waste is not considered a priority issue within local government administrations. Waste management responsibilities have frequently

grown within public health sectors of municipal government, with practices implemented by the sanitation authorities. In many cases both public health and sanitation personnel, with very limited formal waste management training, have several other important public functions and responsibilities (e.g., as medical practitioners, administrators or municipal engineers). Even at a national level, departments with waste management responsibilities often also have several other non-waste management functions, such as covering policy and planning; legislation; infrastructure resourcing; or environmental protection. Despite having multifunctional roles, few government personnel seem to recognize a correlation between better waste management and a decrease in existing deficiencies, e.g., the provision and functioning of potable water supply systems, management of waste-water systems, improved air quality, public health issues, etc.

The second issue concerns the diversity of ministries, local departments, sections and depots operating in relative isolation to each other. Confusion, and sometimes duplication, exists within and between national and/or municipal government departments concerning responsibilities for various waste management functions, e.g., planning or approvals for facilities or practices; drafting legislation, regulations and guidance; financing waste services; and ensuring enforcement of waste management regulations and standards. A further issue concerns local procedures and customs associated with recruitment and retention of local government personnel. Any recommendations that seek to alter institutional structures involving the acquisition of staff, particularly where re-deployment may deplete an existing department work force or its functions, may meet with substantial resistance. Cultural differences in attitudes to waste management and the environment may also impact directly on local acceptance for particular facilities and practices to manage various waste streams.

There are several critical functions, which are currently rarely in place and which ought to be core to any integrated institutional framework. However, the first rule must be that progress can only be made by evolution and not by revolution. This applies across the whole spectrum of waste management need, as outlined below, including operational practices and associated infrastructure. The ultimate goal within each municipal government authority should be to establish a waste management division, with its own authority to set and administer budgets which support departments managing a range of specific activities including:

- drafting of waste management legislation, regulations guidance and standards;
- development and training of human resources to support the introduction and sustainability of effective waste management activities;
- finances associated with all departments and their activities, controlled by the waste management division;
- strategic planning of long-term integrated waste management services for all waste types;
- management of all hazardous wastes including clinical wastes;
- all authorization to develop waste management facilities or services (including approvals for transportation carriers and procedures covering the movement of hazardous wastes);
- monitoring and enforcement of standards for all waste management services and facilities;
- provision of a waste information library, giving access to up-to-date national and international reference materials.

This is a daunting list of institutional roles and responsibilities, particularly where required within a single newly created administrative unit (a waste management division), to be directly accountable (only) to the central municipal government. Given constraints, which impinge on acceptance for change, it is important to stress that it is the functionality and accountability of personnel with various defined responsibilities which matters, and not the application of some rigid, universally applied, institutional structure that proves alien in local circumstances. It will be noted that all the above activities only relate to waste management. They do not include roles covering other environmental, technical or administrative duties. In the short term, the availability of only a few well-trained persons may dictate that each person takes on several roles to a lesser degree of detail.

It will also be noted that the above management responsibilities should not be associated in any way with carrying out practices designed to manage wastes (with the possible exception of divisional responsibilities for developing and operating centralized hazardous waste treatment and disposal facilities). Responsibility for operational services and associated plant and equipment should be retained by existing authorities (e.g., by the local sanitation bureau), although amended institutional management systems for these operational functions are frequently desirable too. These authorities must be clearly seen not to retain any current responsibilities for issuing permits and authoriza-

tions, or for the enforcement of standards, which relate to their own facilities and practices. Unit structures should also clearly reflect separate duties and responsibilities for waste collection from those required for managing and/or carrying out waste treatment or disposal operations, and for the management of the various types of waste arising.

Conclusions

No matter how the functions and responsibilities are formulated to create a comprehensive institutional system as appropriate to local circumstance, it remains essential that all parties are familiar with the functions of others and that regular formal communication channels are established and maintained between them. External consultan-

cies and agents can offer advice and assistance in recommending change; in helping to draft legislation, procedures and long-term plans; in supporting local or out-of-country training; and can help with designs for improved services. However, little or no noticeable and sustainable environmental or cost-effective benefits will accrue unless and until municipal authorities sanction and implement institutional change which demonstrates full accountability for all parts of an integrated and comprehensive waste management system.

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