COST-EFFECTIVE SOLUTIONS FOR SOLID WASTE MANAGEMENT PROBLEMS BEING FACED BY LOCAL AUTHORITIES

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Solid waste is a significant problem in most local authorities and particularly in developing countries. Most local authorities are experiencing a combination of issues that prevent proper management of solid waste. For example, the combination of rapid population (urbanization) and economic growth and its associated prosperity has led to an increase in the use of consumer items and a parallel increase in the production of solid waste.

However, incorrectly managed solid waste streams can pose a significant risk to health and environmental concerns. Incorrect waste handling in conjunction with uncontrolled waste dumping can cause a broad range of problems, including polluting water, attracting rodents and insects, domestic animals and including people, as well as increasing floods due to blockage in drains. In addition, this might bring safety hazards from explosions and fires. Furthermore, climate change is a common problem nowadays due to an increase in greenhouse emission as a result of poor solid waste management.

Solid waste management problems in local authorities are partly as a result of poor or no enforcement of policies and by-laws. In some cases, the policies are not available at all. In cases where the legislation and policies exit for solid waste management, the enforcement of the by-laws is weak leading to illegitimate and poor waste management practices. Therefore, effective solid waste management is dependent on the availability of policies which should be context specific and implementation of such policies at local level. The policies should include how waste will be managed at local level. The policies should also be in line with other relevant policies such as Environmental Management Act, Country's Constitution and other relevant and applicable governing policies. In local councils, there is need to pass the by-laws which should be followed in order to follow proper waste management.

One of the challenges faced by local authorities in solid waste management is lack of resources and capacity to manage the wastes. The city councils do not have sufficient resources to manage waste being generated. They largely depend on funds raised within the city which is always

inadequate to cater for the ever increasing and demanding needs of the councils. Furthermore, subvention from the government is not enough to support waste management as it mostly supports payment of salaries for staff and consequently waste management implementation plans suffer a great deal. In countries like Malawi, the situation has been further complicated because waste management support in the cities has been done mostly by donors e.g. vehicles for the same purpose. On the other hand, there is no adequate personnel to manage the waste in the councils. The councils are rapidly expanding overwhelming the capacity of the councils to manage the wastes properly leading to many environmental health problems. Hence there is a need for the local councils to identify models that should ensure self-reliance and sustainability of effective waste management in the long term. Some of the models which have been proven effective in waste management include Public Private Partnership (PPP), decentralization or empowering the business community, attracting local and foreign investors and integrated solid waste management.

The Public Private Partnership (PPP)

With this approach, the local councils should invite the private sector to take part in waste management. This should include some condition that attracts their participation. Accordingly, the city council together with the private sectors should identify business model(s) within waste management. For example, they may engage a company to manage landfills at a cost. In this scenario, the local councils may need to support construction of effective and efficient landfills also called sanitary landfills as opposed to unsanitary landfills which are associated with a lot of environmental health hazards. Those landfills should be handed over to the private companies to run them at a fee and the city collects a commission from this which can further sustain waste management implementation plans and activities within the city councils. In this case, organizations or individuals who dump wastes in the landfills will have to pay stipulated amount for it. On the same, this contracted company managing the landfill may sub contract small scale business players to be collecting wastes from the commercial and residential premises including health care facilities.

Another effective model is that of empowering the business community to set up an energy generation plant that can run on wastes as its raw materials. In this circumstance, wastes will not be dumped at the landfill but rather at this plant to generate energy for example, electricity for people to use in their homes. In this situation, waste will be valued as an important resource and a

lot of players will be involved in this business, thus creating employment among the people which contribute further to development of the cities. Consequently, this will prevent damaging the environment since dumping of wastes in the landfill has its own negative implications to the environment and human life.

The other effective model is by attracting investors by the government (business community) to set up a recycling plant. In this case, the investor will view all forms of waste as something with monetary value. Community members will be involved in separating the wastes at the point of generation up to the point of recoiling. Apart from the economic value, this model will help to ensure that the environment is being conserved as well since wastes will not be thrown indiscriminately, but rather will be taken as a raw material. Thus, minimizing the amount of wastes going to the landfill which is the overall goal of the United Nations section responsible for conserving the environment.

All these agreements should be made in a clear and open manner to the private partners so that they appreciate how they will benefit from it. With this arrangement, the city council will no longer be involved in collection, transportation and landfilling of the wastes which has not been an easy task. It will just be there to manage the private companies, checking that they are fulfilling what they agreed.

Integrated solid waste management is another effective solution to waste management. Local authorities should ensure that integrated solid waste management strategies are followed in managing waste within the local councils. Integrated solid waste management approach has four functional elements or components which include source reduction, recycling and composting, waste transportation and landfilling.

Waste reduction: waste reduction activities are important to slow down the ever increasing rate of waste generation in local and city councils. One example of waste reduction is volume reduction of waste which involves cutting the amount of waste generated by using less materials in the first place. Waste production also encompasses the production of products which can be recycled much straightforwardly. Other options the industries can embark on include the redesign of products,

material use changes and restrictions on specific product types and the role of the local councils is to ensure that industries abide by this.

The approach of waste reduction should be broadly applied by including actions that can be taken by industries, individuals, commercial entities and government departments and agencies. For example, industries role in waste reduction can be through raw material substitution and redesign of products and processes. On the other hand, individuals (town dwellers or users), commercial enterprises and agencies can use their purchasing power to create a demand of low waste products or items produced from recycled materials.

Importantly, waste reduction efforts should also focus on consumer behaviour through education and awareness messages from the media to cause desired behavioural and attitudinal changes.

Recycling and composting

This means that the material is reprocessed before being used to make new products. The solid wastes like plastics which are a major pollutant in many local councils and cities can be recycled to make other plastics for usage. However, others argue that this is costly and not sustainable but evidence shows that there are countries where this is practiced and it successful. For example, other countries like Rwanda completely banned the usage of plastics and hence achieving waste reduction.

Biodegradable organic wastes such as food and garden waste can be converted into compost in a natural biological process. Composting can be done by individual householders and community groups or on a commercial scale. On the larger scale, the waste from an entire town or city could be composted if sufficient land, labour and equipment is available.

Waste transportation: This includes the collection of waste from collection centres, as well as from transfer stations where waste may be concentrated and reloaded onto other vehicles for delivery to the landfill. In this case, there should be adequate and suitable vehicles for transportation of the wastes.

Waste disposal: The most common way of managing these wastes is through landfills, which must be properly designed, well-constructed and systematically managed.

Other measures may include use of dustbins in places such as shops, bus depots, offices, schools and homes where waste can be temporarily disposed of waiting for collection to other sites then transportation to landfills or recycling plants. Ensure that animals and people are protected from the contents of the dustbins. This can be done by done by using the right dustbins and regular emptying of the dustbins. In all the efforts, ensure that there is multi-sectorial and community engagement. Concerted efforts in management wastes is one of the sustainable ways of waste management.

The Household Water Treatment Processes

Household water treatment improves water quality and reduces diarrheal diseases which are common in developing countries (CDC) and Malawi in particular. There are five main proven treatment options which are widely implemented in many developing countries and these include: water purification, pre-treatment, coagulation, flocculation, filtration, disinfection, chlorination, water distribution.

Water purification

Drinking water sources are subject to contamination and require appropriate treatment to remove disease-causing agents including Cholera.

Conclusion

The government of Malawi must implement preventive measures and have a plan in place to eradicate diseases brought on by inadequate hygiene and waste management in light of the cholera outbreak in the country.