MUNICIPAL WASTE MANAGEMENT DISPOSAL TECHNOLOGY AT OTAMIRI RIVER OWERRI NIGERIA

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ABSTRACT

Perceived hazards related to waste disposal have led to this study were many people have little confidence in government or industry to preserve and protect public health in the context of waste disposal, waste disposal sites are essential if society is to function properly be it a sanitary land fill for municipal waste an incinerator that burns urban waste as hazardous waste disposed operation for chemical materials. Many waste management programmes procedures involves simply moving waste from one site to another and not really managing it. Waste from urban areas may be placed in land fills, causing new problems while methane gas or noxious liquid while leak from the site and contaminate the surrounding areas. Methane produced from land fills when managed well is a resourced for as fuel. An integrated waste management (IWM) policy concept is advocated I this study this management alternative involves, re-use sources reduction, recycling composting, land fill and incineration and preparation of Biogas. A system design model of the economy showing flow of various grades of resource have been treated of this study. The input-output and waste vectors and the wastivity productivity relationship and methodically presented.

Key words: Integrated Waste Management Design Model.

INTRODUCTION

This study proposed and integrated municipal waste management disposal technology (IWM) procedure in the countries of Otamiri River in Owerri Nigeria waste Africa. The process is a set of management alternatives involving re-use source reduction recycling composting land fill and incineration (Relis P. and Dominski A. 1987) the tendency of this technology is to reduced the weight of municipal refuse by adopting better design of package to reduce waste to establish recycling programmes and large scale composting programmes.

MATERIALS AND METHOD

The schematic diagrams of the system model of the site specification of Otamiri river waste dumped is shown in figure1. Some open dumps have been closed and new open ones are band apart from this many cities in Nigeria notable Lagos, Abuja, Calabar, Port Harcourt, Enugu and Kaduna to mention but few adopted different efficient methods of disposing the waste. Dumps are allocated were every land is available without regard to safety health hazard and asthetic degradation. As observed at national low areas in Owerri dumps such as swamps, flood plains and hill side areas above or below the two.

Sanitary land fill

This is designed to keep waste to small area reduced volume and cover it soil. This gives access to insects, rodents and bird. Sanitary land fill pollute ground water or surface water hence leacheate noxious mineralize liquid transporting bacterial pollutants abound. It is noted that life scale composting is carried out in controlled areas by mechanical digesters (Schmeider W.J. et al 1970) this techniques is observed in Europe and Asia were there demand of this for intense farming. The composting system is an essential component of IWM.

Incineration

This is a process in which compostible waste is burnt at temperature of about 900-1000 C^0 or 1650 to 1830 ^0F) and ash is dispose of to land fill. Problems of maintenance and waste supply may be envisaged though 50% volume reduction in waste abound. Incineration in urban area is not very ideal not a clean process. Air pollution occur and toxic ash. Incineration at the Otamiri side is not proper. Smoke starts from incinerators is likely to emit oxides of nitrogen and sulfur which lead to acid rain, heavy metals notably,, cadmium, mercury and carbon dioxide which is related to global warming may be experienced. The modern incineration techniques facilitates smokes starts are fitted with special devises to trap pollutants hence the process of pollutant abetment is rather expensive as well as the plants. Government could be up to subsidize the cause with an investment of 8 million naira adequate number of incinerators is possible to be constructed in Owerri today to burn 60% of the waste.

Similarly, the same investment in source reduction recycling and composting could result in diversion from land fill 50%. In the city 15% of the municipal waste is disposed up adopting incinerators giving rise to about 5 million tones a year. Energy could be obtained and economic option of revenue accruing could be realized it is proposed that a combination of reusing, recycling and composting reduced the volume of waste considerably. The waste tonnage can vary widely rather in the higher income countries the current production id about 1 tonne per house hold per year. In house hold food waste can be minimized. In the house office or other institution paper can be printed or photocopied on both sides. Consumers can buy goods with least packaging.

SYSTEM DESIGN OF WASTE FLOW

Consider a waste flow in basic system. It involves the system boundary environment main system recycling system and desirable output as well as undesirable output. The desirable out put is usually termed as out put (O) is treated as waste (W). The waste flow in basic systems and the block box representation can be designed.

According to the principle of conservation total input to the system = total output from the system = desired output + undesirable output is = output + waste.

Or $I = O + W$ (1)

The main objective of waste management is to minimize "W" both by waste reduction and waste reuse or recycling. The above equation may be re-written as $O = I - W$

Dividing both the size by I we have $O/I = I/I - W/I$.

Or productivity is = I –wastivity (2)

The wastivity for each type of input thus indirectly accesses the productivity for each type for input. This indicates that wastivity and productivity are complementary to each other bearing the inherent cause effect relationships, if the cause i.e. wastivity is checked the effect i.e. Productivity will automatically be improved. the productivity may be conceptualize as primal, while the wastivity as dual formulation and all the advantages of duality can be exercised by applying the concept of wastivity. Further, many a times production and productivity are confused to be the same while the reduction in wastivity means the control of the waste generated of all kinds leaving no scope for such confusion. Hence wastivity may treated as an indirect measure of productivity. I certain cases it may be convenient to measure the productivity directly while in majority of cases that measurement of wastivity may offer an added advantage.

CONCLUSION

Resource grading and wastivity is commented. It is hypothesized that resource is available free of cost to the economy. let Cg be the cost incurred to obtain one unit of resource of gth type, then this conjecture states that Cg >O>g. in certain cases it may be negligibly small (say و), while in other it may be exorbitantly high (say M). These include the resources which can not be economically extracted with present technology. The different resources may be classified as;

Grade	Cost incurred	Type of resources
1.	Cg = و	free nature resource
2.	Alpha is less than Cg less M divided into available resources can be further sub different grade	
3.	Cg = M	unavailable resource

The cost incurred means that the units of resources of grade 1 and 2 have been converted into resource of grade 3 (Paul C. Njoku 2003).

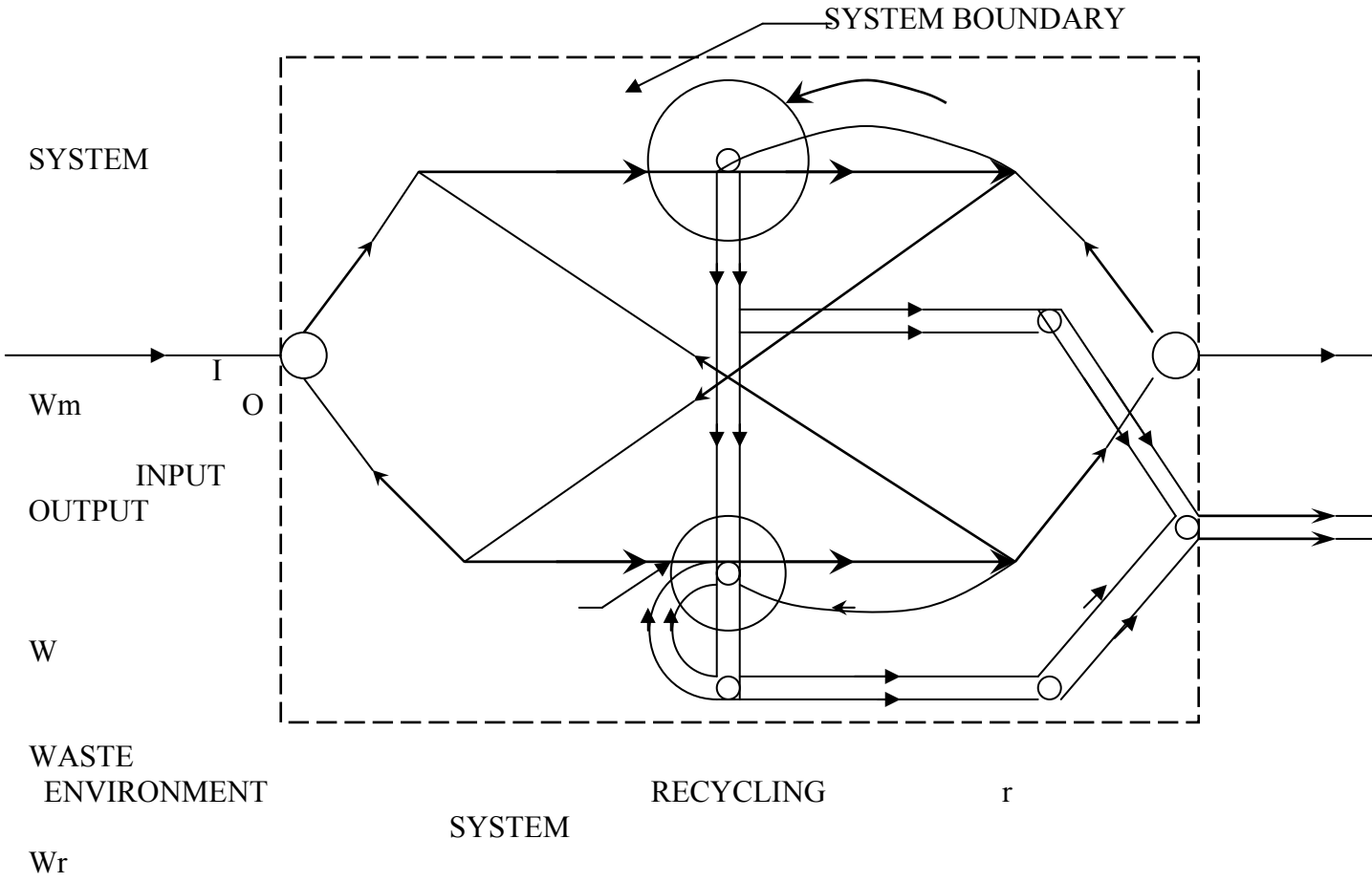

Figure 1.: Flow in basic system

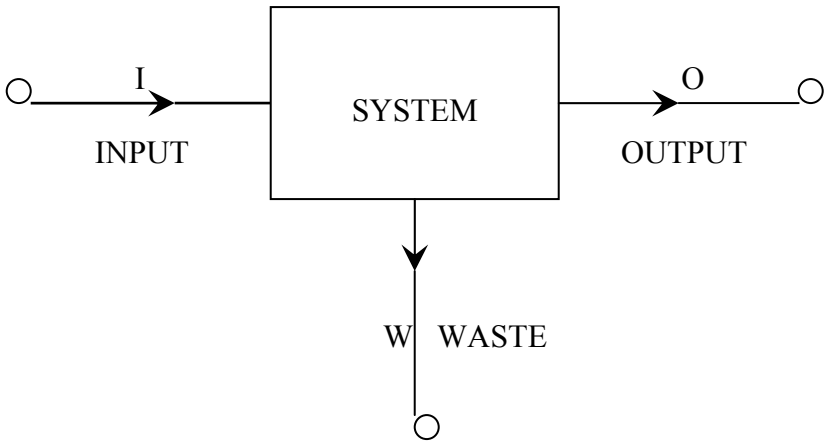

Figure 2.: Black – box representation

In economic system the resources of grade 1 and 2 are wasted. The grade 1 resources are not utilized hence, there is not waste. Since grade resources are almost freely available the main emphasis of waste management is focused on grade 2 resources.

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