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## **A CASE STUDY ON VIVAM AGROTECH - SOLID WASTE MANAGEMENT**

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### **About VIVAM AGROTECH**

Mrs. Nirmala Kandalgaonkar, Proprietress, Founded Vivam Agrotech in 2001. The company works in the field of solid waste management by providing consultancy along with technology solutions such as vermicompost, biogas, mechanical & bacterial composting, and power generation from biodegradable waste. The proprietress' scope of work includes human relation, marketing, personal relations and generating awareness about solid waste management in the social as well as governmental sector. She is having ability to motivate people and delegate work. She combines strategic thinking with strong execution skills. Being an active social worker since young age, it's been her policy to give jobs to social help groups (SHGs), whenever possible and well suited, in Vivam Agrotech's scope of work. The social activities of the company are also looked over along with the operations of an NGO chaired by her.

VIVAM AGROTECH is in the field of solid waste processing such as Composting, Vermicomposting, Mechanical Compost and Biogas since last Ten years and in city Solid Waste Management for last Five years. All these technologies developed by VIVAM AGROTECH are most suitable for city waste management and sustainable development of the city.

VIVAM AGROTECH is into the business of converting waste to energy. They have plants to treat Solid wastes like Municipal Solid Waste, kitchen, canteen, poultry, cow dung, food processing and agricultural wastes. They specialize in Municipal solid waste treatment plants for power generation. They have Biogas plants from 4 Kg to 400 tons waste per day. Vivam is now expanding its business in abroad. Some of these projects are in pipeline like Kenya and South Africa. VIVAM is authorized technology holder of BHABHA ATOMIC RESEARCH CENTER, MUMBAI for Biogas Generation Plants.



## Type of Solid Waste

Solid waste can be classified in many ways according to its source, composition, phase, treatment required etc. Table - 1 describes type of wastes on basis of its source. It includes residential, municipal, mining, agricultural, industrial etc.

**Table 1.** Type of Industrial Waste

Source	Typical Waste Generators	Type of Solid Waste
Residential	Household activities	Food waste, paper, cardboard, plastics, wood, glass, metals, electronic items etc.
Industrial	Manufacturing units, power plants, process industries etc.	Housekeeping wastes, hazardous wastes, ashes, special wastes etc.
Commercial & Institutional	Hotels, restaurants, markets, office buildings, schools, hospitals, prisons etc.	Bio-medical waste, Food waste, glass, metals, plastic, paper, special wastes etc.
Construction and Demolition	New construction sites, demolition of existing structures, road repair etc.	Wood, steel, concrete, dust etc.
Municipal services	Street cleaning, landscaping, parks and other recreational areas, water and wastewater treatment plants	Tree trimmings, general wastes, sludge etc.

## Products of VIVAM

1. Biogas – (i) Small  
(ii) Medium  
(iii) MSW
2. Mechanical Composting
3. Carbon Credit – (i) Carbon Treading  
(ii) Carbon Calculator
4. Vermicomposting
5. Solid waste Management



***The challenges faced by the company:***

**1. Addressing and handling the population to be served**

Municipal solid waste collection arrangements of cities in the emerging world usually serve very restricted part of the urban people. The people still continuing without a waste collection service are generally the less-income population existing in peri-urban areas.

One of the main reasons, is the lack of financial resources to cope with the increasing amount of generated waste produced by the rapid growing cities. Frequently inadequate charges imposed and insufficient funds from a chief municipal budget cannot finance satisfactory stages of service. Additionally the obtainable funds are frequently allotted to the high-income parts with greater tax crops where people have more governmental impact, so the poor in peri-urban areas remain unattended. Nevertheless not only financial problems have an effect on the accessibility or sustainability of a surplus gathering service. In many circumstances it is also practical matters that delay an effective service facility and coverage of large population. Frequently the "conservative" gathering method as advanced and recycled in the developed states is practical in evolving countries. The used vehicles are classy, costly and not very easy to operate and retain, thus often scarce for the situations in emerging countries. After a short time of procedure typically only a small part of the vehicle fleet remains in process.

**1. Working productivity of Solid Waste services and partial use of the informal and formal private sector undertakings in Solid Waste Management.**

Municipal consultants in emerging countries generally spend from 20 to 50 percent of the total municipal spending for the solid waste (SW) service. Though even at such a stage of spending the level of service is low. Only 50 to 70 % of the solid waste is gathered attending less than 50 % of the population, and once gathered, it is generally prepared of incompetently in unrestrained open landfills. Functioning inadequacies of Solid Waste services functioned by municipalities are mostly

due to incompetent recognized organizations, incompetent managerial processes,



lacking capability of the institutes involved and use of unsuitable technologies. On the other hand, the informal sector has usually been playing a significant role in Solid Waste Management, particularly in residue retrieval. Though, as their actions can disturb the process of landfills and allocation places they are very terrible and therefore are opposed by the consultants.

### **1. Management of (non-industrial) dangerous waste**

Pathogenic waste, produced by hospitals and clinics can be considered the greatest significant waste product from the group of non-industrial dangerous waste. About 85 percent of the total waste is produced by hospitals and clinics can be categorized as consistent domestic wastes, whereas 10 percent can be observed as communicable and 5 percent as non-communicable but dangerous wastes. So it is vital that the produced waste be divided, as the non-communicable and non-communicable waste can be accomplished like normal local waste. Dangerous and communicable waste should be gathered in diverse groups as per the way they should be treated at advanced steps. This grouping can be sharp (needles, scalpels etc., all presumed to be communicable), non-sharp communicable wastes, pharmaceutical and chemical deposits and other dangerous wastes. Though most hospitals need departure of their waste and the burning of their pathogenic waste, maximum of the burners are generally out of order and these wastes regularly go in the municipal waste category. This leads to grave health risks to the public, particularly children, to scavengers, gathering staffs and to labors at the landfill.

### **1. Final discarding of solid waste**

Maximum of the municipal solid waste (MSW) in emerging countries is discarded on land in a more or less unrestrained way. Such insufficient waste discarding generates grave environmental harms that may spoil health of humans and animals and become the root cause of economic and other well-being losses.

The environmental deprivation triggered by insufficient discarding of waste can be stated by the adulteration of shallow and ground water through leachate, soil adulteration through straight waste contact or leachate, air pollution by burning of wastes, and the dispersion of illnesses by diverse courses like birds, insects and rodents.



Because of urban growth, in the previous few years unrestrained discarding sites have often been surrounded by settlements and lodging domains and currently are frequently centrally situated. Such unrestrained junkyards with misplaced place organization straight away compromise the health of the people existing close to, or on the site. It is nevertheless immature to ponder that the other people will not be exaggerated as the chemical and biological pollutants from inadequate discarding will certainly find their way to them. The community may be affected by the adulteration of their drinking water, by soil adulteration distributed on to the water and food chain and through the dispersal of viruses by diverse courses. People existing close or on the location are repeatedly subject to straight transmission of adulteration from hand to mouth and complete breathing of hazardous unstable mixtures and sprays. There is also a straight physical hazard involved, stemming from likely waste victories, failing landfills, bursts, fires and waste associated carriage mishaps.

Monetary and official limitations are the key causes for insufficient removal of waste specially where local governments are not strong or underfinanced and quick population progression remains. Financing of harmless removal of solid waste postures a problematic problem as most people are eager to compensate for the elimination of the waste from their close environment but then “out of sight – out of mind” are usually not worried with its final discarding.

The current discarding condition is likely to worsen even more in the coming days because till now the comparative essential place of the discarding places, i.e. near to the gathering area, and the frequently disappeared organization labors, has allowed governments to position of the municipal solid waste at minimum cost. This will transform rapidly with quick development, payments and housing estates now progressively enclose the current junkyards and the environmental ruin related with these junkyards straight touch the population. Waste removal places are so also subject to rising resistance and it is suitable progressively demanding to find new sites which find public consent and which are situated at a sensible space from the assortment zone. Siting landfills at better spaces to the essential gathering part suggests advanced transmission costs as well as supplementary funds in the organization of roads therefore increasing the financial problems of the accountable experts. Also, a growth in service reporting will even worsen the dumping problem if the amount of waste cannot be reduced by waste retrieval.



**Questions:**

1. How can the operational efficiency be improved?
2. Suggest the most realistic and promising approach seen to improve the situation of low-income areas.
3. According to you which issue is the most difficult to tackle? Explain.
4. Give some suggestions for better management of waste.