

# Smart Dustbin

By – Ketaki Indhu Nitin Saurabh,

M.S. Ramaiah Institute of Technology, MSR Nagar, Mathikere, Bangalore 560054.

## 1 ABSTRACT

---

We propose to create a whole new industry. We mean to change the way waste is treated nowadays with an innovative unique ecosystem which revolves around our **“SMART DUSTBIN”**. Not only will this ecosystem help make management effortless, but also blossom into a proper industry which will bring lots of revenue to the investors. This system will improve the society, help the environment and bring revenue, **what more do you need?**

## 2 DESCRIPTION

---

We propose a waste management system at the heart of which is the **“SMART DUSTBIN”**. It is a proof of concept that is developed by us which detects the different kinds of waste – plastic, metal and wet waste, and segregates them.

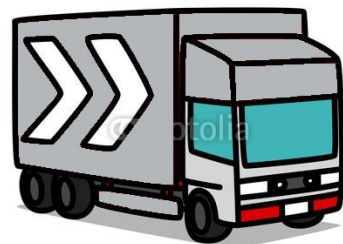
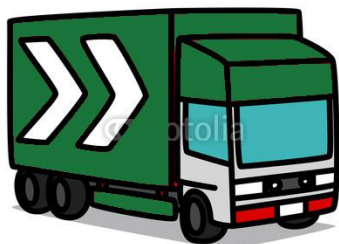
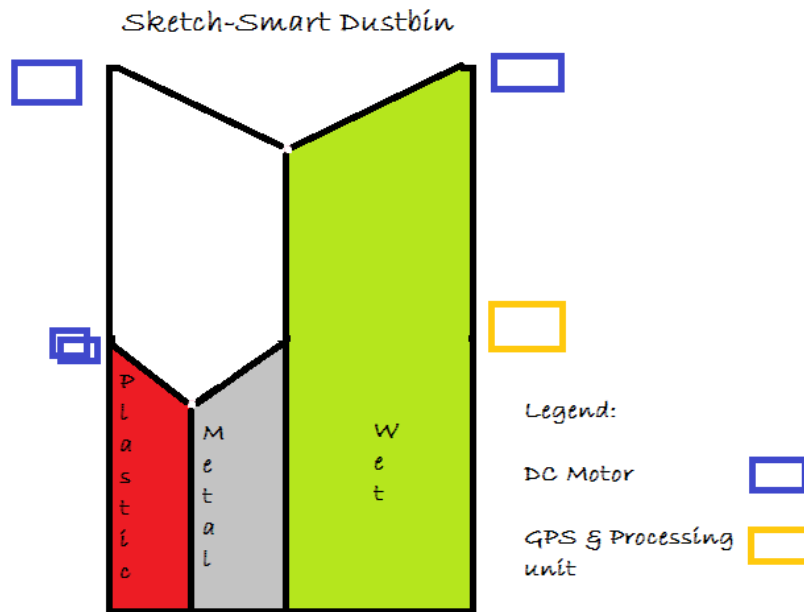
This dustbin will be employed in homes at a domestic level. It will transmit data via a simple GPS connection to the central server. The data from all these dustbins will be stored on a central server. The data will contain how much plastic, metal or wet waste is generated. This data will be aggregated for an area and sent to the government. A web application will be developed for this purpose. The government will be have access to the kind waste generated by a district/state and also determine its percentage.

There will be three kinds of trucks - **Green** for wet, **Red** for Plastic and **Silver** for metal. Using the data the government can map the route of these trucks. These trucks will go to **specific points** in a district and collect the waste that they are supposed to collect.

The **“green”** trucks will go to the bio gas plants and other such facilities that **handle wet waste**. The **“red”** trucks will go the plants where they **recycle plastic**. The **“silver”** trucks will go to plants where **metal is reused**.

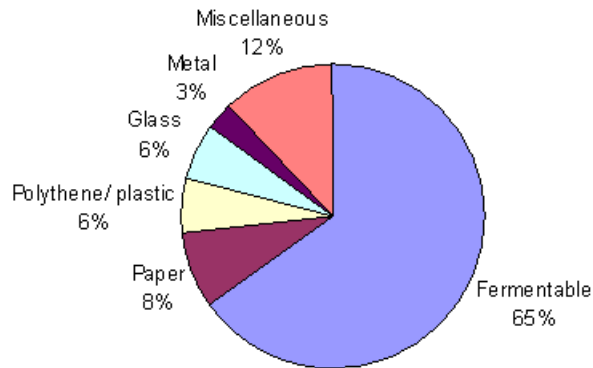
The prototype of our **“SMART DUSTBIN”** is shown in a video which we have uploaded to youtube. You will find it at this link –

<https://www.youtube.com/watch?v=09odCLopdrc&feature=youtu.be>



## 2.1 EXAMPLE

Let's consider Bangalore as an example. Assuming smart dustbins are implemented in this area, we propose our business plan. The following is the graph denoting waste produced by Shivaji Nagar 'only'. (Wet waste generated is maximum)



The government will come to know what kind of waste is produced and where exactly by the help of the central server integrated with the dustbin. Also area based waste generation is known. The government will send the different garbage collection trucks accordingly. If an area has generated wet waste to a maximum extent (Shivaji Nagar), then a, “green” truck which collects wet waste is sent to that area. The truck will also have small compartments to collect other category of wastes. Like this, we can also save a lot of fuel and man power.



The area circled green produces wet waste to a maximum extent so a “green” truck which collects wet waste is sent to these areas. The other kinds of waste produced in these areas will be collected by the same truck in a different compartment. This “green” truck is sent to a renewable energy plant. Similarly with the areas which produces other kinds of wastes.

The waste finally obtained is completely segregated. The government can reuse and recycle the plastic and metal waste. The wet waste can be used to generate energy. This will cause the revenue to flow without having to invest much.

### 3 VALUE PROPOSITIONS

---

- ✓ The segregation of waste at industrial level is tedious and very inefficient. Instead we are segregating at the root, which is at a **domestic level**. This is more reasonable and effective. The waste management system is thus well-organized.
- ✓ Collecting bundled plastic or metal or wet waste from an area provides the government with the chance to recycle, reuse and re-utilize it efficiently without having to spend time segregating it using complicated procedures. *The situation now* - All the waste is just bundled together as one and dumped. Trucks come pick it up as one and dispose it at disposal sites because nothing can be done of mixed waste.
- ✓ The use of the **3 - truck system** saves the diesel and man power. The route is mapped out for the trucks using the data collected at the **central server**. The source and the destination are known to trucks.
- ✓ The enhancement of the environment by the setup of this system is of a far greater value than all the others.
- ✓ Plastic has a very slow decay rate and it *harms the environment*. The only way we can deal with it is by recycling it. But how will we recycle if it is mixed with tonnes of other waste? That is why waste segregation becomes important and that is where our system comes becomes important too.
- ✓ **Wise use of waste** - It inspires people to use waste in unique ways which people wouldn't have thought of before. "It stimulates people to think differently!" After all you are getting some kind of quantitative amount of different waste not only a big sludge.
- ✓ By putting all the three dustbins into one, we are able to overcome a *major obstacle* in the segregation of waste - The **laziness** and **unawareness** of us humans.
- ✓ By making the waste management into a full grown industry it will spread awareness on how the waste is recycled, reused and re-utilized.

### 4 KEY ACTIVITIES

---

Steps for execution -

- i. Ensuring that every home has a smart dustbin.
- ii. Segregating your trucks into green red and silver.
- iii. Teaching the government to use the application and accessing the data.

### 5 KEY RESOURCES

---

- Building the dustbin will require **technical** resources.
- Painting the trucks, so paint will be required! Lots!
- A **central server** will be required. A big server!

## 6 KEY PARTNERS

---

The **government** will need to be a major partner here as collecting of waste and handling is done by the government. Waste management is a big problem and solving it should be there *utmost priority*.

Other sectors like the **metal industry, plastic factories** and **renewable energy companies** will become vital partners as the ecosystem grows.

The truck drivers and their trucks also form an important community and keeping them happy is *indispensable*, so too is keeping the sweepers happy. Half of the revenue has to go to them.

## 7 BUSINESS VIABILITY

---

There will some investment in the beginning but the investment is nothing compared to returns we will getting for improving the environment and making the society a better place. Besides, the revenue generated should be enough to cover the investment in setting the system up.

### 7.1 COST

The Smart Dustbin will not cost more than 200-300 **rupees**.

### 7.2 CUSTOMER RELATIONSHIPS

Once the dustbin has been set up at homes, there is not much to be done. There is *no servicing* required.

### 7.3 SALES CHANNELS

The dustbin will be made **mandatory** by the government.

### 7.4 REVENUE STREAMS

Revenue streams will be opened for the government through the **metal, plastic** and **renewable energy industries/ sectors**.

## 8 ANNOTATED REFERENCES

---

We are from Bangalore and there could not be a better city for generating references. Bangalore has long been the *victim* of waste management. Ever since Bangalore became a major metropolitan city it has been facing the *waste management crisis*.

The government has tried lots of policies and methods to introduce some kind of efficiency in the way waste is being handled but it has all been a failure. From spreading awareness in schools to enforcing the public to separate their waste manually, not a lot of it has worked. Mainly because the people are very lazy and still unaware. After it is waste and who cares which dustbin you put it in.

This article brings out the *crisis* - which waste management actually is.

<http://www.thehindu.com/news/cities/chennai/in-bangalore-crisis-in-waste-management-forces-change/article5016622.ece>

This article shows how vast the spectrum is for turning waste management into a big industry. Here professor S Rajendran explains how trash can help generate revenue. This is only the tip of the iceberg.

<http://www.thehindu.com/sci-tech/energy-and-environment/gain-from-garbage/article5379705.ece>

This is a private organization that goes to industries and decides what kind of waste it produces and provides solutions on how to handle it –

<http://www.wm.com/index.jsp>

We do it automatically and on a general scale not only on the industry level which is highly in - efficient. It collects the same kind of waste in bulk. They have no way of knowing what kind of waste it is. It is a very labor-intensive tedious way of doing what we are trying to do. We offer a better, well-organized solution.

This article tells about the safe disposal of bio-medical waste.

<http://www.hindu.com/2010/12/18/stories/2010121862550400.htm>

This article shows the importance of waste segregation and management

<http://www.hindustantimes.com/news-feed/chunk-ht-ui-indiasectionpage-htfordelhi/delhi-may-drown-in-its-own-waste/article1-1052381.aspx>