

Free term paper on recycling of plastic goods using municipal waste: innovative b...

[Business](#), [Management](#)



Forewords

The term recycling refers to the process of changing waste materials into usable, new products, thus, preventing the wastage of useful materials. It leads to the reduction in the consumption of fresh raw materials, usage of energy, water pollution, and air pollution. It obviates the need for conventional waste disposal, and the greenhouse gas emission is far less than fresh production of the product. There are several materials and wastes that can be recycled including plastics and others. Modern waste management includes recycling as a key component and is the third aspect of waste management hierarchy which includes Reduce, Reuse, and Recycle (“ Recycling”). Everything we use turns waste sooner or later including plastic items such as plastic bags and the likes. It is necessary to understand plastics to determine how to recycle their wastes. Plastics consist of long chain molecules referred as polymers, various types of which can be produced from hydrocarbons derived from natural gas, coal, oil and organic oils. These polymers are transformed into different plastic materials with certain properties. Thermoplastics are plastics that can be easily recycled, and become soft on heating. Thermosetting plastics get hardened on heating, and are usually employed in electrical appliances, but are unsuitable for recycling. Thermoplastics are durable, moldable, light, economic, hygienic, and most suited for a variety of applications such as car manufacturing, food and product packaging, and housing and agricultural products. These can be transformed into new products repeatedly, and hence, are the focus of the present paper (Berg, 2009).

Plastics impact environment negatively through every stage of their

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existence, right from manufacturing to utilization, and disposal.

Manufacturing needs fossil fuels and non-renewable energy to burn plastics. The process releases a significant amount of smoke containing hazardous substances, small particulates, and greenhouse gasses containing hazardous substances, small particulates, and greenhouse gasses that vitiate the environment. So far as their disposal is concerned, most plastics not being biodegradable persist in the environment for several years. These can lead to blockages of sewage and drainage systems causing floods, water logging, and spread of water-borne diseases. Plastic products especially the packaging on being disposed of immediately after purchases, the requirements of landfill spaces for disposal of plastic wastes are of great concern for environmentalists worldwide (Berg, 2009).

Why Recycling Business?

The recycling of plastics saves energy and reduces greenhouse emissions. It saves the consumption of non-renewable sources such as oil and gas.

Additionally, the recycling industry provides employment opportunities and livelihood to millions of populace all over the world especially in the developing countries. Despite plastics being increasingly used in developing countries like Asia and other continents, even then per capita consumption of plastics in the countries of these continents is much less than in developed countries. Hence, there is a greater scope for a business plan in the world especially in the developing regions due to several positive factors. These factors include cheap labor, the culture of reuse and recycle in many countries. An informal sector is ideally suited to undertake recycling

activities on a small scale and a friendly legal environment for recycling of plastics. In addition, low transportation costs, low cost of materials, and scope for innovative use of manufacturing processes (Berg, 2009). Thus, an innovative business plan for recycling of plastics collected from the municipal waste or garbage is feasible economically.

Business Plan

Thinking of a business plan or idea is the first step. The next is the feasibility of the business idea which is based on certain information collected about the business being started. The structuring of ideas, collection of information systematically, putting it in black and white, and translating these into a financial sense are parts of a business plan. A business plan helps one to decide whether one should start a business or not. It helps to organize his ideas for starting and running the business in the right manner and presenting one's business ideas in a coherent manner to other stakeholders as a lending institution. A complete business plan enables one or enterprise management to evaluate and estimate whether one's business idea is economically viable, technically feasible, and profitable. The term "Enterprise Management (EM)" refers for a business having partners for the purpose of managing the business effectively. A well-defined business idea provide opportunity to all concerned partners in order to understand associated technicalities and outcomes. It also helps in increasing volume of the business and profit (" Business Idea"). A business plan takes into account the type of business to be started based on the availability of raw materials and labor. Moreover, it includes the equipment to be used, the finished

products, the marketing strategy, tasks to be allocated to group members, costing, and financial planning and management. It contains answers to what type of business to be started, who are likely to buy the products, how to market the products, and which need of consumers is going to be fulfilled by the products. (ILO, 2007)

Plastic Recycling Business: An Understanding

Prior to starting an enterprise in the plastic recycling sector, investigations of all factors afflicting the business have to be performed. Collection of various information regarding plastic business and its scope is essential.

Investigations should be directed towards raw materials, types of plastics available; where, in what quantities, the quality, and the cost involved in the collection of waste plastics from the municipal waste or garbage. Next, the technology available and feasibility of its deployment, the machinery required, the consumption of energy, lubricants water, fuel and so forth. The type of premises needed, and the level of investment are need to be taken into account. The third factor to be investigated relates to the market prospects of plastic recycling business, the customers, and the selling price based on production cost and transportation (Berg, 2009).

One must know what types of plastics can be recycled easily and profitably to venture for a recycling of plastics industry. It is widely believed that the following six types of plastics are easily recyclable. These include Polyethylene, High density polyethylene, Polyvinyl Chloride (PVC), low-density polyethylene, Poly Propylene, and Polystyrene. Thus, collection of waste plastics is of utmost importance as any business requires the constant

inflow of raw materials for its successful run. It could be done through middlemen, traders, or scavengers who pick waste plastics from the garbage. One may get the involvement and cooperation of the local municipality in this pursuit. Regularity of supply of waste plastics is a must for the success of the plastic recycling business (Berg, 2009).

The Recycling Process

The recycling process starts with the storage of waste plastics, materials under process, and the finished products for which large spaces are required. Plastic waste materials have large volumes, so these take large space. Then sorting and identification are done under which sorting could be done manually or through some equipment. Where there is cheap labor available sorting, and also identification can be done manually. For identification, the polymer identification code should be used. Simple tests can be done to distinguish common types of polymers to separate for processing. There are water test, burning test, and fingernail test that could be done. Bailing refers to the selling of the collected waste plastics to other processing units. The plastics so collected should be washed, and large sized plastics should be cut appropriately to facilitate easy handling. The shredding of small pieces of plastics is done through a shredder that has a chopper. The chopped plastics turn into plastic flakes that are further processed. An agglomerator consisting of vertical crum set of fast moving blades in the bottom is used to process clean film sheet. The plastic sheets are chopped into thin film flakes in the agglomerator. The process of cutting and the resultant friction energy cause plastics to melt and form crumbs, and is referred as agglomeration.

The process increases the bulk density of plastics that can then be fed directly into the extruder. Some entrepreneurs prefer to convert the agglomerate or crumbs into pellets prior to the processing. Plastic pieces on being fed into the extruder are heated. Then they are forced through dies to turn into plastic spaghetti that are cooled in water prior to these being chopped into pellets (Berg, 2009; Patela et al., 2000).

Further processing includes extrusion used to manufacture new products that are usually in the shape of a continuous tube of plastics like a hose or piping. The extrusion machine involves heating the tube by an Archimedes screw, and the die is used to shape the plastic polymer. Another method is referred as injection molding under which the plastic polymer comes out of a nozzle into a split mold. The quantity of polymer being forced out is cautiously controlled. Other processes used in the recycling of plastics include blow molding and film blowing that involves compressed air and blowing of air to give shape to the recycled plastics (Berg, 2009).

It is important to have a supportive government policy for the success of a plastic recycling business. The government is usually concerned with the preservation of the environment, and not much issues are involved in obtaining the necessary permission for setting up the plastic recycling business. However, proper effluent and waste management, prevention of pollution, and close cooperation with the local regulatory bodies are essential for the success of the enterprise. The compliance with the local laws and rulings for the preservation of the environment is a must (Berg, 2009).

There is a wide variety of plastic products that can be produced by recycling the waste plastics collected from the garbage. However, the inconsistency of

raw materials limits the market. Some of the manufacturers incorporate only a small quantity of well-sorted recycled material into their products while others may utilize a higher percentage of recycled polymers. All these depend on the quality of the products. In many developing countries, raw materials being expensive and standards, the scope for recycled plastic materials is wide and extensive. The products include building materials, shoes, kitchen utensils, office equipment, sewage pipes, and even beauty aids (Berg, 2009).

The complete business plan includes efficient management of finances besides meticulously following the processes involved. Financial management, in modern times, has added significance without which no business enterprise can develop and thrive. Financial statements such as profit and loss account, trading account and other records relating to taxes and compliance with environment laws are essential (" Business Idea").

Cost of Production and Services

This proposed business plan is prepared for recycling of plastic obtained from municipal waste or garbage. The material like paper, fiber glass and so forth will be bought directly from municipalities that will be available on marginal cost. There is a need to buy deficient raw material indirectly. The civil society and NGOs can also be involved to obtain deficient material. The management has the intention to supply refined raw material to different industries that manufacture a variety of products as discussed in an earlier part of the paper.

There are various other costs that do not need to pay every month like

depreciation, insurance, license and so forth. These costs also fall under indirect costs. The indirect estimated cost per month and depreciation cost for various equipment and accessories is presented in Table 1 and 2 (ILO, 2007).

Figure 1 is illustrating mechanism to calculate the total cost. This is important to evaluate prior to deciding profit margin based on different factors like competitors, consumers and so forth.

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Figure 1: Flow Diagram to calculate total cost Source: ILO, 2007

Source: ILO, 2007

Capital Required to Launch the Business

- Construction at Premises for Business
- Construction of sheds for processing of plastic = \$23000
- Equipment
- Storage Cages= 3x 12500 = \$37, 500
- Shredder = 2 x 13000 = \$26000
- Vat Machines= 3x 5000 =\$15000
- Beater Machine = \$14500
- Mold screens = 2x 2500 = \$5000
- Hand tools (Scissors, Gloves, and Rulers etc.) = \$10, 000
- Sub-Total = \$108000
- Working Capital
- Stocks of raw materials = 50000
- Salaries for two months = 150000

- Promotion = 25000
- Rent (For Two Month) = 6000
- Other costs = 25000
- Sub-Total= \$256000

Total Capital = \$ 387000

Net Annual Profit (In Million) Based on Targeted Sale in 1st Year of Business

Sales per Annum = \$ 53000

Cost of Material per Annum = (15800)

Cost of Labor = (14650)

Gross Profit = \$26550

Indirect Costs = (1760)

Net Profit per Annum =\$24790 million

Conclusion

An innovative business plan for recycling of plastic wastes must be a well thought out plan having an eye into all aspects of the business. This is necessary to consider the availability of raw materials and marketing of the products prior to the start of the business. In the recycling of plastics, the environmental pollution is a serious concern that has to be looked into before the enterprise.

In the collection of waste plastics from the garbage, municipalities have their roles. The processes of recycling are there since decades, but one must exercise caution in selecting the process taking into account. It includes local tax and environment laws, availability of cheap labor, market position,

competition with existing units, and needs of consumers. The selection of the variety of plastics to be used for recycling, the quality to be produced, and the process to be adopted can make one's business plan innovative. Last, but not the least, this innovative business idea is profitable and environmental friendly. The use one's business acumen can make a business plan innovative, and successful, too.

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