

Conducting a Study to tackle the issue of plastic shopping bags- A call for Green Environment: A Case study of Hyderabad

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Abstract: Plastic pollution involves the accumulation of plastic products in the environment that adversely affects humans. Plastic pollution can unfavorably affect lands, waterways, oceans, living organisms and marine animals can also be affected through direct ingestion of plastic waste. According to a study, about 8 million tons of plastics are deliberately dumped into the environment globally. Minister for Climate Change Senator Mushahidullah Khan said in the Senate that as many as 55 billion plastic shopping bags are being used each year in Pakistan with their use increasing by 15 percent per annum. Today, Pakistan is the second largest consumer of plastic with the domestic consumption of 2.7 kg, the aim of research paper is to briefly discusses about the types of plastic it's usage and threats to biodiversity and to provide possible measures & practical solution to reduce usage, threats and risks of plastic pollution. The research focuses majorly on plastic shopping bags. The research methodology which author adopted include field survey regarding the types of plastic, their different usage and the measures to reduce it, this paper will also help in providing the alternate of plastic bags which will not only help in reducing the plastic pollution but also will help in making the environment more organic.

Keywords: Bio diversity, Environment, Organic, Plastic pollution, Shopping bags.

I. INTRODUCTION

In 1970 plastic bags have been introduced [1]. Plastic bags gained popularity, as they are available in market in several varieties, it is stated according to a study that 500 billion plastic bags are used every year [2,3]. According to a study after the entry of plastic bags in environment they remain for 1000 years to degrade & hence pose a disposal issue [4]. These plastic bags cannot be degraded through sunlight & micro-organism[5]. Plastic bag accumulation poses several problems which include environmental pollution, deterioration of natural beauty, death of wild & marine biodiversity [6-9]. Another problem due to plastic bags is blockage of sewerage system, it is common in several cities [10-14]. Several researches reported that plastic bags are still causing hazardous environmental effects and no voluntary initiatives have been attempted [15].

Plastic pollution is causing damage to animal & human health, it also damages urban & rural lives & it is because of poor waste management & un awareness of hazardous effect of plastic to the environment [16]. The plastic bags were used mostly in every aspect of life in Hyderabad, they are used for carrying solid & liquids, Field survey told that previously liquids were kept in ceramic pots, but now they are also carried in plastic bags. According to a study plastic bags are doing same job in a cheaper & efficient way as ceramic pots were doing previously [17]. Usage of plastic is increasing dramatically and we can see plastic bag as a source of "environmental pollution". A study conducted at Yemen, stated that plastic bags are the source of bringing the pollution & damaging the environment [18]. In another study, author stated plastic as a "National flower" of Yemen but in contrast some author reported it as volatiles in the air [19].

A study stated that the quantity of plastic bags produced every year by Yemen is about 54000 metric tons [20]. While having more other issues, Hyderabad also faces the problem of plastic pollution, which is damaging the environment, animals & human life, it is not only the cause of plastic pollution but results in several other form of pollution which include, blockage of sewerage which is another form of pollution. It blocks the growth of trees, faint birds and animals to death. Field survey reported that used plastic shoppers are notorious for choking the sewer, open drainage system, spoiling sanitation & creating an overall unaesthetic environment. Currently they are burned on road side, hence the practice of burning them produces toxic gases and furans, which are extensively or intensively inhaled by human being and they are responsible for several diseases associated with lungs and respiratory system. Due to presence of non-biodegradable materials present as raw material of plastic bags, remain for several years in environment [20] It contributed their undesirable impact s for an extended period, as they are used at high quality rate, so the adverse impacts are extremely visible in urban areas.

According to a study it is supposed to be a universal truth that plastic facilitate human being by being a comfortable alternative of leather, wood, glass and metal. [21] Some authors had rigidly stated that, if corrective initiatives are not taken with immediate effect, it will require one planet to dump the non-degradable plastic waste. The concentration of plastic waste on earth, shown by the satellite image specially of oceans shows big white spots specifying accumulation of plastic floating on its surface [22, 23]. Hyderabad being developing city, poses several problems, which include plastic pollution, especially plastic bags locally known as "shoppers". They are the part of every house & shop as they are the cheapest material to be used for keeping & carrying goods. When we go through the streets of residential areas of Hyderabad we examined that every street

has an illegal dumping site for waste and maximum part of the waste site was full of plastic bags, which were polluting the environment. The hierarchy of plastic demand in the world as shown by an author is discussed below. Table # 1 shows the plastic type along with its percentage of demand throughout the world.

Table. 1. Demand of each plastic type throughout world. [24]

PLASTIC TYPE	%
Thermoplastic types polypropylene	21
Low- and linear low-density polyethylene	18
Polyvinyl chloride	17
High-density polyethylene	15
Polystyrene and expandable polystyrene	8
Polyethylene terephthalate	7
Thermosetting plastic polyurethane	6

An author in his study reported that plastic polymers are not toxic, but plastic materials contain some residual monomers & chemical compounds used in the plastics manufacturing as additives, in particular plasticizers are dangerous to human health and the environment, along with some degradation products that may be released during the plastic life cycle [24]

II. AIM & OBJECTIVE

The aim of this research paper is to provide measures for reduction in plastic pollution, for this the objectives include

- Listing out types of plastic it's usage and threats to biodiversity
- To provide possible measures & practical solution to reduce usage, threats and risks of plastic pollution.

III. PLASTIC & ITS TYPES

Plastic can be defined as a manufactured material, which is made from organic polymers which include: polyethylene, PVC, nylon. They can be moulded into different shapes at their softening time and then set to a rigid or elastic form. The society of Plastic Industry (SPI) established a classification system in 1988 and according to them, plastic is classified into 7 categories



Fig. 1: Main market of unit # 12 Latifabad



Fig. 2: Wastage disposal site

which are listed down along with their properties and usage. Table. 2 shows the classification of plastic described with their general properties and common household use. Following are some pictures taken at the time of survey by author. These pictures show the ridiculous condition of garbage bins



Pic. 3: Circulation Space Covered With Plastic Bags



Pic. 4: Open Drainage System, Where People Dump Waste



Pic. 5: Wastage dumping site for market



Pic. 6: Open drainage covered with plastic pollution.

Table. 2: Types of Plastic, general properties along with their household use. [25]

TYPE OF PLASTIC	GENERAL QUALITIES	HOUSE HOLD USAGE
Polyethylene Terephthalate	Clear, Hard & tough, microwave transparency	Mineral Water, fizzy drink and beer bottles, Pre-prepared food trays and roasting bags, Tough Fibre for clothing and carpets, Strapping, Some shampoo and mouthwash bottles
High Density Polyethylene	Semi-flexible, Soft waxy surface, permeable to gas	Detergent, bleach and fabric conditioner bottles, Snack food boxes and cereal box liners, Milk and non-carbonated drinks bottles, Toys, buckets, rigid pipes, crates, Plastic wood, garden furniture.
Polyvinyl Chloride	Hard, Rigid, gas permeability, chemical resistant	Credit cards, Carpet backing and other floor covering, Window and door frames, Pipes and fittings, wire and cable sheathing.
Low Density Polyethylene	Touch, Flexible, soft, transparency, moisture barrier	Films, fertiliser bags, Packaging films, Irrigation pipes Thick shopping bags, Some bottle tops.
Polypropylene	Hard, flexible, high melting point, waxy surface	Bottle tops, ketchup & syrup bottles, crisp bags, crats, plant pot, junk food wrappers.
Polystyrene	Clear, Rigid, Brittle, High clarity	Yoghurt container, fast food tray, video cases, coat hangers.
Other	Flexible, soft, gas permeability	Nylon, Polycarbonate,

IV. RESEARCH METHODOLOGY

The survey of waste dumping sites of different areas was conducted, which help in collecting the data regarding type of plastic waste, few un structured interviews with the vendors & un structured questionnaire survey with scrap shopkeepers revealed the usage of shoppers, perspective of a lay man towards plastic bags. In this regard as the practical experiments were near impossible, in this regard author go through research papers carried out by several researches, throughout the world and also provide some self-strategies to minimize the use of plastic. Hyderabad is the 2nd largest city in Sindh and the 8th most populated city of Pakistan, with a total area of 123 sq. mile, with a huge population of 1,732,693 (2017 census). According to a study, Hyderabad produces 48 million tons solid waste from which 9 % is plastic pollution.

V. DISCUSSION

At the time of survey, the collected data help author about reasons of increasing usage and issues related with plastic bags, which are listed down below in table # 3 and then further discussed below, table # 4 shows the issues related with plastic pollution:

Table. 3: Reasons of using plastic bags

SERIAL #	REASONS
1	Un-awareness about the pollution
2	Disinclination towards any other feature
3	Reasons of using shoppers

A. "Irrelevant issue" for public

The survey told that public suppose it to be a very un-important argument that plastic bags should be replaced by any other feature, as they are supposed to be cheapest material for carrying and keeping things. The main reason behind using these plastic bags is their availability at cheap rates and within the accessibility of public, hence public suppose it to be irrelevant issue to talk about reducing plastic bag.

B. Un-awareness about the pollution

Un-awareness is another point which author point out because most of the people are un-aware about the pollution creating through plastic bags, as they see on daily basis that a large amount of shopper fly from here to there in streets, roads, but it is the limit of ignorant behaviour that they do not take second thought about, what should we do to minimize this pollution.

C. Disinclination towards any other feature

Problem not end at awareness issue, it increases when the public show un willingness towards adopting any other feature, public in Hyderabad is disinclined as they told it is very far from our priorities, we have many other prior issues then using different solution for plastic bags.

Table. 4: Issues due to plastic bags.

SERIAL #	ISSUES RELATED TO PLASTIC BAGS
1	Health issue
2	Environmental issue
3	Hazardous to Biodiversity

D. Health issues

The health issue indirectly related with plastic bag use is that they block sewerage lines, and the gutter overflowed, which become the birth place of several infections & diseases, plastic bags due to present in large quantity in waste dumping site become the food for several animals like cow, which then become our food, hence spread several diseases.

E. Environmental issues

Environmental issue related with plastic bags is that they visualize the poor picture of cities, they pose worst aesthetical picture of the area, plastic is non-biodegradable hence remain in environment for several years, if plastic bags are burnt can make the environment more polluted through fume and toxic gas which is hazardous for animals, human being and trees.

F. Hazardous to Biodiversity

Plastic bags used in variety of areas, it is the cause of land pollution as waste dumping sites are full of plastic bags which causes the death of land animals, including donkey & cow, When burnt for degrading, results in death of birds due to toxic gas hence becoming the major part of air pollution, and when seeing the marine pollution, a large number of marine animals are effected from plastic bags and other plastic materials, some of the animals are fainted to death. As discussed in the paper, there are several types of plastic, but author focused on plastic bags as they are the hazardous of all the plastic type. In context of minimizing the plastic pollution, author suggested to take the efforts to mitigate the impacts of plastics pollution, which are listed down in table # 5 and then briefly discussed.

Table # 5: Efforts to mitigate the impact of plastic pollution.

SERIAL #	EFFORTS SUGGESTED BY AUTHOR
1	Producing more durable largest thickening plastic bags
2	Replace the plastics bags with cloth bags as much as possible
3	Environmental tax on plastic bags
4	Landfilling
5	Reorganization of the recycling sector
6	Extended producer responsibility
7	Increasing educational initiatives
8	Replacing plastic bags with seed- bags

1. *Producing more durable largest thickening plastic bags*

Producing more durable plastic bags can help in minimizing the plastic pollution as the usage of more durable plastic will decrease in number of using plastic bags.

2. *Replace the plastics bags with cloth bags as much as possible:*

Cloth bags are reusable several times until and unless they are torn up, cloth bags are more sustainable than plastic bags as they are washable & reusable several times and can carry more quantity of materials than plastic bags.

3. *Environmental tax on plastic bags*

Environment is affecting in bad manner due to the usage of large amount of plastic bag, in this regard government should apply some environmental tax on industries involved in producing plastic bags, this will help in producing a limited number of plastic bags and directly it will affect the usage of plastic bags & than decreases the plastic pollution.

4. *Landfilling*

While another issue with plastic production is what we should do for the waste dumping of plastic, landfilling is the practical and appropriate solution for disposing, firstly each area should have a figure of production of plastic waste per day then according to this a certain area away from the residential areas of city should be confined for landfilling, this will help in minimizing the environmental effect of plastic pollution.

5. *Reorganization of the recycling sector*

Recycling of plastic bags is another method to decrease its environmental affect, in this scenario, the recycling method should be re organized in a way that plastic bags should not recycled twice as they poses several health and safety issues, if used many times even after recycling.

6. *Extended producer responsibility*

In production of more durable and biodegradable plastic bags, the responsibility of produces increase, as it is the responsibility of producer to produce a quality product which not only decrease the pollution issue, but also help in minimizing the use of plastic.

7. *Increasing educational initiatives*

Another initiative which should be considered on a serious note include educational awareness, at every level and the students should make aware of the problems faced by country because of plastic bags, and they must be guided by measure to control the plastic pollution.

8. *Replacing plastic bags with seed- bags*

Seed-bags are the initiatives, can be taken to reduce the pollution, they will work in 2 dimensions, as they decrease the plastic bag using quantity and when thrown will grow in plants. In this regard the familiar cloth brand "SAPPHIRE" takes initial step and introduces the seed-bags to their customer which was appreciated by public.

VI. CONCLUSION

Through field review of plastic bags, which we have done in Hyderabad and found that the capital containing a lot of plastic where there are in the avenues, streets, the trees, the power strings, most markets & vegetables, where the pervasiveness of the plastic bags along these lines prompts sully and bending condition and diminishes the Traditional perspective of Hyderabad, which alludes to the ecological catastrophe in Hyderabad just not to mention whatever remains of the urban communities. In this regard author surveyed the streets, markets and commercial places in Hyderabad and proposed some recommendations for minimizing the plastic pollution. These strategies which include waste materials evacuation by the

microorganism that is related with plastic bags, replacing the plastic bags with seed-bags can be utilized broadly for the treatment of Plastic pollution. In this scenario, author contribute in listing out the type of plastic, focusing use of plastic bags, reasons of increasing its usage, its effect on our health & environment. For further future research, author recommends the detailed survey of plastic bag factory along with the detail process of microorganism evacuation and complete process and BOQ for the production of seed-bags in order to make a wider research of coping up with plastic pollution. In this regard not only, waste management is needed but some sort of measures should be taken deliberately to minimize the usage of plastic and some of the solutions are given by author which can help in minimizing the environmental pollution.

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