

# SINGLE-USE PLASTIC WASTE MANAGEMENT IN INDIA: IMPACTS AND SUGGESTIONS

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**Abstract:** Plastic products are there everywhere you look; humans have become more comfortable in using this material. Lightweight, easy to make and easy to use features of plastic are welcomed by all and in fact users have become addictive to this material. But there is another side of this material, which alarms all its users. Plastic waste cause's immense problem when it is leaked into the environment because most plastics are not biodegradable and it take millions of years to breakdown and decompose. Plastic being a recyclable material, there is always a chance to reduce its risk on the environment. But there are some plastics which are called as Single-Use Plastic and these plastic materials cannot be recycled, they cause damage to a very great extent. These Single Use Plastics includes cigarette butts, plastic drinking bottles, plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws and stirrers, other types of plastic bags, and foam take-away containers. This paper helps in analyzing and understanding the Impacts of Single-Use Plastic on the environment. This paper also throw's light on possible suggestions that would help in reducing the usage of Single-Use Plastic.

**Keywords:** Single-Use Plastic, Government Initiatives, Recycle, Impacts, Environment, Waste Management.

## INTRODUCTION

For more than 5 decades, global production and consumption of plastics have continued to rise tremendously. The plastic production globally which was about 270 million metric tons in 2010 has gone up to 335 million metric tons in 2016, a 24% increase in just 6 years. Due to increasing domestic consumption and high potential, India is emerging as one of the focus destinations for plastics and downstream players worldwide in the recent years. The plastic industry caters to the entire spectrum of daily use items, such as clothing, housing, construction, furniture, automobiles, household items, agriculture, horticulture, irrigation, packaging, medical appliances, electronics and electrical items. Plastic is versatile, moisture resistant, strong, light weight and mostly inexpensive, these qualities of plastics have attracted many people and has made them addictive to its use.

Plastic is very convenient to carry liquid items and mobilize them, many companies in India are in the process of commercializing drinking water and generating huge money with the help of Single-Use Plastic materials. Single-Use Plastic includes cigarette butts, plastic drinking bottles, plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws and stirrers, other types of plastic bags, and foam take-away containers. The contribution of plastic manufacturing industries towards the economy is also immense and it is one of the fastest growing sectors in the economy. The Governments vision on infrastructure development is well supported by the Plastic Manufacturing Industries sector over the years. India is economically and socially dependent a lot on plastic manufacturing industries; plastics are useful to most of the industries in packaging and storage.

When we think that plastic is recyclable and re-useable we need to understand that it's a myth that all types of plastic are both a) recyclable and b) routinely recycled by society. In reality, only two types of plastic are typically recyclable (Polyethylene terephthalate and High-density polyethylen), and neither type is single use plastic. Thus it is a challenging process of recycling single use plastic and this is why single use plastic turns out to be such a menace to the environment. Previous scientific research studies suggest that single use plastic can take up to thousands of years to decompose, contaminating soil and water, and posing significant ingestion, choking and entanglement hazards to wildlife on land and in the ocean.

## OBJECTIVES

- 1) To analyze the importance on Single-Use Plastic in Indian economy and society.
- 2) To analyze the dangers and hazards that Single-Use Plastic posses on Indian environment.
- 3) To understand various challenges faced by the society and the government in dealing with Single-Use Plastic.

- 4) To recognize government initiatives in tackling Single-Use Plastic.
- 5) To give possible suggestions on Single-Use Plastic management.

### **RESEARCH METHODOLOGY**

Researchers have used both primary and secondary data that has been collected through structured questionnaire, articles, journals and various websites respectively. Descriptive research design has been employed for the present study. Primary data has been collected from the people in and around Bengaluru City. The sample size being 115 respondents, Percentage analysis has been deployed to analyze and present the data.

### **IMPORTANCE- SOCIALLY & ECONOMICALLY**

Plastic is one of the significant inventions of mankind, due to its wide use. We can find Single-Use Plastic in most of the human activities involving freight transfers, packaging, local carrying bags, water repellent-water proof. Therefore, we can say single use plastic will be greatly impacting the Indian Economy.

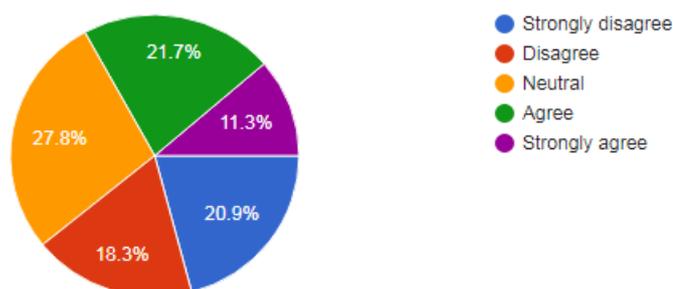
Despite of many advantages provided by plastic there is a debate on plastic ban. There is no doubt plastic ban will have positive impact on environmental ecosystem but at the same time society is so dependent on plastic, banning which will surely lead people to go for other alternatives like paper bags. But it will cost more for the public to use paper bags as plastic bags are available at 50% lesser price compared to paper bags, so we can say plastic bags are cost-effective. Usage of paper bag as an alternative for single use plastic will create another problem that is deforestation. So we can say plastic plays a vital role in conserving natural resources. In fact the main intention of inventing plastic is to prevent clear cutting of Forests.

Plastic ban will have negative impact on Indian economy and it leads to shutting down of plastic manufacturing industry, which will surely impact earning, employment, demand, supply, interest rate & in the end the economy itself. Plastic industry makes a significant contribution to the economic development and growth of various key sectors in the country such as automotive, construction, electronics, healthcare, and textiles. Over the last few decades, the demand for and usage of plastics in several industries has increased tremendously. Over the last 5 years, the Indian plastic industry has grown by 13% annually. If the plastic industry is banned then Indian economy will be facing an immediate loss of Rs 15,000 crore, leaving nearly 3 lakh people jobless.

The Indian plastic industry is about 0.5% India's GDP. The export of plastic product also yields about 1% of the country's exports. The sector has a large presence of small scale companies in the industry, which account for more than 50% turnover of the industry and provides employment to an estimated 0.4million people in the country. Approximately Rs.100 billion is invested in the form of fixed assets in the plastic industry. By looking at the above statistical data

We can say that plastic contributes a major share towards GDP.

### **DO YOU AGREE THAT NO OTHER MATERIAL CAN REPLACE SINGLE USE PLASTIC FOR ITS CONVENIENCE AND COMMERCIAL FEATURES?**



From the above data we can understand a large portion of people feel that single use plastic is more convenient and no other material replace its position for its commercial features.

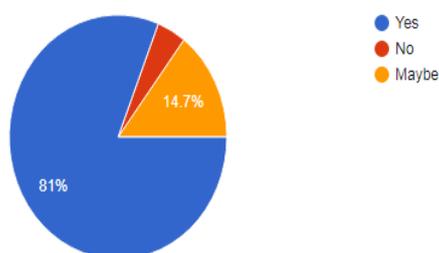
## **DISADVANTAGES & HAZARDS**

Plastic maybe cheap and easy to produce but it is extremely hazardous for the environment.

The Decompose time that plastic take is so long that we use one plastic bag today means decades of polluting environment.

Whichever the item that you find around you in recent time, it will be completely made from plastic or some plastic ingredients will be included in it. We can come up millions of reasons to say plastic is very useful, but it is not perfect. Plastic has several disadvantages that make it a hazardous substance for environment and which force the government to create strict laws to prevent the usage of the same. Consumers of plastic, it may be Industries or general public consider plastic as lighter, compared to other packaging materials, but the wide use of plastic products has shortfalls as well. Through the graph below we can understand that nearly 81% of the respondents are very well aware that single-use plastic is hazardous to the environment and pollutes the environment.

DO YOU AGREE SINGLE USE PLASTIC POLLUTES THE ENVIRONMENT?



### 1) PLASTIC POLLUTES SOIL:

Plastic won't be decomposed easily and when it is buried in soil it releases many toxic chemical which mixes into the ground making it harmful for agriculture and human use, it can also go deeper into the ground and mix with groundwater, and this makes the water unhealthy for human consumption and agricultural use.

### 2) PLASTIC RELEASES TOXIC CHEMICALS WHEN BURNED:

In order to get rid of plastic most of the people irrespective of regions in India, set fire to used and old plastic objects. They might be disposing the plastic but they don't know the fact that plastic contains lot of chemicals which releases into atmosphere and mixes with natural air when it is burnt. This makes the air we breathe toxic and hazardous. As the air we breathe is not pure and contains many types of hazardous chemical, it hurts our lungs and overall health.

### 3) PLASTIC POLLUTES OCEAN:

Bio-degrading plastic on soil takes lot of time and it degrades faster in the ocean, so plastic is left over into the ocean for biodegrading it, but it also leaves the harmful chemical into it, making it even more dangerous to the life in the ocean and life on the earth. The garbage thrown into the sea such as plastic utensils, polythene, etc. keeps floating into the sea. These floating plastic objects will be consumed by marine animals which will adversely affect their health. And most the humans are dependent on marine animals which will indirectly affect human health as well.

### 4) PLASTIC THREATENS WILDLIFE:

Wildlife become entangled in plastic, they eat it or mistake it for food and feed it to their young, and it is found littered in even extremely remote areas in India. So we can say plastic is not just affecting civilized beings like humans but also the creatures living in wild.

### 5) PLASTIC POISONS OUR FOOD CHAIN:

As stated above many marine and wild animals are exposed to plastic so badly that they started consuming plastic objects as food. Plankton, the tiniest creatures in oceans, are eating micro plastics and absorbing their hazardous chemicals. Not only wild life even the domestic animals like cow eat plastic mistaking it for food. The tiny, broken down pieces of plastic are

displacing into other living creatures who feed on them. Through this plastic indirectly enters the food chain of the living beings.

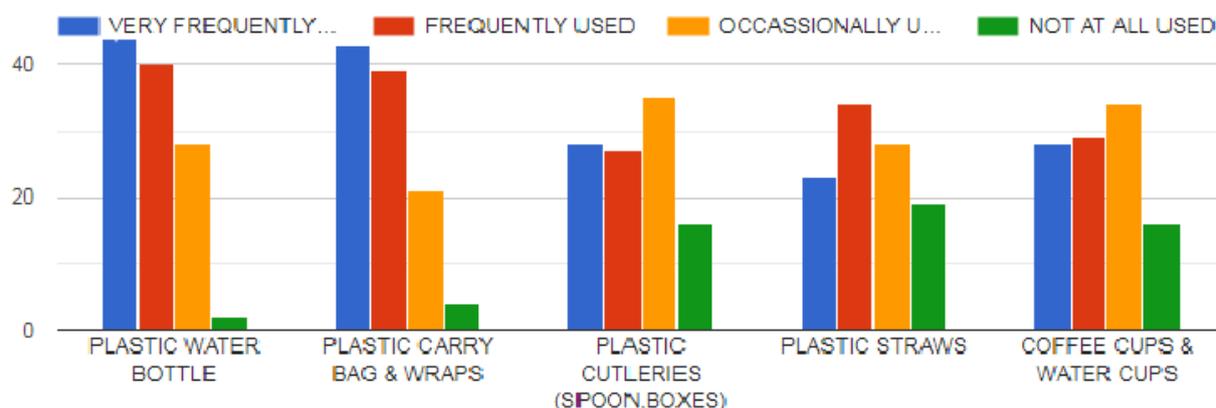
#### 6) EXTINCTION:

Many species have become extinct due to human activities like hunting and poaching, and this Single-Use Plastic has become a new problem which is leading to extinction many species. Most of the marine animals have digested micro plastic and that will surely make the species go extinct over a long period of consumption plastic.

#### 7) GARBAGE EMERGENCY:

When plastic is dumped in the open areas, it will destroy the environment of entire area, if the amount of plastic garbage accumulated in that area is beyond danger limit, will cause habitat death in that particular area, which makes the concerned governments to declare garbage emergencies. All human activities in that area will be banned as an implication of emergency which will affect the livelihood of people.

### BASED UPON THE USAGE OF SINGLE-USE PLASTIC, PLEASE CHOOSE THE TYPE WHICH IS USED BY YOU



The above graph showcases us the level of usage of different single-use plastic products among the respondents. We can find that plastic water bottles and plastic carry bags are very frequently used followed by plastic cutleries and plastic cups.

### GOVERNMENT INITIATIVES

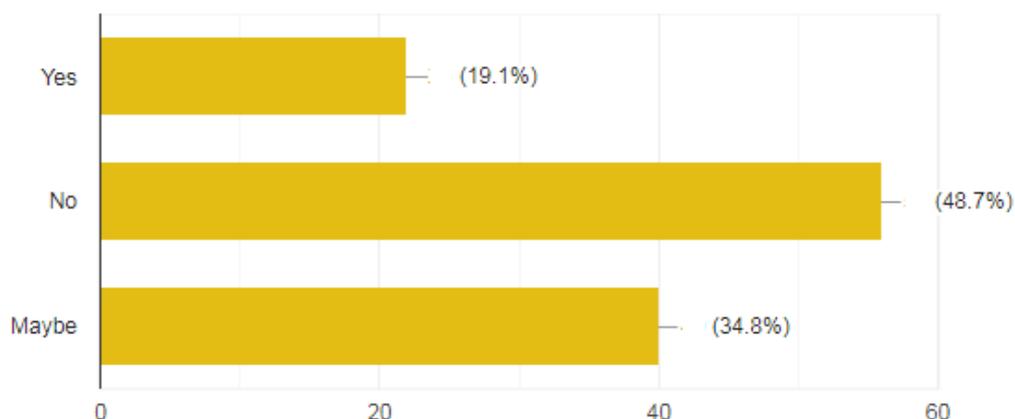
Understanding the precarious situation, the Government of India has decided to step up and has taken up some major decisions & initiatives to control the Single-Use Plastic waste menace. Alongside with, initiatives like pan-Indian plastic clean-up drives across public spaces, national reserves, forests and beach clean-up activities here are some of the recent major initiatives taken up by the Government of India on Single-Use Plastic management.

- 1) **PLASTIC FREE GOVERNMENT OFFICES:** The Union Government of India is trying to take all such initiatives in abolishing Single-Use Plastic by 2022. As a step forward, Ministry of Environment has planned to ban all types of Single-Use Plastic in all Union Government Offices, Plastic water bottles, cutlery and even plastic bags will come to an end in Union Government Offices. Taking the lead the Ministry of Environment has already, banned all single-use plastic items at its head office in Paryavaran Bhavan, Delhi. States like Tamil Nadu and Sikkim have also imposed ban on Single-Use Plastic in their department offices.
- 2) **25 STATES/UT'S HAVE BANNED PLASTIC IN INDIA:** 20 states have imposed complete ban on plastic and 5 states have allowed a partial ban on plastic, they permit polythene bags above 50 microns thickness. Sikkim being the first state to ban plastic in 1998, many States joined the rally against plastic. Though States have banned plastic yet the

implementation of the ban is very lax, according to a January 2015 assessment report of the Central Pollution Control Board (CPCB) 6000 tonnes on plastic waste are discarded every day. On a note Sikkim is the only state that has successfully implemented the plastic ban.

- 3) **INCREASE IN THE THICKNESS OF CARRY BAGS AND PLASTIC SHEETS:** In the year 2016 Government of India came up with a new rule to increase the thickness of plastic bags and sheets from 40 to 50 micron. This increase has led to nearly 20% increase in the cost of plastic bags, hence the tendency to provide free carry bag's has come down and collection by the waste-pickers has also increased.
- 4) **CO-PROCESSING OF WASTE:** State Governments have come up with the concept called co-processing, co-processing is the process of utilizing waste materials in the industrial processes or substituting them for primary fuel or raw materials. Gujarat Pollution Control Board has started this initiative and is closely working with many industries.
- 5) **MOTIVATING & ENCOURAGING NGO'S:** Government has realized that to eradicate plastic there needs to be public awareness and participation. Government has itself started up many small initiatives in association with local NGO's to tackle Single-Use Plastic problems. Friends of Marine Life is an NGO which is working with Government in order to clear plastic waste in sea shores, activists like Tripti Aggarwal have started initiatives like Liter of Light in Bengaluru with government support where discarded PET bottles is literally lighting up the lives of people.

## DO YOU THINK GOVERNMENT IS TAKING RIGHT STEPS IN SINGLE USE PLASTIC WASTE MANAGEMENT



In spite of several government efforts and initiatives we can find that people still want government to take more steps. The above graph helps us to understand that nearly 48% of the respondents expect government to take up more strong measures in controlling single-use plastic menace.

### SUGGESTIONS

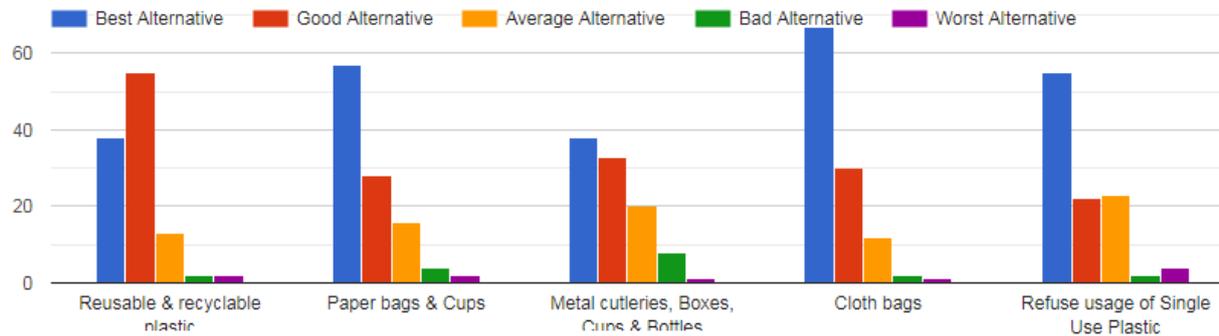
- 1) **WIDE IMPLEMENTATION OF SINGLE-USE PLASTIC WASTE FOR ROAD SURFACING:** Plastic Man of India Padma Shri Dr.R.Vasudevan has done intense research on plastic management in India. His recommendations of using single-use plastic for road surfacing has been appreciated and welcomed by the Union Government and State Governments, but they have not shown much interest on wide implementation of his model than generating more garbage. Dr.R.Vasudevan has also come up with Plastone made up of Single-Use Plastic waste which can be used for flooring, especially outdoors. Government should try to encourage more such research and try to implement the findings.
- 2) **BIO PLASTIC:** Bio-plastics are a form of plastics derived from plant sources such as sweet potatoes, soya bean oil, sugarcane, hemp oil, and corn starch. These polymers are naturally degraded by the action of microorganisms such as bacteria, fungi and algae. Bio-plastics can help alleviate the energy crisis as well as reduce the dependence on fossil fuels

of our society. They have some remarkable properties which make it suitable for different applications. Bio-plastics are not new, in the 1850s, a British chemist created plastics from cellulose, a derivative of wood pulp. Later in the early 20th century, Henry ford experimented with soy-based plastics as an alternative to fossil fuels for powering various automobiles. Bio-plastics are environmentally friendly as compared to traditional plastics for their production results in the emission of less green house gases such as carbon dioxide, which is one of the prime sources of air pollution and leads to environmental issues such as global warming, climate change, etc.

- 3) **CLEAN UP INDIAN OCEAN DRIVE:** India is among the top 20 countries discharging plastic waste into the oceans, many important rivers of India have been serving this purpose of polluting the Ocean and disturbing the marine habitat. The Government of India has not launched any campaign to solve this crisis. Western countries have come up with various mechanisms to resolve this major issue; especially Great Pacific Garbage Patch has turned out to be a major problem to them. Local fisher folk have already started to remove plastic waste from the sea, now it is time for the government to pitch in and support them.
- 4) **WISE USAGE OF PLASTIC& ITS ALTERNATIVES:** The burning issue these days is paper bags should replace single use plastic, so we can save environment. Many are arguing that paper bag is one major alternative for Single-Use Plastic. But going back in time, the main intention of inventing plastic was to reduce deforestation, production of paper requires abundant natural resources like trees, leading to cutting down of forest. Plastic invented as a permanent solution for the problem and it has become boon for human kind in conserving natural resources. But now we know how plastic has transformed as bane within a span of few decades. The main reason why plastic has become bane is because of irresponsible and unwisely usage of the single use plastic. So it's the duty and responsibility of all the human beings to use single use plastic and the available alternatives of plastic in a very wiser way which will conserve the natural resources and which may make plastic boon again.
- 5) **TIGHTEN THE LAWS:** Nearly 25 States have banned plastics in India but still plastic menace continues in the country. Other States should follow Sikkim model and tighten their laws when it comes to Plastic usage and disposal. Strict laws and heavy fines imposed will bring in fear amongst people and make them realize the situation. When States can be strict with traffic rules why not Plastic rules to develop a sustainable environment.
- 6) **PUBLIC AWARENESS AND PARTICIPATION:** Public awareness and participation is a key to reducing plastic waste. A nation-wide action plan including awareness campaign has to be taken up by Indian government in order make public aware about the right use and management of single use plastic. According to the facts the plastic products which have more than 30-50microns can be used for ample amount of times, for example a thick polythene hand bag, which has a good durability status. But most of the people have the misconception that polythene hand bags can be used only for one use and it has to be dumped after. Awareness about these matters will reduce amount of plastic wastage which makes the plastic waste management an easy process.
- 7) **REGULATE UNORGANIZED SECTOR:** Indian government has taken many initiatives to recycle the single plastic and it has set norms to avoid reuse of recycled single use plastic for the manufacturing of edible storage products like lunch box and water bottles, as it is going to affect the human health, but there are many unorganized sectors existed in India which are mixing recycled Single-Use Plastic with virgin plastic in producing edible storage products. As known by many, it is very difficult come with the exact count of such units, and quantity they produce. But they do exist. We would like to suggest Indian government to inspect about the issue and take actions. General public can spot the use of recycled single use plastic by noticing slight yellow tinge on such edible storage products.

The below graphs gives us an idea about respondents perception about different alternatives for single-use plastic products. Through this survey we can find that people find alternatives for single-use plastic based upon their convenience.

## ACCORDING TO YOU RATE THE BEST ALTERNATIVE FOR SINGLE USE PLASTIC



### CONCLUSION

Plastic has become a part of everyone's life in India and we cannot even imagine a day without plastic, from the water bottle to carry bag there is no exception without plastic. At the same time Plastic Industry in India is growing at a very fast rate and its contribution to GDP is undeniable. India's tryst with solid waste management, including plastics, began in the year 2000, since then our Country has seen many environmental issues due to plastic waste. Government came up with recycling of plastic and today nearly 47% of plastic is being recycled, but majority of plastic is being dumped and this is where a lot of environmental problems occur. Government is also promoting reuse of plastic and alternative for plastic for a very long time but till date government is not able to convince the citizens with any alternative for Single-Use Plastic. Single-Use Plastic Waste Management is in need of the hour, Government is trying with its best measures to handle this challenge but Government of India also understands that nothing can be possible in a democratic government without people participation. Our paper is intended to bring in awareness among people about Single-Use plastic and also we have tried to give in some suggestions to the government on Single-Use Plastic Waste Management.

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