






India on Track to Plastic Waste Management – A Diversity of Challenges and Regulatory Innovations

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Abstract. Plastic is an essential item of every Indian household and during this pandemic the usage of plastic is unavoidable. India produces almost 3.3 MMT of plastic waste every year which is quite alarming. This article provides a comparative analysis of the Plastic Waste Management (Amendment) Rules, 2021 (12th August 2021) to the Plastic Waste Rules, 2016 focusing on the concept of Extended Producers Responsibility. The paper showcases an examination of how the phasing out of all Single-Use Plastics (SUP) by 2023 would be accepted by the vendors. The authors have also analysed the existing Indian judicial developments concerning plastic usage and address the following research questions with recommendations:

How effective are the Plastic Waste Management (Amendment) Rules, 2021, 2022 and 2023?

What are the fundamental obstacles that the vendors will face to phase out Single-Use Plastics by 2023?

Keywords: Hazardous Materials, India, Stakeholders, Plastic regulation laws, Environment.

1 Introduction

It is no secret that India is a highly populated country. The nation reached a population of over 1.4 billion in 2023 and has surpassed China for the first time. Thus, it has become critical that proactive actions are taken to mitigate the Damaging impact of Plastics on the Environment generated by such an enormous populous. India is already facing environmental calamities and needs to take rapid steps to protect its economy from

Uttarakhand, Himachal Pradesh and¹ Assam² and Drought in Karnataka³, Bihar and Maharashtra and also the topical cyclones such as Biparjoy, Mandous, Sitrang, Asani, Jawad, Amphan, Fani, Yass and many more between 2019-2023. Based on the Annual Report (2020- 2021), the yearly plastic waste generated by India is at an alarming rate and must be controlled through practical means as quickly as possible. To address this challenge, the Government of India through the Ministry of Environment, Forest and Climate Change¹⁰ ("MoEFCC") vide notification number GSR 169(E)¹¹, has amended the Plastics Waste Management Rules, 2016 (hereinafter referred to as "2016 Rules") via the Plastic Waste Management (Amendment) Rules 2021¹³ (hereinafter referred to as "2021 Rules"). The 2021 Rules came into effect on 12th August 2021 introducing the below-mentioned salient features:

- (i) Prohibition on the manufacture, import, stocking, distribution, sale and use of Single Use Plastic Single-Use Plastic (hereinafter referred to as SUP), including polystyrene and expanded polystyrene, commodities from the 1st July 2022.
- (ii) Requires an increase in the thickness of plastic carry bags.
- (iii) Provides effective implementation towards the Guidelines for Extended Producer Responsibility⁴¹⁴ (hereinafter referred to as EPR) under the 2016 Rules, including extending the Producer's responsibility to the post-consumer stage of a product's life cycle.
- (iv) Other measures towards implementation by States/UTs for the elimination of single-use plastics and effective implementation of the 2016 Rules.

The 2021 Rules aim to put India on track to properly manage plastic waste as they address a large and growing volume of total plastic waste that results in littering, adversely impacting both terrestrial and aquatic ecosystems⁵. The 2021 Rules also put into action India's commitment as it piloted the resolution in the 4th UN Environment Assembly (2019)⁶ addressing single-use plastic products pollution. This paper

¹ United Nations Department of Economic and Social Affairs, Economic Analysis India overtakes China as the world's most populous country, (Future of the World, Policy Brief No 153) < <https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/PB153.pdf> > accessed December 29, 2023

² Laskar N and Kumar U, "Plastics and Microplastics: A Threat to Environment" (2019) 14 Environmental Technology & Innovation 100352

³ Plastic Pollution under The Environment (Protection) Act 1986 ("EPA 1986")

⁴ Ministry of Environment, Forest and Climate Change, Notification GSR (722)E, 6 October 2023 < <https://cpcb.nic.in/uploads/plasticwaste/Draft-Notification-EPR-6-10-2021.pdf> > accessed December 29, 2023.

⁵ "Plastic Waste Management Amendment Rules, 2021" (INSIGHTSIAS August 16, 2021)

<<https://www.insightsonindia.com/2021/08/16/plastic-waste-management-amendment-rules-2021/>> accessed December 29, 2023

⁶ "India Pilots Resolutions on Single-Use Plastics and Sustainable Nitrogen Management at Fourth United Nations Environment Assembly" (Press Information Bureau 2019)

assesses the inevitable responsibility of the Government of India to proceed with the 2021 Rules to counter the various challenges and concerns that India faces or may face with the banning of SUP products.

This paper takes on two major questions:

- I. How effective are the Plastic Waste Management (Amendment) Rules, 2021, 2022 and 2023?
- II. What are the fundamental obstacles that the vendors will face while phasing out of Single-Use Plastics by 2023?

The paper presents the analysis in two parts. The first part presents a study enabling an understanding of how plastic waste management functions in India. It initially highlights the harmful effects of plastic on the environment followed by identifying the existing regulations to regularise plastic waste management. It further furnishes a discussion on the recent development of the 2021 Rule followed by a critical analysis of the 2016 Rule to the 2021 Rule. The paper also illustrates the impact of COVID-19 vis-à-vis plastic usage on the environment further drawing a comparative analysis of the States which have banned the usage of plastic and its outcome. Lastly, the paper has enunciated the role of the judiciary to make India, a nation which is free from plastic pollution. The second part presents an analysis of data collected from the 100 respondents (vendors by profession) concerning the 2021 Rule and its implementations.

Single-Use Plastics, Vendor and Extended Producer Responsibility

To have a complete understanding of the analysis presented in the paper it is pertinent to know the legal definition of the Operational Definition of Single-Use Plastics and the Operational Definition of Vendor under the light of the Plastic Waste Management Amendment Rules, 2021.

Single-use plastics are usually made out of petrochemicals and are intended to be used only once, following which they are, more often than not, disposed of, and sometimes recycled. The most common applications of SUP include but are not limited to, packaging, water bottles, carry bags, straws etc.⁷ Some of the uses of these SUPs have become practically inevitable in today's times, such as disposable gloves, face masks, face shields and PPE kits. According to the Plastic Waste Management Amendment Rules, 2021, Single Use Plastics can be defined as "a plastic item intended to be used once for the same purpose before being disposed of or recycled"⁸

<<https://pib.gov.in/PressReleasePage.aspx?PRID=1568929>> accessed December 29, 2023

⁷ Lindwall, Courtney. "Single-Use Plastics 101." NRDC, April 20, 2021. <https://www.nrdc.org/stories/single-use-plastics-101>.

⁸ Plastic Waste Management Amendment Rules, 2021

Vendor as per Section 2(l) of the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, “street vendor means a person engaged in vending of articles, goods, wares, food items or merchandise of everyday use or offering services to the general public, in a street, lane, sidewalk, footpath, pavement, public park or any other public place or private area, from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific; and the words “street vending” with their grammatical variations and cognate expressions, shall be construed accordingly”⁹. The same definition has also been used in the Plastic Waste Management Rules, 2016. The definition is comprehensive and includes an array of persons within its ambit. It is also essential to note that the definition covers traders as well as service providers.¹⁰ In this paper, the term ‘vendor’ has been taken in a broad sense while conducting a pilot study.

Extended Producer Responsibility (EPR) would include manufacturers, importers, and brand owners were required to undertake primary responsibility for gathering used multi-layered plastic sachets, pouches, or wrapping under the Extended Producer Responsibility (EPR) framework, as incorporated in the Plastic Waste Management (PWM) Rules, 2011¹¹. This definition of EPR was majorly redefined in PWM Rules 2016¹². EPR can also be referred to as a fundamental policy instrument which supports the circular economy, reduces the environmental effect of a commodity and its packaging, and advances the “polluter pays”¹³ concept by making the producer responsible for the company's whole lifespan. The primary objectives of the principle include integrating the environmental costs, enhancing the process of waste management¹⁴, curbing the disposal of environmentally harmful articles, and encouraging the manufacturing, sale and use of products which are environment friendly.¹⁵ In this paper the authors have used a mixed methodology to address to the research questions in this article. The authors have conducted the research work in two phases: in the first phase the authors have used doctrinal methodology by conducting an extensive literature review of the existing primary and secondary

⁹ Section 2(l), Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

¹⁰ A D, “Explained: Who Is a 'Street Vendor' in India? What Is the Street Vendors Act?” (The Indian Express November 6, 2020) <<https://indianexpress.com/article/explained/street-vendor-act-pm-svanidhi-scheme-explained-6911120/>> accessed December 24, 2023

¹¹ Plastic Waste Management Rules 2011

¹² Plastic Waste Management Rules 2016

¹³ Rio Declaration on Environment and Development 1992, Principle 16

¹⁴ “Ban on Single-Use Plastic” (INSIGHTSIAS October 3, 2019) <<https://www.insightsonindia.com/2019/10/03/ban-on-single-use-plastic/>> accessed December 27, 2023

¹⁵ Singh SG, “Draft Extended Producer Responsibility Policy: How Gaps in Achieving Fundamental Goals Can Be Closed” (Down To Earth2021) <<https://www.downtoearth.org.in/blog/waste/draft-extended-producer-responsibility-policy-how-gaps-in-achieving-fundamental-goals-can-be-closed-80551>> accessed December 24, 2023

sourced materials. In the second phase, the authors conducted a pilot study to understand the implications of the Plastic Waste Management (Amendment) Rules, 2021 upon the vendors. The authors had reached out to 100 vendors or shopkeepers/owners. The authors felt that an explanatory research design would be appropriate for this topic. To provide a comprehensive understanding of this topic the authors have provided a comparative analysis of the harmful effects of the usage of a single use disposal plastic between the States that have completely banned single-use disposal plastics to all other States of India that haven't banned the usage of single-use disposal plastic. The authors analyzed the collected data by using Google Forms which was further analyzed using the Excel sheet to provide a graphical representation.

2 Harmful effect of plastic

Plastic is a low-cost, highly durable, unbreakable material which has several applications. Consequently, the production of plastic has significantly increased over the years. The profit orientation of Humans leads to the manufacture of low-micron plastics which is hazardous to the environment. Plastic has now become the utmost concern for us. Bisphenol A (BPA) inside Plastics when mixed with the land or water is eventually consumed by animals affecting the animal's development and reproductive system. When affected animals are consumed by humans it causes poisoning, hormonal changes, and in extreme cases even cancer. The effect of plastic on animals is discussed in the latter part of the paper. Primary microplastics are by-products of industrial particle emissions, as well as the discharge of plastic dust from plastic items. Microplastics that are bigger than primary microplastics are referred to as secondary microplastics. These microplastics ultimately wind up in landfills and aquatic bodies.¹⁶

It has been reported that close to 80% of the plastic waste found in the seas traces its origin from land sources. This implies that to check plastic pollution in the seas, it is extremely essential to control plastic waste generation, production and disposal. Plastic waste which ends up in landfills is ultimately subject to degradation – both biotic and abiotic, which subsequently finds its way into various other elements of the environment, including but not limited to soil and water thereby contaminating vast areas altogether.¹⁷

“Waste incineration, the single most effective way for removing non-biodegradable plastics from the chemosphere, is known to produce carcinogenic polychlorinated

¹⁶ Halden RU, “Plastics and Health Risks” (2010) 31 Annual Review of Public Health 179

¹⁷ 29 Laskar N and Kumar U, “Plastics and Microplastics: A Threat to Environment” (2019) 14 Environmental Technology & Innovation 100352

dibenzo-p-dioxins/furans (PCDD/Fs) and additional toxic, persistent organohalogen.”¹⁸

Microplastics often even operate as a pollutant transport medium for several harmful substances like DDT and hexachlorobenzene, causing them to end up in the bodies of live organisms that ingest them.¹⁹

The impact of EPA 1986 needs to be analysed before referring to the 2021 and 2016 Rules. Under the EPA “...the protection and improvement of environment and for matters connected therewith:... [including] protection and improvement of the human environment,... prevention of hazards to human beings, other living creatures, plants and property”. The preamble to EPA 1986 sets a comprehensive responsibility on the Government of India to protect human beings, other living creatures, plants and property, the ambit of such terms is wide to include both terrestrial and aquatic ecosystems. Specifically, Section 2(a) of EPA 1986 which defines “environment”²⁰ provides the context to which the powers of the Government of India should be exercised to prevent pollution to protect and improve the environment. For Plastic Waste Management, it is pertinent to take into account Sections 3,6,7,8 and 25 of the EPA 1986.

3 A Critical Analysis of the 2016 Rule and 2021 Rule Vis-À-Vis Covid-19 Impact

The Plastic Waste Management Rules, 2016 were notified by the Ministry of Environment, Forest and Climate Change. These 2016 Rules superseded the Plastic Waste (Management and Handling) Rules, of 2011. The Rules were not merely aimed at protecting and fostering the environment and surroundings but also endeavoured to achieve the objective of the Swachh Bharat Mission and enhance the health and tourism of the country.²¹ These Rules stated that the plastic carry-bags ought to be of a minimum thickness of 50 microns, which earlier stood at 40 microns. This change in requirements not only ensures that less harmful plastic carry bags are utilised but















¹⁸ 30 "environment" includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organisms and property.

¹⁹ Okunola A A and others, “Public and Environmental Health Effects of Plastic Wastes Disposal: A Review” (2019) 5 *Journal of Toxicology and Risk Assessment*

²⁰ CENTRAL POLLUTION CONTROL BOARD, 2021. Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules. Delhi: Ministry of Environment, Forest and Climate Change, Govt. of India.

²¹ John H, “How the Pandemic Brought Plastic Back in Kerala” (The News Minute February 2, 2021) <<https://www.thenewsminute.com/article/how-pandemic-brought-plastic-back-kerala-142538>> accessed December 27, 2023

also leads to an increase in their cost of manufacturing, resulting in the restrictive distribution in daily use by Vendors. These rules were formulated keeping in mind that it is not prudent to order a complete ban on plastic, given that there were no feasible alternatives available at that time.²²

STOP PLASTIC			
WHAT'S TO BE PHASED OUT			
	NAME OF THE PRODUCT	UTILITY INDEX	ENVIRONMENTAL IMPACT
	Carry bags- thin (less than 50 microns)	32	84
	Non-woven carry bags and covers (less than 80 gsm and 320 microns)	21	87
	Straws/ Stirrers	16	87
	Small Wrapping /Packing films	22	84
	Cutlery: Foamed cups, bowl and plates	23	91
	Cutlery: Laminated bowls and plates (non-foamed)	25	88
	Cutlery: Small plastic cups/ containers (less than 150 ml and 5g)	23	85
	Ear buds and plastic sticks for balloons, flags, candies etc	17	89
	EPS for decoration	23	85
	Plastic banners (less than 100microns)	22	64
	Cigarette overwrap film	46	62
	Disposable rigid cups, trays and containers	46	56
	wrapping films for food applications*	64	56

*Only sweet boxes with wrapping films are listed for phasing out

Figure 1: Highlights the SUPs which are banned by the 2021 Rule33

²² John H, "How the Pandemic Brought Plastic Back in Kerala" (The News Minute February 2, 2021) <<https://www.thenewsminute.com/article/how-pandemic-brought-plastic-back-kerala-142538>> accessed December 27, 2023

The producers were now also made responsible for collecting back the plastic waste from various stakeholders and persons involved in the supply chains, through processes such as pre-registration. The Rules also suggested that single-use plastics be gradually phased out and suitable alternatives be developed. Moreover, the use of non-recyclable plastic waste for purposes such as the construction of roads, energy recovery etc. was suggested.²³ Local bodies and Gram Panchayats were made responsible for ensuring that the guidelines were appropriately adhered to.²⁴ Norms were laid down concerning the labelling and marking of products such as plastic bags and multi-layered packaging materials.²⁵

The Government soon felt the need to revise these rules to ensure that they were in congruence with the needs of time and fulfil their purpose to the best possible extent. The Plastic Waste Management Rules, 2016 were amended in the year 2018 and further amended in the year 2021. The Plastic Waste Management (Amendment) Rules, 2021 were notified. These Amendments made certain updations to the existing guidelines. The Amendment prohibited the manufacture, sale, distribution etc. of single-use plastics, with effect from July 1, 2022.

The minimum threshold limit for carrying bags made of plastic has been increased from 50 microns to 75 microns with effect from September 30, 2021, and further to 120 microns from December 31, 2022. The same would not only ensure that the amount of littering is reduced but also make such plastics reusable. A timeline of ten years has been provided for the future prohibition of other plastic commodities. The respective State Pollution Control Boards, along with the Central Board, have been accorded the responsibility of monitoring the implementation of the Rules and Guidelines and imposing the necessary sanctions in consonance with the Environmental Protection Act, of 1986. Norms have been legally enforced for the Extended Producer Responsibility, also known as EPR, for effectively implementing the Rules. A designated Special Task Force has been mandated for all the States and Union Territories, in addition to a National Level Task Force at the national level.

²³ Section 5, Plastic Waste Management Rules, 2016

²⁴ Section 6 & 7, Plastic Waste Management Rules, 2016

²⁵ Section 11, Plastic Waste Management Rules, 2016






STOP PLASTIC WHAT'S NOT TO BE PHASED OUT			
	NAME OF THE PRODUCT	UTILITY INDEX	ENVIRONMENTAL IMPACT
	CCigarette filters (non-biodegradable)	20	93
	Small plastic bottle for drinking water (<200 ml)	26	79
	Plastic bottles for non-food applications	59	40
	Plastic bottles for food and beverage (more than 200 ml)	74	36
	Multi-layered packaging (more than 36 cm ²)	81	73

Figure 2: Highlights the SUPs which are not banned by the 2021 Rule²⁶

The Amendment also aims at strengthening the implementation of the Rules in the spirit of the Swachh Bharat Mission.

It is widely known and acknowledged that plastic and plastic products are a massive threat to the environment and also to the health of all living beings across the globe. However, the usage of plastic has taken virtually irreplaceable importance in our lives. It is therefore extremely tedious to imagine our lives without the use of plastics. However, we must also take into consideration the ways and alternatives by which we can limit if not eradicate, the usage of plastics in our lives. While the 2016 Rules and the subsequent amendments in 2018 and 2021 are much-required steps towards the ideal world, we also need to analyze their practicability.

Before the enforcement of these guidelines, it is essential to devise newer and equally suitable and feasible alternatives to the products being banned, given that if single-use plastics are prohibited without any concrete alternatives in place, the same would pose even more challenging issues, including but not limited to nitpicking the loopholes, flouting of norms etc.

Another essential task is knowledge creation and dissemination. While the guidelines concerning recycling the various forms of plastics have been put in place, it is necessary that the manufacturers of such plastics as well as the handlers of the waste so generated are well versed with at least the basic requirements of the same, especially in terms of knowledge and information. While ignorance or incomplete knowledge can lead to improper implementation of the guidelines, it can also result in dangerous and even hazardous outcomes for the environment as well as for humans and animals alike.

²⁶ Down to Earth (2021) Stop Plastic, Cdn. Down to earth<
https://cdn.downtoearth.org.in/library/large/2021-08-17/0.11236900_1629210493_table-2.jpg> accessed December 4, 2023

It is also essential to identify the areas, sectors and avenues wherein the usage of single-use as well as recyclable plastics can be minimized. Minimization is one of the first steps towards elimination. This requires massive amounts of research as well as opinions from the legislators, stakeholders and the users. One of the most basic areas where the same can take place is by switching plastic packaging with more sustainable and eco-friendly materials, which are durable as well as environment friendly.

Sustainable alternatives to plastics ought to be developed, which would require careful consideration as well as a huge amount of research and development. Some alternatives can be the use of cloth bags instead of carry bags made out of plastic, paper bags for carrying lighter stuff and even khadi bags.

The production of such alternatives ought to be increased as well as incentivized for the manufacturers, producers and consumers. This can be done by way of subsidies by making the process simpler or by enhancement of infrastructure. However, it is also necessary to ensure that the same does not compromise on the labour laws or the working conditions of those involved.

This can also prove to be a benchmark in the promotion of cottage industries, and small businesses. Products like cotton bags or paper bags can also be produced even in places with less developed infrastructures and lesser investment as compared to big industries and manufacturing units. The same would enhance employment opportunities and the process of skill development.

While the producers and manufacturers of plastics and plastic products must be conscious, it is equally important that we, as consumers, do our bit to ensure that we take steps towards a more sustainable and safer environment for ourselves as well as the future generations to come. What is required is a behavioural change in addition to a structural change.

The Plastic Waste Management (Amendment) Rules, 2021 stated that “The manufacture, import, stocking, distribution, sale and use of following single-use plastic, including polystyrene and expanded polystyrene, commodities shall be prohibited with effect from the 1st July 2022:- (a) earbuds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration; (b) plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 microns, stirrers.²⁷” It is also essential to note that the above-mentioned provisions do not apply to such articles which are made up of compostable plastics.²⁸

²⁷ The Plastic Waste Management (Amendment) Rules, 2021

²⁸ Plastic Waste Management (Amendment) Rules, 2021. Aravind I, “Another Pandemic: India's Fight against Single-Use Plastic Falls Victim to COVID” (The Economic

While these articles are widely used in our day-to-day lives, and their prohibition would drastically reduce the production as well as consumption of single-use plastics, thereby proving to be beneficial to the health of the individuals as well as the environment, we must also analyse the practicability of the provisions of the new amended rules. In fact, at the time when the Coronavirus Pandemic was underway, several essentials (which are often made of single-use plastics) became a necessity, and their elimination can cause a major threat of further spread of the Virus.

“Anecdotally, Covid is undoing all the work we have done on the elimination of single-use plastic. Another very big downside (of the pandemic) has been the increased use of single-use plastic and the legitimacy it has got as a sign of safety.”

Images of plastic bags of medical waste stacking up outside hospitals, as well as used personal protection equipment drifting in coastal seas and washing up on the world's coasts, have gone viral yet again, highlighting the negative effects of single-use plastics. Short-term thinking during the epidemic, if we are not careful, might lead to an even worse ecological and public health disaster in the times to come.²⁹

One of the initial steps towards checking the chain of transmission of the COVID-19 Virus is testing. The most common means of testing is collecting a sample of the individual using a swab. More often than not, the shafts of these swabs are made of Polypropylene.⁴² It is a tough task to replace all the swabs consisting of Polypropylene shafts with other environmentally friendly alternatives, and a prerequisite for the same would also be to test their efficacy and accuracy against the existing techniques. A detailed analysis of the non-reusable wastes generated due to the essentials required for protection against COVID-19 has been elucidated below.

Table 1: It identifies the plastic essentials which are used during Covid-19 and the 2021 Rule is silent on the same

S. No.	Name of the Commodity	Kind of Plastic Used	Whether it is Banned under the 2021 Amendment
01	Testing Swabs	Polypropylene	Not explicitly banned

Times2020) <<https://economictimes.indiatimes.com/news/politics-and-nation/another-pandemic-indias-fight-against-single-use-plastic-falls-victim-to-covid/articleshow/78848847.cms?from=mdr>> accessed December 4, 2023

²⁹ Duer J, “The Plastic Pandemic Is Only Getting Worse during COVID-19” (World Economic Forum 2020)

<<https://www.weforum.org/agenda/2020/07/plastic-waste-management-covid19-ppe/>> accessed December 4, 2023, 42 Garnett L and others, “Comparison Analysis of Different Swabs and Transport Mediums Suitable for SARS-COV- 2 Testing Following Shortages” (2020) 285 Journal of Virological Methods 113947

02	Disposable Masks	Polypropylene	Not explicitly banned
03	Disposable Gloves	Latex/Nitrile/Vinyl	Not explicitly banned
04	Shoe Covers	Polyethylene/Polypropylene	Not explicitly banned
05	PPE Kits	Polypropylene/Polyethylene	Not explicitly banned
06	Face Shields	Polycarbonate	Not explicitly banned
07	Protective Goggles	Polycarbonate	Not explicitly banned
08	Sanitizer Packaging	Polypropylene/Polyethylene	Not explicitly banned

Another unavoidable essential to prevent the spread of COVID-19 is the use of masks. There are several masks available for this purpose and one of the prominent categories include disposable masks. These masks, which are made mainly of Polypropylene, have to be disposed of after every use, thereby contributing immensely to the generation of non-biodegradable waste. Similar is the case with disposable gloves which are usually made of Latex. These too have to be disposed of after every use, and invariably end up in landfills.

We also cannot overlook the requirement of PPE Kits in times of the Pandemic, which have become a necessity for several categories of persons, including but not limited to doctors, healthcare workers, persons involved in jobs requiring contact with a wide number of persons such as airline staff etc. these PPE Kits include full body coverups, shoe covers, safety goggles, face shields, masks etc. A report published by the Economic Times in 2020 stated that in six of the busiest airports of the country, more than 6000 kgs of waste is generated out of PPE kits, and another 500 kgs of plastic is used in the packaging of these, in a single day!³⁰ These figures are horrifying if we consider the magnitude of waste so generated out of just PPE kits across the country.

While there has been a direct increase in plastic waste generation due to the necessities of the COVID-19 Pandemic, several indirect factors also contribute to the same, which might be overlooked. Some of such factors have been elucidated below.

The Coronavirus restrictions and lockdowns mandated the closure of dine-in facilities in restaurants across the country for months altogether. However, home

³⁰ Chowdhury A and Rajagopal D, "Discarded PPE Kits at Airports Pose New Biomedical Waste Challenge" (The Economic Times2020) <https://economictimes.indiatimes.com/industry/transportation/airlines/-aviation/discarded-ppe-kits-at-airports-a-new-challenge/article_show/79553783.cms> accessed December 4, 2023

delivery and takeaway services were permitted. Moreover, even after the dine-in facility was permitted to operate people preferred to enjoy outside food at the safety of their homes. The prerequisite for this was the invariable increase in packaging requirements and disposable cutlery, which more often than not, was plastic.³¹

Moreover, there were times when people preferred to get groceries and other necessary products at their doorsteps, both because the same was safer and also much more convenient and hassle-free. However, the same, just like the above situation, led to a drastic rise in the requirement and consumption of plastic packaging.³²

While the Pandemic has created massive environmental and ecological havoc, its effects were not always adverse to the environment. The nationwide lockdowns and restrictions drastically reduced the traffic on the roads. This meant that the pollution caused by vehicular emissions was also cut down. Several industries were also shut down. Therefore, industrial waste disposal and emissions were also very low. The quality of air improved substantially.³³

While a lot of damage has been done, efforts ought to be made to minimize the possibility of recurrence of the same in future. We are coming across newer variants of the Virus at a rapid rate, and we must ensure that the chain of transmission is broken for which it is essential to make use of masks, gloves, PPE kits etc. We must not compromise our health, however, we must also endeavour to look for alternatives with equal or higher efficacy, which are environmentally friendly also. Meanwhile, it must also be ensured that the disposable plastics are treated suitably and reused in such a way that they neither adversely affect our health, nor the environment. Moreover, once we arrive at suitable alternatives, the existing environmentally harmful categories are prohibited by making suitable amendments.

³¹ Drost N and others, “Will COVID-19 Change the Fate of Single-Use Plastics?” (Kearney)

<<https://www.kearney.com/chemicals/article/?%2Fa%2Fwill-covid-19-change-the-fate-of-single-use-plastics>> accessed December 4, 2023

³² 45 Leal Filho W and others, “The COVID-19 Pandemic and Single-Use Plastic Waste in Households: A Preliminary Study” (2021) 793 *Science of The Total Environment* 148571

³³ 46 Deka P, “Covid-19 and Its Impact on Environment” (Times of India Blog June 22, 2021)

<<https://timesofindia.indiatimes.com/readersblog/world-of-words/covid-19-and-its-impact-on-environment-34088/>> accessed December 4, 2023

4 Plastic Waste Management (Amendment) Rules, 2022 and 2023

The Government of India on 16th February 2022, published the amendment to the 2016 rules in furtherance of its powers conferred by Sec 3, 6, and 25 of the Environment Protection Act 1986.

The Amendment requires that the CPCB must constitute a committee with the Chairman, CPCB as the head. This committee shall have the responsibility to issue recommendations to the MoEFCC for the effective implementation of the amendments.

The amendments mandated that the Producer, Importer of plastic packaging, importer of products with plastic packaging, Brand Owners including online platforms, supermarkets, and retail chains dealing with commodities with plastic packaging, (except, the MSME as per the criteria of MoMSME, Government of India) and Plastic Waste Processors will be considered as EPR and will have to get themselves registered under the CPCB's centralised portal.³⁴

These ERPs are required to submit their Action Plan to the Board providing their Targeted reduction in plastic. The CPCB's portal shall operate as an online system providing an annual report on plastic management representing all activities implemented by ERPs after the implementation of the Plastic Waste Management Rules, 2016. The ERPs are provided with set targets to ensure a decrease in the generation of plastic. The targets are fixed based on the categorisation of the EPR and as per the formula given under the Annexure provided in the 2022 rules. In case the EPRs fail to meet the target, they are slammed with penalty monetary fine based on the Polluter Pay Principle. The CPCB levies compensation on the defaulting ERPs which are operating in more than two states. However, for those defaulting EPRs who are operating in a single state, the SPCB having the jurisdiction levies the penalty.³⁵

The Government of India on 30th October 2023 brought another amendment to the Plastic Management Rules, 2016 introducing more stringent provisions for EPRs. It introduced the Biodegradable Polymer as a separate category of Plastic. The amendment requires that the Manufacturers and importers of merchandise composed of biodegradable plastics shall also register on the CPCB portal and must report the annually generated waste as per the 2022 policy. The ERPs shall mention the total quantity of such products which are entering the market and the quantity of waste generated before the consumption of such products. It further requires that the EPRs indulging in the manufacturing and import of such plastic commodities must fulfil their EPR responsibilities as per the EPR rules, including the establishment of a system for the collection of plastic waste generated as a result of such commodities. The amendment also projects policies for proper testing and labelling of

³⁴ Plastic Waste Management (Amendment) Rules, 2022

³⁵ Plastic Waste Management (Amendment) Rules, 2022

Biodegradable Plastic. The amendment requires that the packaging sachets used for pan masala and tobacco products are to be manufactured out of Biodegradable Polymers. Irrespective of all the changes brought forth by the regulation, it still poses a big challenge for the industry i.e., to prove that their technology doesn't generate microplastics which can only be accomplished by strict monitoring and fair testing methodology prescribed by the CPCB.³⁶

5 A State-Wise Analysis of the Banning of Plastic and its Outcome

The phasing out of single-use plastics, and plastic waste in general, is one of the primary and urgent requirements of today. In pursuance of the same, the Plastic Waste Management Rules, 2016³⁷ were enacted, and later the Plastic Waste Management (Amendment) Rules, 2021³⁸ were passed. This is a praiseworthy initiative by the Government and the Prime Minister of the country towards a greener, safer and healthier environment for us all. In the following sections, the paper highlights the various attempts and initiatives taken by the states and Union Territories for the fulfillment of this ideal. Moreover, the issue becomes all the more essential given that the unprecedented rise of the COVID-19 pandemic has led to an exponential increase in the usage of single-use plastics, and plastics in general. The impact of COVID-19 vis-a-vis plastic waste generation has been discussed in greater detail previously in this paper.

The following diagram is a depiction of the distribution of plastic waste which was generated across the various states and Union Territories in India in the year 2018-19.

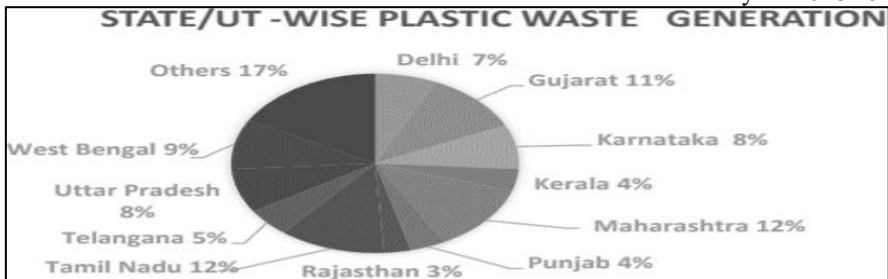


Figure 3: State/UT Wise Plastic Waste Generation³⁹

The diagram furnished above provides a comprehensive understanding of the quantum of plastic waste generated by the various states and Union Territories of the country. Maharashtra, Tamil Nadu and Gujarat are among the largest producers of plastic waste. An analysis of this diagram would also help in the formulation of state-

³⁶ 49 Plastic Waste Management (Amendment) Rules, 2023

³⁷ 50 Plastic Waste Management Rules, 2016

³⁸ 51 Plastic Waste Management (Amendment) Rules, 2021

³⁹ 52 CENTRAL POLLUTION CONTROL BOARD, 2021. Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules. Delhi: Ministry of Environment, Forest and Climate Change, Govt. of India.

specific policies concerning the phasing out of plastics as well as plastic waste generation in the times to come.

Assam, Bihar, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Puducherry, Punjab, Tamil Nadu, and Uttar Pradesh each have 1080 unregistered plastic manufacturing/recycling operations. Furthermore, the states of Chhattisgarh, Daman and Diu, Delhi PCC, Himachal Pradesh, Uttarakhand, and West Bengal have not supplied details on this matter⁴⁰.

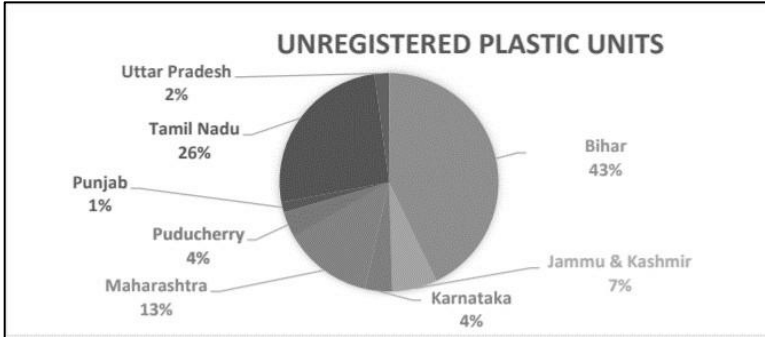


Figure 4: Percentage of Non-Registered Plastic Units in States and Union Territories.⁴¹

Several unregistered plastic manufacturing and recycling units are being operated in various states and Union Territories of the country. The above diagram represents the percentage of such units in 12 States and Union Territories.

States that have banned the usage of Plastics and the pro-active steps taken by them are as follows:

Maharashtra - Maharashtra has already begun amending its state policy on plastic ban, since the national objective for abolishing single-use plastic is 1st July 2022. Earlier this year, Maharashtra State Environment Minister Ramdas Kadam banned all single-use plastic products such as utensils, cups, straws, plates, glasses, and other items.⁴² According to a study by the Maharashtra State Pollution Control Board, the state's plastic trash output has decreased by nearly 35%. (MSPCB)⁴³. To ensure that the prohibition is enforced, the state has set stiff penalties on anyone caught using prohibited plastic objects. A first-time offender will be fined INR 5000,

⁴⁰ Ibid 43.

⁴¹ Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules (n43).

⁴² Deshpande T, "Maharashtra Takes Steps to End Single-Use Plastic by May 1" (The Hindu February 19, 2020)

<<https://www.thehindu.com/news/national/other-states/maharashtra-takes-steps-to-end-single-use-plastic-by-may-1/article30865146.ece>> accessed December 27, 2023

⁴³ Maharashtra Pollution Control Board, 2021. Annual Report 2018-19. Mumbai, Maharashtra: Maharashtra Pollution Control Board.

a second-time offender will be fined INR 10,000, and a third-time offender will be fined INR 25,000.⁴⁴

Odisha - On Gandhi Jayanti in 2019. Odisha implemented a phase-by-phase ban on single-use plastic goods. Bhubaneswar, Cuttack, Berhampur, Sambalpur, and Rourkela, as well as the beach resorts of Puri, have all been declared single-use plastic-free zones by Chief Minister Naveen Patnaik⁴⁵. The CM also stated that the total ban on plastic would be enforced within the next two years and anyone who violates the prohibition in these cities will face stiff penalties, including a five-year prison sentence or a fine of up to INR one lakh⁴⁶. Odisha has witnessed positive developments since then, as reported by the NDTV.⁴⁷ There has been rapid raiding of stores in the marketplaces by the Behrampur Municipal Corporation (BMC). BMC has taken severe steps to ensure that single-use plastic is completely outlawed. They have collected over 1.40 lakhs in penalties from merchants who continued to deliver sold items in plastic bags, they also confiscated over 400 kg of plastic.⁴⁸

Uttar Pradesh - Plastic was also prohibited in phases across the state by the Uttar Pradesh government. Polythene bags and other single-use plastic goods are already prohibited, and the administration has imposed a ban on non-biodegradable polythene with strict sanctions⁴⁹. Anyone discovered with 100 gms of polythene would be fined INR 1,000, while those with 5 kgs will be punished INR 25,000, according to the new

⁴⁴ Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019) <<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁴⁵ Karelia G, "Plastic Bans in Five States, Here's How India Fared in Fighting Plastic Pollution in 2018" (Sonia Bhaskar ed NDTV January 3, 2019) <<https://swachhindia.ndtv.com/year-ender-2018-waste-management-plastic-waste-India-performance-against-plastic-29144/>> accessed December 27, 2023

⁴⁶ Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019) <<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁴⁷ Karelia G, "Plastic Bans in Five States, Here's How India Fared in Fighting Plastic Pollution in 2018" (Sonia Bhaskar ed NDTV January 3, 2019) <<https://swachhindia.ndtv.com/year-ender-2018-waste-management-plastic-waste-India-performance-against-plastic-29144/>> accessed December 27, 2023

⁴⁸ Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019) <<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁴⁹ Mehrotra V, "Up Bans Plastic, Thermocol Items" (August 15, 2018) <<https://www.indiatvnews.com/news/india-up-bans-plastic-thermocol-items-458224>> accessed December 28, 2023

legislation⁵⁰. This State government went a step ahead to establish a pottery board to revitalise pottery and earthenware as a means of replacing plastic in the state⁵¹. This step appears to be an appreciable initiative taken by the government to help the vendors with their transition phase from plastic to bio-degradable alternatives of plastic. The board's mission is to reinvigorate the use of earthenware among the general public and to establish industries to support the programme throughout Uttar Pradesh. Politicians in the state started utilising clay pots or paper glasses instead of plastic water bottles or even glasses at political rallies to become role models for the public at large. The state has also collected approximately 2.32 crores in fines which itself highlights how well the law has been implemented in the State of Uttar Pradesh.⁵²

Bihar - In 2018, the Bihar State Pollution Control Board (BSPCB) and the Department of Environment, Forest and Climate Change intended to propose a ban on single-use plastic in both urban and rural regions of the state⁵³. The BSPCB official Mr Jaiswal further elaborated the definition of plastic carry bags as follows: "Plastic carry bags are non-biodegradable, emit harmful fumes when burned, clog sewers and drains, diminish soil fertility, and endanger the lives of livestock that consume plastic garbage mixed with their feed. As a result, the Bihar government has outlawed the manufacturing, storage, import, transportation, sale, and use of plastic carry bags".⁵⁴

It was from midnight on December 14, 2021, that the Bihar government prohibited the manufacturing, import, storage, and circulation of single-use plastic to be at par with the 2021 Rule.⁵⁵ The action comes after the state implemented a polythene ban to

⁵⁰ Mehrotra V, "Up Bans Plastic, Thermocol Items" (August 15, 2018) <<https://www.indiatvnews.com/news/india-up-bans-plastic-thermocol-items-458224>> accessed December 28, 2023

⁵¹ Rawat VS, "Plastic Ban: Up Constitutes 'Pottery Board' to Promote Terracotta Items" (Business Standard July 10, 2018) <https://www.business-standard.com/article/economy-policy/plastic-ban-up-constitutes-pottery-board-to-promote-terracotta-items-118071000890_1.html> accessed December 28, 2023

⁵² Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019) <<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁵³ HassanA, "Bihar Govt Plans Ban on Single-Use Plastic Items" (The Times of India 2018) <<https://timesofindia.indiatimes.com/city/patna/bihar-govt-plans-ban-on-single-use-plastic-items/article-show/65358774.cms>> accessed December 27, 2023

⁵⁴ Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019) <<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁵⁵ Khan MI, "Bihar Government Enforces Ban on Single-Use Plastic" (Down To Earth December 15, 2021)

curb plastic waste and pollution. Violating the guidelines will result in a penalty, fine, or possibly a prison sentence under the Environment Protection Act, of 1986 (mentioned later in the article). This prohibition would apply to thermocol goods such as disposable glasses, plates, cups, and silverware.⁵⁶

Tamil Nadu – In Ooty, a town of the State of Tamil Nadu the district government of Nilgiris was the first place in India to impose a ban on SUPs⁵⁷. So, one would not see any usage of plastic bottles, soft drink bottles, or food wrappers though it is one of Tamil Nadu's most popular tourist destinations. Thousands of visitors visit Ooty each year, resulting in a significant increase in plastic garbage, which has become a big concern for the inhabitants, district government, and personnel but now, the ban was enacted to reduce the widespread use of plastic in the region. By installing Reverse Vending Machines⁵⁸ to collect and recycle PET bottles, the tourist area takes another step toward keeping the environment clean.⁵⁹ This initiative of the State of Tamil Nadu is praiseworthy.

Himachal Pradesh - Himachal Pradesh is another Indian state that has outlawed the manufacture and use of single-use plastics. On July 6, 2018, Himachal Pradesh issued a plastic ban announcement⁶⁰. In the state, all types of disposable plastics and single-use non-biodegradable materials have been banned. Some key cities, such as

<<https://www.downtoearth.org.in/news/waste/bihar-government-enforces-ban-on-single-use-plastic-80690>> accessed December 27, 2023

⁵⁶ Sundaram N, "Ooty Was the First in India to Enforce a Plastic Ban. Here Is How the Town Made It a Huge Success" (cnbctv18.com June 29, 2018)

<<https://www.cnbctv18.com/economy/ooty-was-the-first-in-india-to-enforce-a-plastic->

⁵⁷ "Reverse Vending Machine or RVM is a device that takes empty or used bottles or cans, then returns money or other forms of incentivization to the recycler, depending on the quantity of receptacles recycled." - Taylor M, "Reduce, Reuse, Recycle with the Reverse Vending Machine" (USC Viterbi School of Engineering October 10, 2021)

⁵⁸ Mullick S, "These 5 States in India Have Banned Single-Use Plastic & It's Time Others Follow Suit" (www.mensxp.com November 28, 2019)

<<https://www.mensxp.com/special-features/features/70612-these-5-states-in-india-have-banned-single-use-plastic-it-s-time-others-follow-suit.html>> accessed December 26, 2023

⁵⁹ "There Will Be Complete Ban on Use of Plastic and Thermocol Cutlery in HP" (Himachal Pradesh Government 2018)

<<http://himachalpr.gov.in/OnePressRelease.aspx?Language=1&ID=12521>> accessed December 27, 2023

⁶⁰ "Which States in India Have Banned Plastic" (Business Insider July 30, 2019)

<<https://www.businessinsider.in/which-states-in-india-have-banned-plastic/articleshow/70218756.cms>> accessed December 26, 2023

Shimla, were discovered to be devoid of disposable polybags, cups, and tumblers due to the careful surveillance of the ban's enforcement.⁶¹

Telangana – Now coming to the Telangana state government it has also imposed a plastic ban on June 14, 2018. Polymers⁶² used in drinking bottles, tetra bottles, single-use straws Styrofoam teacups and containers, plastics with a thickness of less than 50 microns, and other single-use plastics were all banned⁶³. Ramanjaneyulu GV, a social activist, stated of the ban, "Although consumption has decreased, all of the plastic items are still present. However, due to environmental concerns, individuals are now hesitant to utilise them."⁶⁴

Chandigarh - In September 2019, the administration of Chandigarh resolved to ban articles made of single-use plastics, including, but not limited to, cutlery, thermocol or styrofoam cutlery, containers, sealed drinking water glasses, single-use razors, single-use pens, thermocol for decorative purpose, and plastic material for decorative purposes, such as wrapping sheets, frills, garland, confetti, plastic ribbons, and so on.⁶⁵ By the directives issued by the National Green Tribunal, if a person is found using, storing, purchasing, dealing with, or distributing plastic bags, plates, glasses, or other linked products, they would be required to pay environmental compensation of Rs 5,000 per incident.

●Chhattisgarh - The Government of Chhattisgarh attempted to make the state free of plastic by issuing a directive with effect from January 1, 2015, which prohibited the usage of carry bags made of polythene.⁶⁶, to welcome this initiative, the

⁶¹ "Plastic bottles are made of polymers, which are chemically bonded to create materials such as polyethylene and polystyrene. The different raw materials of plastic bottles include polyethylene terephthalate and high-density polyethylene.", Gillespie C, "What Are the Raw Materials of Plastic Bottles?" (Sciencing March 2, 2019)

<<https://sciencing.com/raw-materials-plastic-bottles-5747796.html>> accessed December 27, 2023

⁶² "Telangana Govt. Bans Plastic in Civic Offices" (Business Standard June 14, 2018) <https://www.business-standard.com/article/news-ani/telangana-govt-bans-plastic-in-civic-offices-118061400306_1.html> accessed December 28, 2023

⁶³ "Which States in India Have Banned Plastic" (Business Insider July 30, 2019)

<<https://www.businessinsider.in/which-states-in-india-have-banned-plastic/articleshow/70218756.cms>> accessed December 26, 2023

⁶⁴<https://chandigarhenvi.gov.in/sites/default/files/LawsNotificationsRules/PlasticGuidebook.pdf>

⁶⁵ Pundir DS, "Ban on Single-Use Plastic: Chandigarh to Launch Crackdown during Festival Season" (Tribune India News Service2021)

<<https://www.tribuneindia.com/news/chandigarh/ban-on-single-use-plastic-chandigarh-to-launch-crackdown-during-festival-season-325609>> accessed December 27, 2023

⁶⁶ From 2015, Plastic Carry Bags Banned In Chhattisgarh, MP Climate Change Knowledge Portal, < <http://www.climatechange.mp.gov.in/en/news-events/news-features/2015-plastic-carry-bags-banned-chhattisgarh>> accessed December 27, 2023

Government decided to designate the state as “Plastic Carry Bag Free”, following a notification released by the Department of Urban Administration and Development.⁶⁷

- Delhi - In July 2021, the South Delhi Municipal Corporation decided to prohibit single-use plastics in malls as well as marketplaces. According to the official guidelines, plastic bags with a thickness of up to 50 microns are prohibited, although a senior official stated that the goal is to eliminate the use of plastic bags. Malls and markets are participating in the programme, but if they are discovered to be breaking the rules, challans will be given.⁶⁸

According to a draft action plan for the removal of ecologically hazardous products, the Delhi government will identify single-use plastic littering hotspots and the entrance sites of such things into water bodies and drains by October 31, 2021. By June 30, 2022, all single-use plastic goods and production facilities in the capital will be decommissioned. According to the research, municipal governments and departments of the environment and urban development would give incentives for alternative market penetration and design a plan to promote recycling technology and recycled goods.⁶⁹

- Gujarat - The Gujarat government has begun outlawing single-use plastics and is taking a stand against makers of single-use plastics and plastics less than 75 microns thick, following the government of India's recent notification of the Plastic Waste Management (Amendment) Rules, 2021.⁷⁰

- Haryana - The Haryana government decided to prohibit single-use plastic water bottles in all government buildings in the state on the eve of World Environment Day 2018. The departments involved were told to go into mission mode and implement the five-point plan with public engagement within six months.⁷¹ Gurgaon's municipal

⁶⁷ Pti, “Chhattisgarh Bans Use of Plastic Bags” ([https://www.oneindia.com/January 1, 2015](https://www.oneindia.com/January_1_2015)) <<https://www.oneindia.com/india/chhattisgarh-bans-use-of-plastic-bags-1609274.html?story=3>> accessed December 27, 2023

⁶⁸ Rajput A, “Single-Use Plastic Banned in South Delhi Markets” (The Indian Express July 14, 2021) <<https://indianexpress.com/article/cities/delhi/single-use-plastic-banned-in-south-delhi-markets-7404689/>> accessed December 27, 2023

⁶⁹ “Delhi Govt to Shut Single-Use Plastic Manufacturing Units by June 2022” (mint August 18, 2021) <<https://www.livemint.com/news/india/delhi-govt-to-shut-single-use-plastic-manufacturing-units-by-june-2022-11629303832466.html>> accessed December 27, 2023

⁷⁰ Dave K, “Gujarat to Ban Single-Use, Sub-75-Micron Plastics: Ahmedabad News - Times of India” (The Times of India 2021) <<https://timesofindia.indiatimes.com/city/ahmedabad/state-to-ban-single-use-sub-75-micron-plastics/article-show/85382725.cms>> accessed December 27, 2023

⁷¹ “Haryana Bans Single-Use Plastic Water Bottles in All Government Offices” (The New Indian Express June 4, 2018)

corporation (MCG) said that it had initiated efforts to establish a ban on plastic thinner than 75 microns in the city.⁷²

- Karnataka - In March 2016, the Government of the state of Karnataka imposed a complete prohibition upon the manufacture, sale as well as usage of plastic bags in the state, through Notification FEE17EPC2012. Non-compliance with the directive entails a fine. During the year 2018-19, an estimated 272776 tons of plastic waste had been generated in the state of Karnataka.⁸⁶ The notification did, however, provide for three exceptions. It permitted plastic to be used to package milk and milk products, in nurseries and horticulture, and in Special Economic Zones for export purposes.⁸⁷

- Kerala – The Kerala government declared in January 2020 that the sale, storage, production, and transportation of single-use plastic goods will be prohibited throughout the state. According to the rule, wholesalers, retailers, or plastic producers found in possession of such plastic products — plastic carry (polyethene) bags, disposable cups and plates, straws, and plastic wrappers — were fined Rs 10,000 for the first offence, Rs 25,000 for the second, and Rs 50,000 for the third. Stores were raided often by civic and police authorities, who seized tens of thousands of plastic carry bags.⁸⁸

- Manipur – Chairman of the Manipur Pollution Control Board (MPCB), L Radhakishore, announced that all single-use plastic will be banned in Manipur from May 15 2021. Plastic sheets, plastic wraps, multi-layered plastic without marking or labelling, and 1-litre PET (polyethene terephthalate) bottles will be banned from May 15, 2021. Plastics with a thickness of less than 50 microns were formerly prohibited by the state. Furthermore, using single-use plastic was made illegal under the new guidelines. Under the Environmental (Protection) Act, 1986, those discovered making, marketing, or using single-use plastic may be sentenced to five years in prison or fined Rs 1 lakh, or both.⁷³

<<https://www.newindianexpress.com/nation/2018/jun/04/haryana-bans-single-use-plastic-water-bottles-in-all-government-offices-1823666.html>> accessed December 27, 2023

⁷² “Curbs on Plastic Thinner than 75 Micron in Gurgaon” (The Times of India 2021) <<https://timesofindia.indiatimes.com/city/gurgaon/curbs-on-plastic-thinner-than-75-micron-in-Gurgaon/article-show/87594247.cms>> accessed December 27, 2023

⁷³ “Ban on Single-Use Plastic from May 15” (The Sangai Express - Largest Circulated News Paper in Manipur March 12, 2021) <<https://www.thesangaiexpress.com/Encyc/2021/3/12/By-Our-Staff-ReporterIMPHAL-Mar-11-Manipur-Pollution-Control-Board-MPCB-Chairman-L-Radhakishore-today-declared-that-Manipur-will-ban-all-single-use-plastic-from-May-15-this-year-Radhakishore-.html>> accessed December 27, 2023

●Madhya Pradesh - A complete ban on carry bags made of plastics was imposed in the state of Madhya Pradesh with effect from May 2019.⁷⁴ One of the primary reasons cited for the implementation of this measure was the huge and increasing number of cow deaths resulting from the consumption of plastic waste.⁷⁵

Rajasthan - From August 1, 2010, the Rajasthan government imposed a blanket prohibition on the usage of plastic carry bags throughout the state.⁷⁶ The entire state was proclaimed a "plastic carry-bag-free zone" as per the notification. The restriction has also been made applicable to the manufacturing, storage, import, sale, and transportation of plastic carry bags, according to the official announcement. Consumers will not be able to purchase items in these carry bags from any shopkeeper, merchant, trader, hawker, or vendor. Any violation of the guidelines, according to the statement, entails a prosecution under Section 15 of the Environment Protection Act, which carries a penalty of five years in imprisonment a fine of up to Rs.1 lakh, or both. Repetition of the offence may result in a daily penalty of Rs.5,000.⁷⁷

6 Judicial interpretations

The judiciary has also been quite active in banning the usage of single-use plastics. The National Green Tribunal has requested a nationwide ban on the usage of PVC banners by the Ministry of Environment, Forest and Climate Change during the elections in 2019. Apart from the National Green Tribunal, the Election Commission has also banned the usage of PVC banners in both the 2018 and 2019 elections. Moreover, in cases like *Almitra H Patel v. Union of India & Ors.*⁷⁸ and *Ravikiran Singh v. Union of India & Ors.*⁷⁹ the Honorable Court has banned the usage of PVC banners. Again, in another case, the same decision was passed that unauthorized

⁷⁴ 90 CENTRAL POLLUTION CONTROL BOARD, 2021. Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules. Delhi: Ministry of Environment, Forest and Climate Change, Govt. of India.

⁷⁵ 91 "Madhya Pradesh Bans Plastic/Polythene Bags from May 1" (The Economic Times 2017)

<<https://economictimes.indiatimes.com/news/politics-and-nation/madhya-pradesh-bans-plastic/polythene-bags-from-may-1/articleshow/58128505.cms?from=mdr>> accessed December 27, 2023

⁷⁶ CENTRAL POLLUTION CONTROL BOARD, 2021. Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules. Delhi: Ministry of Environment, Forest and Climate Change, Govt. of India.

⁷⁷ "Rajasthan Bans Plastic Carry-Bags" (The Hindu July 26, 2010) <<https://www.thehindu.com/news/Rajasthan-bans-plastic-carry-bags/article16211138.ece>> accessed December 27, 2023

⁷⁸ *Almitra H. Patel v Union of India and Ors.* [1998] 2 SCC 416

⁷⁹ *Ravikiran Singh v Union of India and Ors.* [2016] SCC Online NGT 3158

banners and advertisements need to be removed⁸⁰. To elaborate in detail, in the case of *Almitra H Patel v Union of India and Ors*⁸¹ the Hon'ble Court recognized that the role of citizens in a country like India is of paramount importance. Improper disposal, or non-disposal, of waste, can potentially pose serious threats to the environment and surroundings of cities. It is thus necessary to ensure that the directives are properly implemented before the problem goes out of hand. However, it is ultimately the responsibility of the government to make sure that the same is put into effect. In India, the enforcement of environmental law largely lies upon the judiciary, which ought to be hand in hand with the citizenry. The Petitioners in this case demanded that there should be endeavours to ensure that the massive amounts of municipal waste disposed of every day ought to be properly treated. The court stated that this waste can be converted into electricity or fuel, and thus can be utilized for the benefit of all. Further, in the judgement of *Ravikiran Singh v Union of India*,⁸² the court highlighted the issue of the massive number of PVC hoardings and banners which were being installed for advertisements and other purposes. Such materials are extremely harmful to the environment. The use of PVC banners as hoardings as well as for various other purposes was subsequently prohibited. Similarly, in the judgement of *Chennai Non-Woven's Private Limited v State of Tamil Nadu*,⁸³ the Tamil Nadu government's decree prohibiting the use of single-use plastic has been affirmed by the Madras High Court.

The state government was instructed by a bench of Justices R Subbiah and Krishnan Ramasamy to stop supplying 'Aavin' brand milk in plastic packets and instead adopt bottles or other methods. "We, therefore, direct the government to implement the banning of all multi-layered plastic wrappers and covers, which are meant for one-time use and throwaway, to make the ban effective and meaningful," it said. Again, in Kerala HC SSCR No 9 of 2018,⁸⁴ the High Court of Kerala has issued a categorical decision prohibiting the use of all types of plastic at Sabarimala, including plastic materials such as sachets and covers used to cover the offerings carried by worshippers in their "Irumudikkettu" travel pouch. The court's distress at the alarming degree of pollution produced by indiscriminate plastic use, as well as its concern for the area's holiness and ecological balance, were expressed in the order. The authorities were urged to apply the prohibition delicately, so as not to cause the devotee any unnecessary distress or to be viewed as a nuisance. Now coming to the case of *R. Kavin vs The Secretary to Government*¹⁰¹ it was pronounced that the Government shall consider phasing out all types of plastic on the market, including the plastics mentioned in the proviso to Directions 1(b) of the G.O. (Ms). Department of Environment and Forests (EC-2) No. 84, issued June 25, 2018. These are some of the cases in which the authors have highlighted how the honourable courts of India have constantly supported and passed judgment to ban the usage of plastic.

⁸⁰ *St. Stephens Malankara Catholic Church V. St. of Kerala and Others*, (W.P.(C) No. 22750 of 2018

⁸¹ *Almitra H. Patel v Union of India and Ors.* [1998] 2 SCC 416

⁸² *98 Ravikiran Singh v Union of India and Ors.* [2016] SCC Online NGT 3158

⁸³ *99 Chennai Non-Woven's Private Limited v State of Tamil Nadu WP No 33453 of 2018*

⁸⁴ *100 SSCR No 9 of 2018*

7 Findings

To answer the second research question, the authors have conducted a pilot study by collecting data from 100 Vendors based out of Gandhinagar and Ahmedabad district of the State of Gujarat to understand how well has the 2021 Rule been accepted by them. The authors have also tried to under the problems which the Vendors might face and their expectations from the government. The 100 vendors were selected randomly and the only limitation that the authors faced was that they could have reached out to more vendors due to the Covid-19 restrictions. The authors prepared a questionnaire comprising 17 questions. The questions were both open-ended and closed-ended in nature. The data collection was conducted in 2 phases. In the initial phase the authors approached vendors who were primarily into selling grocery and stationary items and in the later phase the authors approached food joints.

It was identified in the research that out of 99 responses, 86.9% of the vendors were aware of the 2021 rule. At the same time as mentioned in Figure 5, it was quite alarming to witness that 89% of the total respondents use plastic bags.

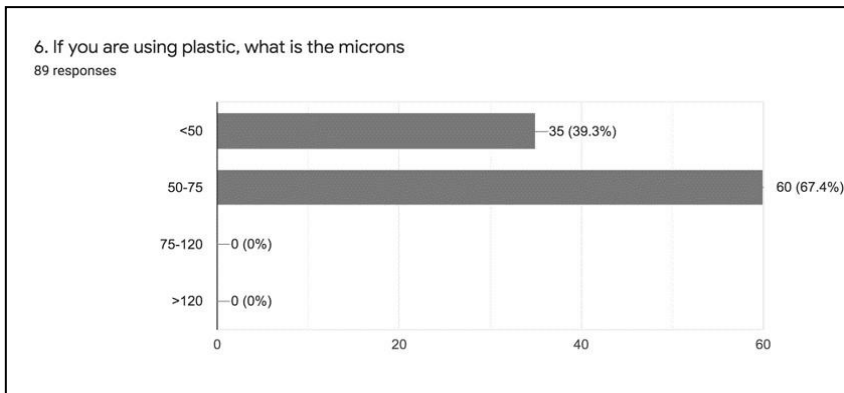


Figure. 6 Highlights the micron of the plastics used by the vendors

Moreover, out of 89 responses, 39.3% of vendors still use plastic bags which are less than 50 microns and this is completely in violation of the Rule 2021. To add to this as per Rule 2021 by December 2022 the vendors are expected to use plastic with more than 120 microns but unfortunately, as per the authors' survey, none of the vendors now practice the same. However, as mentioned in Figure 7 only 4% of the

vendors have thought of using plastics over 120 microns. 86% of the respondents have referred to the use of paper bags. This is where the authors are worried as paper-

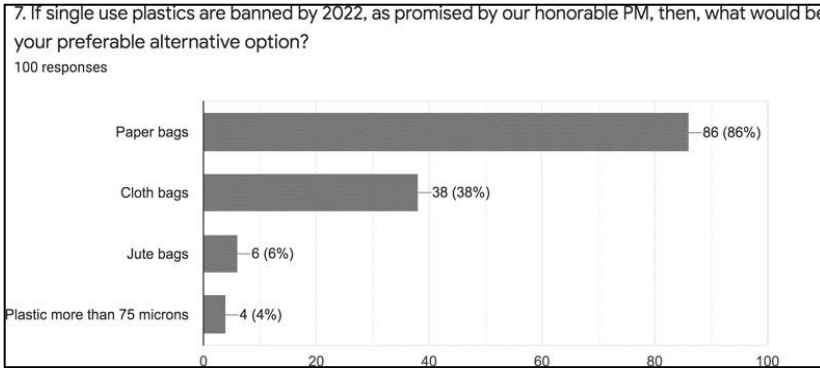


Figure. 7 highlights the alternative of plastic which the vendors have planned to use for their business purposes.

bags are not as durable as plastic bags and there are certain items like e.g.: frozen foods, milk packets etc. would make the paper bags soggy. This is where the authors feel that the honourable government of India can come up with a proper guideline as to how to manage the alternative items when plastic, below 120 microns is no longer to be used.

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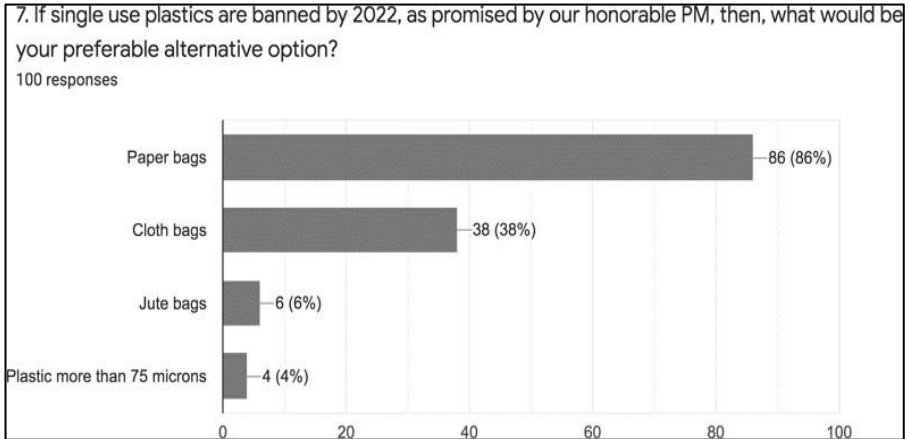


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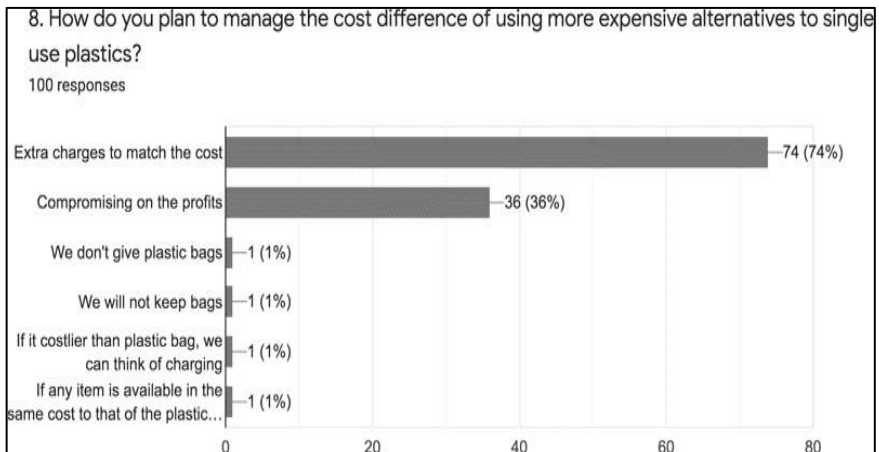


Figure. 8: Highlights the cutlery used by the food joints.

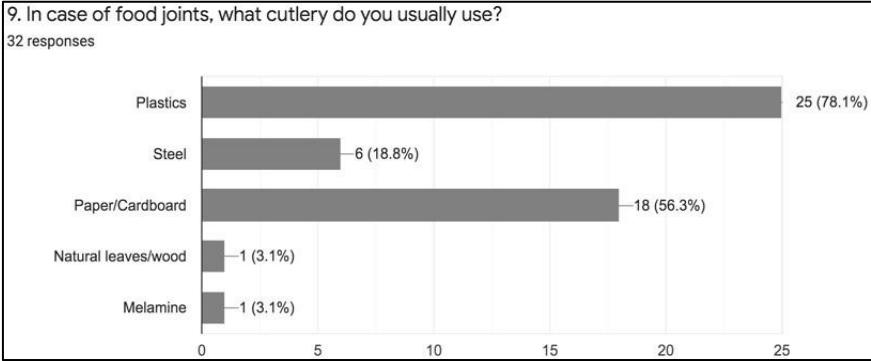


Figure. 9: Highlights the alternatives which the food joints have thought of using in place of plastic, and Highlights how the food joint vendors have decided to manage their profit margin.

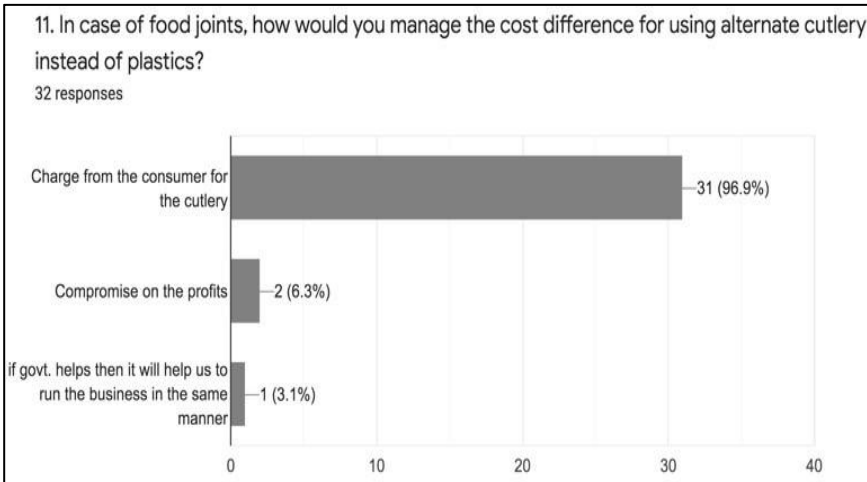


Figure. 11 Highlights how the food joint vendors have decided to manage the cost of the cutlery

The research next focuses on food joints. Out of the 100 respondents, 32 respondents were food joints. These food joints were a mixture of shops and street vendors. The authors were very happy to learn during the collection of data that though 78.1% of respondents out of 32 responses are using plastic cutlery now 96.9% of the respondents out of the 32 responses are happy to shift to paper or cardboard cutlery and plates. Another challenge for the vendors is to ensure that the sales of the food items are retained. As mentioned in Figure. 9 the vendors would charge the customers the extra price of the alternative cutlery instead of plastic. This would substantially increase the price of the food items and there may be several customers who would not be able to afford the same, hence there could be a decline in the profits

of the food joint vendors. Therefore, the authors believe that the government should support these vendors at least during the initial transition phase.

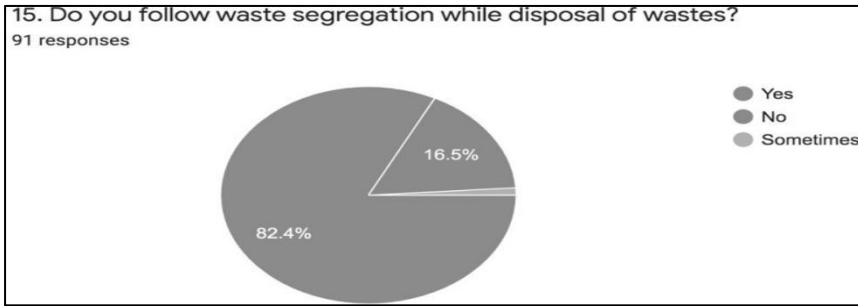


Figure. 15 Depicts the percentage of vendors/shopkeepers which follow the practice of waste segregation before its disposal

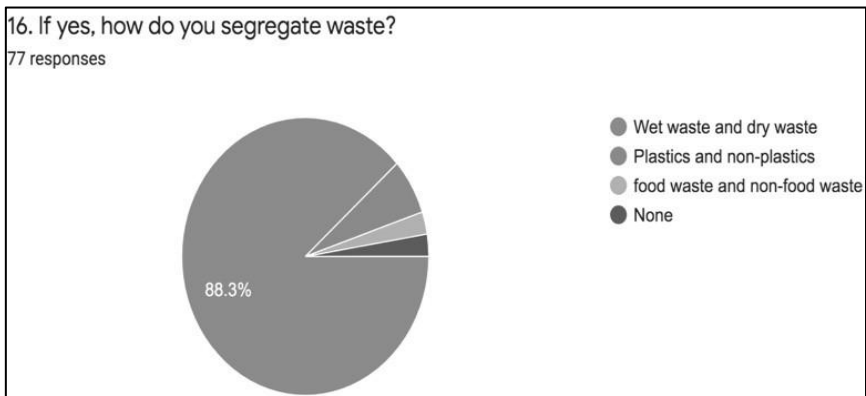


Figure. 16 Depicts how the respondents segregated waste before its disposal.

According to the Central Pollution Control Board, India generates 10 lakh tonnes of plastic every year. If the waste so generated were sold at an average price of fifty cents for each kilogram, a revenue of 56,000 crores could be generated in a year⁸⁵. Despite this, most of the plastic waste remains untreated and ends up in places like landfills or water bodies. To ensure that the waste is properly handled and recycled, it is essential to make sure that the same is segregated at source. The segregated waste ought to then be properly transported and treated.

⁸⁵ Shenoy M, "A Plastic Charter" (The Hindu June 13, 2018) <<https://www.thehindu.com/opinion/op-ed/a-plastic-charter/article24146946.ece>> accessed December 28, 2023

The Plastic Waste Management Rules, 2016⁸⁶ were amended in the year 2021⁸⁷. While the 2021 amendment is silent on the issue of segregation of waste by the generator before its disposal, the 2016 Rules talk briefly about the same. The 2016 Rules, as well as the 2018 Amendment to the Rules⁸⁸, refer to the Municipal Solid Wastes (Management and Handling) Rules, 2000. As per the 2000 Rules, “segregation means to separate the municipal solid wastes into the groups of organic, inorganic, recyclables and hazardous wastes”.⁸⁹ However, the authors suggest that more comprehensive guidelines ought to be laid down about waste segregation, such as directives regarding the separation of plastic and non-plastic waste materials etc, to realize the full intended potential of the Acts. In the above study, a total of 100 respondents were contacted, out of which 91 responded. Of these 91 respondents, 82.4% of individuals stated that they follow the practice of segregating waste before disposal, while 16.5 persons did not. 1.1% of respondents sometimes segregated the wastes, and sometimes did not. Out of the 100 respondents contacted, only 77 respondents responded. This gap of 23% itself highlights the lack of awareness and responsibility among the masses. Moreover, 88.3% of the respondents segregated the waste as wet and dry, 6.5% as plastics and non-plastics, 2.6% as food waste and non-food waste, and the remaining 2.6% did not adhere to any of the above-mentioned categorizations.

The process of recycling plastics can be facilitated only when the disposed waste is separated based on plastic waste and non-plastic waste. The findings of the survey are rather alarming and depict a lack of awareness among the common people concerning the correct measures and well as the implications of proper segregation of waste before disposal.

The authors strongly feel that these gaps need to be bridged in India. There should be sensitization and awareness initiatives by the Governments, local bodies, non-governmental organizations, educational institutions and public-spirited citizens for the general public. Such initiatives can potentially become stepping stones for a cleaner, greener and healthier tomorrow.

⁸⁶ Plastic Waste Management Rules, 2016

⁸⁷ 104 Plastic Waste Management (Amendment) Rules, 2021

⁸⁸ 105 Plastic Waste Management (Amendment) Rules, 2018

⁸⁹ 106 Municipal Solid Wastes (Management and Handling) Rules, 2000.

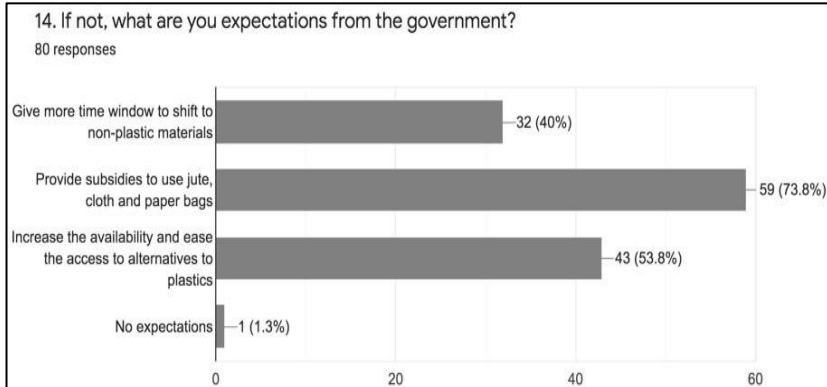


Figure. 14 Highlights the expectations of the vendors from the government.

Lastly, the authors would conclude their findings by saying there are a few expectations of the vendors from the government and it is possible the government can support them at this phase so that there would be a smooth transition. 40% of the respondents of the 80 responses expect more time. Unfortunately, that would not be possible hence the authors request that if the government can provide a subsidy in the alternative materials of plastic then it would be comfortable for the vendors to continue their business with almost the same amount of profit. Moreover, the authors also believe that aggressive building of factories for alternatives to plastic items should begin so that in 2022 there would not be any dearth of items.

8 Conclusion

There have been significant developments with the initiative taken by our Honorable Prime Minister to make India free from plastic pollution as far as possible. The authors have tried to provide their recommendations to ensure that the 2021 Rule can be implemented successfully in India. The authors came across reports stating that Arunachal Pradesh, Bihar, Daman Diu & Dadra Nagar Haveli, Jammu & Kashmir, Kerala, Maharashtra, Manipur, and Sikkim are the eight (8) states/UTs that have not given information concerning the steps taken by them towards the elimination of single-use plastics. Hence, the authors are positive that the implementation of the 2021 Rules, would be automatically binding upon the entire country to work implement and execute the same. In India now plastic waste is being used in various industries hence the authors are hopeful that this can significantly reduce plastic pollution in the country. Some of the examples are as follows⁹⁰:

Plastic refuse is being sent to cement plants in 14 states/UTs, including Andhra Pradesh, Assam, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Puducherry, Tamil Nadu, Telangana, and Uttar

⁹⁰ cf Annual Report for the year 2018-19 on Implementation of Plastic Waste Management Rules (n43).

Pradesh. The authors feel that this can potentially prove to be a wonderful initiative towards ensuring that disposable plastics are efficiently utilized after usage, and can also contribute towards value addition in a multiplicity of ways.

Plastic waste is being used for polymer bitumen road building in 15 states/UTs, including Andhra Pradesh, Assam, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Puducherry, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal.

The plastic refuse is recycled in 16 states/UTs, including Andhra Pradesh, Chhattisgarh, Goa, Jharkhand, Karnataka, Lakshadweep, Madhya Pradesh, Nagaland, Punjab, Tamil Nadu, Telangana, Uttarakhand, and Uttar Pradesh. The same is certainly a step towards sustainable utilization of the generated waste.

Plastic waste is being sent as Waste to Energy plants in two states/UTs: Himachal Pradesh and Delhi. Not only does this help with the treatment of generated waste, but is also a step towards energy efficiency. This initiative by Himachal Pradesh and Delhi should motivate the various other States and Union Territories of the country to take similar steps towards sustainability.

Plastic refuse is being used in a waste-to-oil facility in Uttar Pradesh. The same is also used as RDF in Chandigarh, Goa, and Madhya Pradesh.

India still faces a multiplicity of challenges about the banning of single-use plastics in the country. The authors believe that to reach the 2022 target for eradicating single-use plastics, the government has not established a comprehensive strategy regarding dates. States and union territories are not required to phase out single-use plastics by 2022, according to the recommendations. That goal of 2022 is now more idealistic due to the lack of a defined route.⁹¹

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⁹¹ 108 InsightsIAS, "Ban on Single-Use Plastic" (INSIGHTSIAS October 3, 2019) <<https://www.insightsonindia.com/2019/10/03/ban-on-single-use-plastic/>> accessed December 27, 2023

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