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Economic and Environmental Outcomes of Plastic Bags Ban: A Case Study of Sonipat City

Amita Rani[†]

Abstract

Plastic bag is one of the various miracles but a controversial invention of the 20th Century. Worldwatch Institute (2017) estimated that 4-5 trillion plastic bags are consumed annually across the world, appreciated for contributing to the medical field, hygienic food packaging and reducing packing costs in many industries. But during the 21st Century, disposal of waste created by plastic bags posed a complicated problem as only 1 per cent of bags are recycled. Research revealed that the waste created by poly bags deposited in the oceans, urban drainage, and agricultural soil damages our ecosystem. Accumulation of plastic on soil, water and air for a long time works as the entry point for carcinogenic toxins in the food chain and harms flora and fauna rigorously. Whereas some policies devised to ban plastic bags ended up adversely impacting customers and businesses.

India, with the use of 14 million plastic annually, faces the problem of plastic pollution due to the lack of an organised plastic recycling system. To combat this problem, the Indian Government came up with Plastic Waste Management Rule 2016. It passed a resolution to ban single-use plastic manufacturing, trade, and utilisation from July 2022. The present study is an attempt to analyse and evaluate the pros and cons of the plastic ban policy in the context of environmental and economic outcomes in Sonipat city. Quantitative and qualitative techniques are applied to the primary data collected from the field survey. Based on the study's findings, suggestions have been given to face the challenge of banning plastic bags in Sonipat city.

Keywords: Plastic Bags; Ban; Pollution; Environment; Economy; Plastic Waste; Sonipat, Haryana; India

[†] Assistant Professor in Economics, Government College for Women, Sonipat, Haryana, India,
email: panghalamita@gmail.com

Background

A plastic bag is one of the various miracles but the controversial invention of the 20th Century. These plastic bags are made up of poly-ethylene and poly-propylene films stretched to an appropriate length. Poly bags are thin, lightweight bags used for packaging and transporting all kinds of solids, liquids and even gaseous products. In an analysis, the Worldwatch Institute (2017) estimated that about 4-5 trillion plastic bags are consumed annually worldwide. As evident, these bags are used daily in our lives by various entities—in the medical field, hygienic food packaging and many more, thereby reducing the cost of packing in many industries. Soon light, weighted poly bags weighed heavily in terms of demand for being cheap, lightweight, packing-friendly and convenient for consumers (Worldwatch Institute, 2017). But during the 21st Century, disposal of waste created by plastic bags posed a complicated problem as only 1 per cent of bags are recycled. Various studies claim that the rest of the waste deposited in oceans, urban drainage systems, agricultural land, etc., is damaging our ecosystem (Gourmelon, 2015; Royer et al., 2018; Singh & Devi, 2019; Schmidt et al., 2017). Accumulation of plastic on soil, water and air for a long time works as the entry point for carcinogenic toxins in the food chain and harms flora and fauna rigorously. Given these adverse environmental impacts, many national and regional governments imposed plastic use ban on plastic use in different ways- specific items ban, single-use plastic ban, emphasis on plastic recycling and promotion of alternatives. Another perspective on plastic ban claims that implementation of plastic-banning policies would affect customers and businesses adversely. Studies have been conducted to estimate the loss in terms of rising packaging costs and adverse impact on Micro, small and medium industries (MSME) input cost, which in turn affects product prices, MSME's market competitiveness, unemployment, impact on export and tourism but estimates are less than assumed damage (Pacatang, 2020; Philips et al., 2020). However, some studies see the bright side of these plastic ban policies as it will open a circular economy in the plastic industry, that is, an increase in market demand of alternatives (jute, coconut, cotton and straw articles), expansion of plastic recycling industry, new eco-friendly products (Simon, 2019; Klemeš et al., 2021). Given this discussion, many governments are working on policies to ban plastic use. However, another aspect of the plastic ban policy is the successful implementation of the policy, which depends on many factors— is it a complete or partial ban on plastic (Kenya, Bangladesh), alternative article promotion or restriction on specific plastic article use, and finally focus on recycling rather than plastic ban policy (Sweden) or focus on elimination of plastic waste (UK), whereas some nation like India includes all three- preventive, controlling and abate measures to handle plastic pollution. Here, most of the studies indicated that consumers' and small vendors' awareness and participation are essential for the success of the plastic ban policy (Ahmed et al., 2002; Ahsan et al., 2020; Perera et al., 2020; Umasankar et al., 2021). The present study is an effort to inspect consumer behaviour towards the plastic ban policy.

Adverse Impact of Poly Bags

The development and growth of the economy, on the one side, is appreciated for upgrading human life with comforts, luxuries and facilities, but on the other side, it is being criticised, especially for environmental degradation and generating non-biodegradable waste. The noteworthy use of poly bags has created alarming waste management problems. As per Worldwatch Institute Analysis (2017), around five billion poly bags are used worldwide every year, meaning that each person uses 83 poly bags every year, or one bag every four and a half days. However, a non-biodegradable bag takes years to degrade and deposit in soil and water, creating problems for all ecosystems in several ways, as discussed below:

- Poly bags are difficult and costly to recycle; hence, they are deposited in

landfills as they take more than 300 years to degrade in parts. This in turn, creates methane and ethylene and releases Greenhouse gases (Royer et al., 2018).

- Deposition of poly bag waste in soil hinders the seeping of rainwater to upgrade the soil's water level, which in turn increases the cost of groundwater harvesting for agriculture and drinking (Singh & Bhagwat,2022).
- Excess poly bags are thrown as a heap of waste block drainage systems in urban areas responsible for water logging in the rainy season (Singh & Devi, 2019). One of the various reasons for flooding in Mumbai during July 2005 (Business Standard, 2018) incurred a loss of INR 5.5 billion and 1000 lives due to the blockage of the drainage system caused by the deposition of poly bags in the rainy season (Kadave et al., 2016).
- Studies elucidate that urban hard waste includes twelve per cent poly bags, when burned to dispose of, emit gasses and toxic waste settled on crops and water, entering the food chain responsible for causing cancer, respiratory system problems, neurological disorders and many more (Verma et al.,2016; Singh & Sharma,2016; Alabi et al., 2019).
- Mostly solid and plastic waste is dumped in local water bodies from where it makes its way to oceans. The top ten rivers[1] bring 88 to 95 per cent of plastic waste to seas and oceans, which are deadly for aquatic life (Schmidt et al.,2017).
- Evidently, eleven billion plastic items are scrambled across the Asian region, and the deposition of synthetics in coral reef buildings increased the chances of diseases (black band diseases, white syndrome or skeleton eroding diseases in coral reefs) from 4 per cent to 89 per cent (Lamb et al., 2018).
- The materials used in poly bags and colours used to make them fancy have contaminated the food products—milk, water, juice, etc., proving unhygienic and mal-nutrient for human consumption. Medical experts say prolonged polythene use is carcinogenic and can cause skin diseases and other health problems (Proshad et al., 2018).

The Indian Ministry of Environment, Forest and Climate Change (MoEFCC) in 2021 revealed hat with the use of 14 million plastic annually faces the problem of plastic pollution due to a lack of organised plastic recycling system. India's annual plastic consumption rate is 11 kilograms against the global consumption rate of 28 kilograms annually. Hence, plastic waste produced in 2019-20 is more than three million tons. Deposition of significant amounts of non-biodegradable waste in rivers, oceans and other landfills endangers geographic life. In India, only 15 per cent of total waste is processed, and the rest of the waste-deposited sites are overburdened due to a lack of space (Dhanshyam & Srivastava, 2021). In most advanced nations, poly waste management seriously threatens metropolitan cities as trash collection, segregation, and recycling facilities are insufficient (Dharwal et al., 2022).

Further, the deposition of poly bags, water bottles and other plastic garbage in the cities blocks the drainage pipes, which is primarily responsible for floods in metropolitan cities in India (Pathak & Nichter, 2021; Naik et al., 2021). During the COVID-19 pandemic plastic-based personal protective equipment (PPE) kits were used excessively to keep people safe, but this ended with a surge in plastic waste in the form of gloves, medical suites, sanitisers bottles and food packets (Lockhart et al., 2020). The pandemic has increased consumer concern about safety and hygiene, which hyped the problem of plastic waste management before economies (Rai et al., 2020; Parashar & Hait, 2021; Benson et al., 2021; Vanapalli et al., 2021). Hence, finding the correct method of elimination of plastic waste with minimum segregation at the source and recycling structure posed a big

[1] The names of top ten rivers are as: (1) Chang Jiang, (2) Indus, (3) Huang He, (4) Hai He, (5) Nile, (6) Bramaputra, (7) Zhujiang, (8) Amur, (9) Niger, and (10) Mekong.

challenge. The existing system of plastic waste disposal in India is insufficient for effective separation, gathering and reprocessing. State Pollution Control Boards (SPCBs) raised their voice for framing effective plastic recycling policies from time to time. To combat this problem, the Indian Government made law—Plastic Waste Management Rule, 2016. It passed a resolution to ban single-use plastic manufacturing, trade and utilisation from July 2022. The Government framed a policy to curb plastic waste pollution at the local, state and national levels by issuing notices to raw material suppliers of restricted items, especially plastic with a thickness of less than 100 micrometres. As the environment is a public good, fixing responsibility to protect it requires special efforts. To combat this problem, the Indian Government framed policy and issued guidelines for producers using plastic packaging under the Extended Producer Responsibility (EPR) clause in February 2022. Under the EPR clause, producers of single-use plastic need to collect and manage plastic along with its recycling as the width of plastic in these products increased to 100 microns from 75 microns, which is cost-effective.

It is interesting to note here that Bangladesh was the first country to impose a ban on poly bags in 2002, but till 2015, people, irrespective of age, gender, or class, were unaware of its biodegradable variety (Synthia & Kabir, 2015). The success of any policy made by the Government to save the environment depends on the population's awareness of different aspects of the policy (Ahmed et al., 2002; Ahsan et al., 2020). However, it appears that this awareness drive has been lacking in the context of India. The methods and methodologies deployed in the study are discussed in the next section.

Methods and Methodologies

The present study is an attempt to analyse and evaluate the pros and cons of public behaviour towards the Government's plastic ban policy in the context of environment and economic outcome in the town of Sonipat, Haryana. For this, quantitative and qualitative techniques are applied to primary data collected from 112 people, including targeted units like vendors, retail sellers, and buyers from four local markets in Sonipat town, cloth market, *kache* quarter, *halwaiatta* and Sector fourteen markets using structured-questionnaire. The findings of this study are compared with national data collected from secondary sources. Sample units were selected by applying the probability convenience sampling technique. The study's findings suggest the challenges of banning plastic bags. The research questions of the study are:

- To find out possible reasons behind the use of poly bags and the deposition of poly bags waste.
- To locate users' awareness level about the adverse impact of poly bags on the environment and highlight the most effective source of spreading awareness about lessening the use of poly bags.
- To study the behaviour of the public toward the use of poly bag alternates and poly bags ban.
- To find out answers to research questions on different aspects of poly bags, a few questions were framed in the questionnaire as poly bags are the most commonly used goods. These open-ended questions were: the reasons behind the wide usage of poly bags; awareness about the impacts of poly bag usage on the environment; environment-friendly options used for poly bag disposal; source of awareness about harmful effects of poly bags and ban on poly bags; and use of alternate poly bags.

Framework

The study aimed to analyse the public attitude toward various aspects of poly bag usage (Figure 1). So, the data were collected in four ways for the sample unit categories. This is based on sex, sample units' educational status, age's role on their behaviour, and the impact of occupation on their behaviour. These four variables were further categorised into subcategories. Most respondents were males (67 per cent) and about 35 per cent were highly educated. The reason behind selecting the male population is that they could understand the study's meaning and

process easily and were willing to fill in the questionnaire. The survey results revealed that about 29 per cent were self-employed, while the others, about 28 per cent, were salaried employees. The majority of the respondents were learners; hence, this age group of 19-28 constitutes 48 per cent, followed by the age group of 29-38 years with about 28 per cent of total respondents. The final criterion for selecting respondents is their education status, which is directly related to their profession. The maximum number of respondents in this group were undergraduate or postgraduates, constituting 38 per cent (it is interesting to note that Sonipat is known for the maximum number of educational institutes in North India), followed by 33 per cent of high school students, about 18 per cent students taking primary education and finally, approximately 11 per cent who participated in the study were illiterate (Table 1).

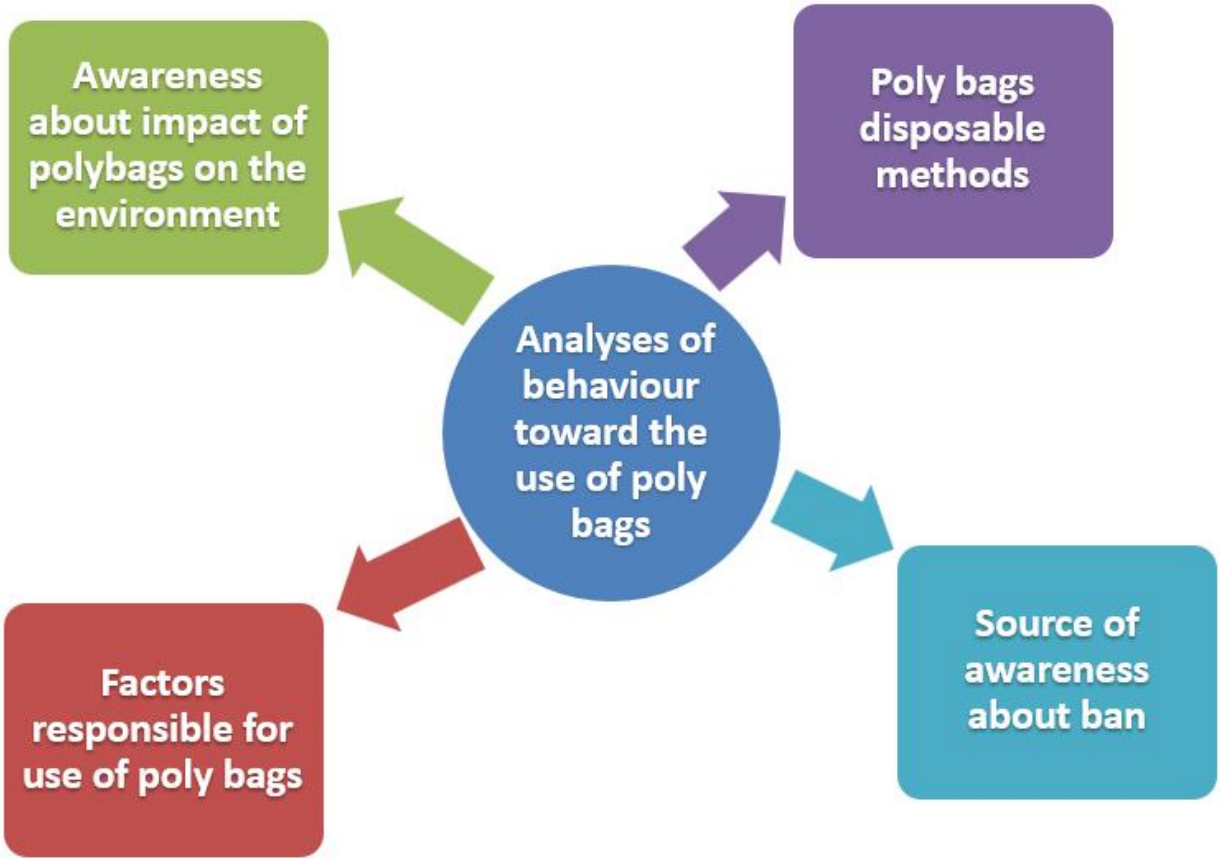

Figure 1: Dimensions of the Users' Behaviour towards the use of Poly Bags
Source: Author

Table 1: Descriptive Statistics			
Variables	**Category**	**Numbers**	**Per cent**
Gender	**Men**	**75**	**66.96**
	Women	**37**	**33.04**
Education	**Uneducated**	**12**	**10.71**
	Primary schooling	**20**	**17.86**
	High schooling	**37**	**33.04**
	Higher Education	**43**	**38.39**
Age	**Below 19yrs**	**13**	**11.61**
	18 to 28	**54**	**48.21**
	29 to 38	**31**	**27.68**
	Above 39	**14**	**12.50**
Livelihood	**Student**	**39**	**34.82**
	Salaried employee	**31**	**27.68**
	Self-employed	**32**	**28.57**
	others	**10**	**08.93**
Source: Field Survey 2022			
Note: In the text, the percentage has been used in whole numbers			

Findings

The Reasons behind the use of Poly Bags

To find out the response to the first question of why respondents prefer poly bags, it was unsurprising to learn that all 112 respondents used poly bags in large quantities. The data specify the practice of using poly bags by men is 31.0 per cent because it is convenient, whereas 27.0 per cent of men used poly bags as it is light weight, followed by 24.0 per cent of men used poly bags as a lack of substitutes. Only 18.0 per cent of men found the poly bags to be cheap. The same trend has been observed in the case of females. 45.0 per cent of females found poly bags convenient, 24.0 per cent of females used them in the absence of substitutes, whereas only 10 per cent of females found it cost-effective. This data indicates that the practice of using poly bags in everyday life (Table 2).

Table 2: Factors Responsible for using Polybags (per cent)				
Category of Variables	**Cost-effective**	**Lightweight**	**Convenient**	**Lack of Close Substitutes**
Gender				
Men	**18.04**	**26.87**	**31.01**	**24.08**
Women	**10.02**	**21.78**	**44.67**	**23.53**
Education				
Uneducated	**98**	**0**	**0**	**2.00**
Primary School	**25.54**	**19.46**	**35.68**	**19.32**
High School	**16.31**	**31.98**	**36.07**	**15.64**
Higher Education	**13.55**	**24.65**	**32.32**	**29.48**
Age Group				
Below 19yrs	**25.76**	**31.43**	**27.67**	**15.14**
19 to 28	**14.56**	**25.09**	**34.23**	**26.12**
29 to 38	**16.66**	**17.27**	**52.62**	**13.45**
Above 39	**48.23**	**13.29**	**15.38**	**23.10**
Livelihood				
Student	**18.45**	**23.77**	**31.34**	**26.44**
Salaried employee	**2.05**	**48.09**	**35.49**	**14.37**
Self-employed	**29.31**	**14.55**	**47.8**	**8.34**
Others	**3.13**	**25.07**	**46.86**	**24.94**
Source: Field Survey 2022				
Note: In the text, the percentage has been used in whole numbers				

Awareness about the Impact of Poly Bags

The survey revealed a big problem related to poly bag disposal. The statistics in Table 3 demonstrate that about 33 per cent of male research participants believe drainage system blockage due to the usage and irresponsible

disposal of poly bags, approximately 22 per cent believe that poly bags create human health problems, while 18 per cent believe that poly bags could be responsible for the death of animals, 16 per cent responded that due to irresponsible behaviour of disposal of polybags creating litter destroys the natural loveliness of the environment. The survey revealed that most respondents expressed worries about plastic bag waste on drainage system blockage, followed by human health, animal death and damage to city beautification due to poly bags littering, respectively. These findings of the study advocate the initiation of immediate steps to create an alertness program to minimise the hazardous effect of poly bags on the health of all living organisms, including animals. In the study area, plastic bag wastes are mostly accumulated near dumping sites, street food stalls, market areas and dense residential areas. These data reveal that respondents were aware of the harmful effects of poly bags, and the pollution caused by the excessive use of plastic bags is a great concern in the study area. Here, respondents are well aware of the fact that deposition of non-biodegradable plastic in considerable quantities in soil stops water and air diffusion in soil, resulting in a gradual decline in the productivity of agro lands.

Table 3: Awareness of Impact on the Environment

Category of Variables	Animal Death	Human Health	Drainage System Blockage	Damage City Beautification	Others
Gender					
Men	17.83	22.43	32.92	16.31	10.51
Women	14.43	16.76	43.04	21.13	4.64
Education					
Uneducated	83	4.34	5.03	7.63	0
Primary school	4	8.93	79.7	3.07	4.3
High School	23.05	24.26	40.43	9.32	2.94
Higher Education	16.42	21.93	35.7	25.82	0
Age Group					
Below 19 years	9.78	24.72	46.39	10.62	8.49
19 to 28	10.7	9.84	75.81	3.65	0
29 to 38	28.65	16.71	34.39	11.57	8.68
Above 39	21.3	4.83	42.85	29.34	1.68
Livelihood					
Student	15.48	25.92	31.73	21.03	5.84
Salaried Employee	33.34	16.67	33.43	16.56	0
Self-employed	15.83	21.85	36.65	25.67	0
Others	8.09	9.08	64.64	9.08	9.11

Source: Field Survey 2022
Note: In the text, the percentage has been used in whole numbers

Awareness about the Disposal of Poly Bags

The survey results showed that dumping poly bags in open spaces is standard practice, and heaps of poly bags waste is responsible for the blockage of the drainage system in the rainy season due to littering poly bags in the open. Our survey results (Table 4) reveal that about 47 per cent of male respondents and 51 per cent of female respondents dispose of poly bags in the open. But 31 per cent of males and 24 per cent of females burn the poly bags. Burring poly bag waste is also common in educated respondents. The survey's outcome suggested that disposal methods are quite limited, and the Government has developed no system for collecting non-biodegradable waste from the city; in the long run, this is creating problems. During field surveys, we witnessed heaps of garbage everywhere in the city, around the major market and residential areas. Even waste collected from homes and markets were dumped at a spot adjacent to the study area due to a lack of a proper disposal system. The practice of burning

polybag waste again creates massive air pollution harmful to human health.

Table 4: Disposal of Poly Bags

Category of Variables	Dumping	Burning	Burying	Others
Gender				
Men	46.85	31.19	14.67	7.29
Women	51.03	23.89	20.92	4.16
Education				
Uneducated	43.8	50.42	5.78	0
Primary school	51.65	2.93	34.98	10.44
High School	41.94	21.43	36.62	1.99
Higher Education	49.54	17.78	28.1	4.58
Age Group				
Below 19 years	41.49	8.73	39.94	9.84
19 to 28	51.17	19.28	29.52	0.03
29 to 38	39.86	19.77	38.94	1.43
Above 39	69.05	17.25	11.46	2.24
Livelihood				
Student	48.62	13.63	33.28	4.47
Salaried employee	52.9	14.06	31.37	1.67
Self-employed	51.83	15.26	25.24	7.67
Others	58.15	13.69	21.94	6.22

Source: Field Survey, 2022
Note: In the text, the percentage has been used in whole numbers

Awareness about the Ban on Poly Bags

Thirty-nine per cent of the male respondents and 36 per cent of female respondents appreciated social media's role in spreading awareness about the evil effects of poly bags and government policy about banning poly bag use. Sources of information in descending order are radio & television (28 per cent of males and 27 per cent of females), Print material (20 per cent of males and 19 per cent of females) and professionals (12 per cent of males and 10 per cent of females). Table 5 recommends using social media platforms to spread poly bag pollution awareness. The use of smartphones validates the fact that the maximum population has access to social media. The outcome of the survey advocates profession is also a source of information after TV and radio. However, respondents received minimal information about the ill effects of poly bag use from books, magazines, journals and other print media . Moreover, people read print media least.

Likewise, the survey exhibits that future generations should be made attentive towards using polyethene and provided with basic education about the importance of environmental protection from deadly particles. Similarly, the system must build a culture to save the green environment. Banning poly bags in educational institutes would help in reducing pollution. Government organizations must engage in a poly bags-free institute model for others. Most of the respondents in each group are well-informed about the issues related to poly bag waste. However, very little has been done to change the habits of people and the Government to develop a system for the collection and disposal of non-biodegradable wastes.

Table 5: Awareness about Ban on Poly Bags					
Category of Variables	**Radio/Television**	**Social Media**	**Books/ Newspapers**	**Professional**	**Others**
Gender					
Men	**28.48**	**38.85**	**20.43**	**12.24**	**0**
Women	**27.42**	**36.32**	**19.32**	**10.45**	**6.49**
Education					
Uneducated	**100**	**0**	**0**	**0**	**0**
Primary School	**54**	**10.12**	**0**	**35.88**	**0**
High School	**25.49**	**35.46**	**26.27**	**12.78**	**0**
Higher Education	**12.38**	**39.12**	**27.1**	**15.85**	**5.55**
Age Group					
Below 19 years	**26.17**	**37.1**	**15**	**11.28**	**10.45**
19 to 28	**19.42**	**39.83**	**17.12**	**12.59**	**11.04**
29 to 38	**21.29**	**32.83**	**18.13**	**23.29**	**4.46**
Above 39	**22.27**	**41.25**	**14.26**	**13.63**	**8.59**
Livelihood					
Student	**21.39**	**34.28**	**25.19**	**10.29**	**8.85**
Salaried employee	**16.67**	**38.42**	**22.83**	**9.25**	**12.83**
Self-employed	**19.29**	**41.72**	**21.25**	**15.21**	**2.53**
Others	**22.73**	**36.23**	**15.26**	**11.28**	**14.5**
Source: Field Survey 2022 **Note: In the text, the percentage has been used in whole numbers**					

Use of Environment-Friendly Bags

Finally, the respondents were asked about the use of alternative bags to poly bags, where 88 per cent of respondents were in favour of using bags made of cloth, jute or paper. Moreover, most of the respondents favoured bags made of clothes due to their reusable and washable nature and being cheaper in terms of price. The respondents believe that shopkeepers, retailers and vendors are responsible for replacing poly bags with bags made up of cloth, jute or other biodegradable materials. This is because the use of poly bags was initiated by the sellers, for which it became habit of the buyers not to carry bags from home. The second choice was paper bags as an alternative to poly bags, although they are a little more costly, non-durable and fragile than plastic bags. The paper bags are not a better substitute for poly bags. Finally, the third well-liked choice of respondents to poly bags is fibre bags, which are environmentally friendly and made up from cotton yarn and revitalized by adding flexible filament to facilitate use by making it durable and stretchy. These artistic and stylish bags are 100 per cent biodegradable and already used by some respondents. In their opinion, someday, better innovation could change the scene entirely, and one could get rid of the hazardous poly bags. The study strongly advocates implementing some serious and effective action to protect the environment.

The Outcome of the Study

- Spillover waste from National Capital Region: Haryana has the positional advantage of bordering the National Capital Region (NCR), and Sonipat is geographically located adjacent to NCR; therefore, it has to bear excess pressure of NCR in terms of population and pollution. This increased the trouble of the local Government in managing the waste created by industrial production, labour and residents invading the Sonipat district due to its location.
- Insufficient human and physical resources: According to a graphic note published in Government publications on Swachata Abhiyan, Sonipat District faces challenges regarding inadequate human and material resources to manage poly bag waste. Development has its own side

effects, and plastic waste is one of them. The industrial area on the Kundli border is one of the most polluted areas in Sonipat due to being the most industrial labour populous area. Therefore, managing poly bag waste is a big challenge for the local Government.

- Build Data Bank on Demand and Supply: To provide replacement for poly bags and curb the existing stock of poly bags from the market, local governments have to provide an accurate database on demand and supply gaps to formulate, execute, monitor and review the poly bags ban program and policies.
- Involvement of retail sellers in poly bags ban programs: The new Government policy on poly bags ban requires the involvement of retail sellers. Therefore, the local Government faces a challenge to convince and motivate small shopkeepers, retail sellers and vendors to abandon the use of poly bags.
- Lack of Awareness: Most of the population is unaware of the type of poly bags, their impact on the environment, animals, and human health and beautification of the city from poly bag waste and the unavailability of poly bag substitutes in the market. Therefore, spreading awareness about all possible aspects for aspiring learners poses a considerable challenge to implementing the poly bags ban.
- Considering the local requirements, an effective system of collecting and disposing of non-biodegradable waste is absent.
- The speed of adopting changes in new practices is slow in the city.
- Disposing the existing stock of single-use poly bags of less than 75 microns is also one of the significant challenges before policymakers.

Suggestions

- The challenges can be seized in two ways—the first is to find a technical solution to the problem, and the second is to embrace the problem's technical solution and its effective implementation. But the latter is not an easy task.
- Although Sonipat city is situated near the NCR and considered an education hub, due to industries, the general situation of poverty, ignorance and illiteracy of the masses makes excessive use of poly bags a common practice. Many of the laws and agendas are difficult for the lay people to understand. To tackle this problem, volunteers from schools, colleges and universities can be asked to spread awareness about the damaging effects of poly bags on the environment.
- Newspapers are making more coverage of environmental issues, and different environmental NGOs have come forward to spread awareness about the ill effects of the poly bags environment. But the larger section of the people, who are mostly busy trying to meet their basic material needs, remains unaware and detached from such initiatives' benefits.
- Campaigns should be arranged to make the country's young generation more aware of their responsibility and things to do to protect the environment. If such responsibility can be instilled in the young minds of our nation, that will serve as an important shield against future environmental degradation in our society. Eventually, their voices will be heard later from different student organizations, professional associations, educational establishments, trade unions and other labour organizations and even from outside the country.
- According to the survey, the respondents from all strata of society are found more or less enthusiastic about upholding the ban. However there remains a lack of awareness about the extent of adverse effects that polythene can have on our surrounding environment since more emphasis is being given by the media only to the circulation of the ban and possible punitive measures if found

guilty. Again, the demand for polythene bags remains in the market since the other options are not as affordable as those of polythene bags. Furthermore, people are still caught red-handed with tons of polythene bags in the city even after more than five months of enforcement of the ban.

- There should be more coverage on TV/radio, and social media, the most popular media in every corner of our country, about all the adverse effects polythene bags that continue to cause to the environment. These obviously will help illiterate & less educated people (who are less capable of going through the reading materials about the use of polythene and the ban) be concerned about the polythene menace.
- The Government needs to pay more attention to providing more authority to the Department of Environment Protection and other concerned organisations' that they can take quick actions against the defaulters. Such strict measures will obviously put a virtual end to the use and production of polythene bags. Here also, local representatives of the Government & political leaders can play pivotal roles by helping the law enforcing authority at the local levels.
- The Government should invest more in the marketing of other options (such as jute bags, paper bags & cotton bags) by providing incentives required to establish these industries. At same the time, the Government should be more alert to keep the price of substitutes as low as possible so that they remain within reach of the consumers. At the same time, the Government should look for immediate rehabilitation of employees previously employed in the polythene-producing industry.

It is easy to enforce a ban on people but challenging to execute and make it a success in one of the most populous countries like India, which is at the bottom of the 180 countries list of the Environmental Sustainability Index (2022 Environmental Sustainability Index, 2022). That is why ways to include students, women and people from every walk of life in protecting the environment for their own interest is among the most critical policy-related questions. India can only save itself from the aggravating environment by having a robust, broad-based, united environmental movement. Political leaders, NGOs, experts, academicians and other representatives from civil society should come forward to lead such movements.

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Ethical Approval and Conflict of Interest

The author bears no conflict of interest. Plus, all the ethical protocols were followed as per the Helsinki Declaration.

Informed Consent

While conducting the field study, I took all the required consent from the participants involved.

Funding and Data Availability Statement

No funding was received to conduct the research, but all the data collected from the field has been incorporated into this study.

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