

# Impact of single-use plastic on local communities in India

## Mapping the lives and livelihoods of local fishing communities

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### ABSTRACT

Single-use plastics are the kind of plastics that are utilised once prior to being disposed of or recycled. Plastic bags, straws, coffee stirrers, soda and water bottles, and the majority of food packaging are examples of such materials. This plastic is then often disposed of in rivers and larger water bodies. Plastic pollution will have a disastrous impact on marine ecosystems and wildlife for many generations to follow. One of the coastal local communities that largely relies on the sea and the coast is the fishing community. Single-use plastic has extremely detrimental effects on the environment, including harm to marine life, a reduction in the quality of seawater, a decline in the livelihood of fishermen, and unfriendly consequences for their possibilities of survival. Henceforth, the need of the hour is to address the issue of the impact of single-use plastic on the local communities. Likewise, the paper intends to break down the issue exhaustively and set forth suggestions to handle the issue at hand.' This paper intends to investigate the manufacture, use, and disposal of single-use plastics, as well as the stakeholders involved in this industry. Further, the paper likewise expects to analyse how these concerns are tackled in different countries, especially those with socioeconomic and geographic similarities to India. Lastly, this research paper suggests certain actionable recommendations that are deemed necessary to help resolve the plastic problem in India.

**Keywords :** Plastic Bags, Straws, Coffee Stirrers, Soda, Paper Intend

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## I. INTRODUCTION

### 1.1 What is Single-Use Plastic?

Single-use plastics are plastic goods that are meant to be disposed of right after use. The term single-use

plastic in India is often interchangeably called disposable plastic.

Though the legislation in India does not provide any definition, the Plastic Waste Management Amendment Rules, 2021 classifies the following as SUP: thin carry bags (less than 50 microns); non-woven

carry bags and covers (less than 80 gsm and 320 microns); small wrapping/ packing films; straws/ stirrers; cutlery such as foam cups, bowls; earbuds with plastic sticks; cigarette filters; small plastic bottles; plastic banners; among other products.<sup>1</sup>

In the absence of an official definition, the following definition provided by the European Union might be more useful: *a single-use plastic product is a product that is made wholly or partly from plastic and that is not conceived, designed, or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to the producer for a refill or reused for the same purpose for which it was conceived*<sup>2</sup>.

## 1.2 Production of Single-Use Plastic

The process of plastic production begins with the extraction of raw materials (largely crude oil and natural gas, but also coal).<sup>3</sup> The raw materials like crude oil are refined into numerous petroleum products. The products are converted to form many useful chemicals including monomers (a molecule that is the basic building block of polymers). These monomers are then chemically combined to form chain-like structures called polymers which are converted to a molten state where several additives are blended to achieve the desired characteristics. The molten state cools off to form plastic.

The production of plastic is largely reliant on fossil hydrocarbons, which are non-renewable resources. If the current pace of development in plastic production

continues, the plastic industry might account for 20% of global oil use by 2050.<sup>4</sup>

## 1.3 Usage of SUP

The impact single-use plastic creates is significant to the global extent of its use which has spiked up in the past few years: The world is producing 538 billion plastic bottles per year from the earlier number of 438 billion in just five years. As consumers, we have reached the alarming number of using 5 trillion plastic bags per year which is 160,000 plastic bags every second<sup>5</sup>.

With a focus on America, we learn that half a million plastic straws are used by residents. The use of single-use plastics has tripled in the past two years (Since the start of the pandemic) owing to various factors including an increase in takeout orders.<sup>6</sup>

Coming closer home to India, 5.58 million tonnes<sup>7</sup> (MT) of single-use plastic is used annually. Furthermore, the country ranks as the third-largest producer of plastic in the world<sup>8</sup>.

Looking at the financial year of 2019, we see the total demand for major plastics across India was approximately 16 million metric tons, of which polyethylene had the highest demand with around 5.3 million metric tons. Polythene was followed by polypropylene, which had a demand of over five million metric tons. The total demand of the Indian market made up less than six per cent of the global demand. Out of the total plastic waste produced only

<sup>1</sup> Ministry of Environment, Forest and Climate Change, Plastic Waste Management Amendment Rule, August 13 2022, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1745433>

<sup>2</sup> European Commission, Single Use Plastics, 2 July 2019 [https://environment.ec.europa.eu/topics/plastics/single-use-plastics\\_en](https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en)

<sup>3</sup> Dr Payal Baheti, British Plastic Federation <https://www.bpf.co.uk/plastipedia/how-is-plastic-made.aspx>

<sup>4</sup> World Economic Forum, 2016

<sup>5</sup> Hannah Ritchie and Max Roser, Our World in Data, April 2022

<https://ourworldindata.org/plastic-pollution>

<sup>6</sup> Hannah Ritchie and Max Roser, Our World in Data, April 2022

<https://ourworldindata.org/plastic-pollution>

<sup>7</sup> Ian Tiseo, Leading plastic consumption in India in financial year 2019

<https://www.statista.com/statistics/1154447/common-plastic-consumed-india-by-type>

<sup>8</sup> India Today, May 2021

<https://www.indiatoday.in/science/story/plastic-waste-india-reliance-mukesh-ambani-1804331-2021-05-19>

60% is being recycled. Households are generating maximum plastic waste, with water and soft drink bottles forming a large number. In the country, around 43% of manufactured plastics are used for packaging purposes and most are single-use. Multi-Layered Plastics also make up a large part of the single-use plastic waste and are categorised under either recyclable, energy recoverable, or having some other alternate use, but their recycling is an expensive process<sup>9</sup>.

#### 1.4 Social, Economic and Environmental Impacts of SUP

##### Social

Oil extraction fields, and chemical and plastic industries are usually located near predominantly minority populations. The people living in these areas are exposed to high levels of toxic pollution and are known to have a high risk for cancer, heart disease, and other respiratory problems. For example, Cancer alley, in the state of Louisiana, serves as an industrial hub with nearly 150 chemicals and plastic plants - where the risk of cancer is 50 times the national average.<sup>10</sup>

Another common impact of usage of SUP is on the marginalised sections of society, such as waste-pickers. Most consumers discard waste with little thought of pre-processing or understanding of what is recyclable. This places a great burden on the recycling facilities and waste pickers to sort wastes and determine which items have recycling value. Waste pickers play a pivotal role in our global recycling process. They work under hazardous conditions for long hours with low

wages resulting in many indirect health effects like respiratory illness and infection.

##### Environmental

Polyethene, the most discarded form of plastic, is the highest emitter of methane, a powerful greenhouse gas, and ethylene, which reacts with the gas Hydroxide in the atmosphere, increasing the concentrations of carbon monoxide<sup>11</sup>. Currently, the global plastic industry emits 850 million<sup>12</sup> tons of greenhouse gases per year which include the production and incineration of plastics and the degradation of plastics due to sunlight exposure. The transportation of plastics also contributes to climate change. Incineration, a common method of plastic disposal results in the disruption of the plastic's original structure releasing toxic compounds increasing the risk of premature mortality related to respiratory issues.

Marine animals also bear the burden of this influx of garbage into their habitats. Plastic waste is ingested or entangled by marine creatures, resulting in serious injury and death. Seabirds, whales, fish, and turtles mistake plastic debris for food, and the majority of them starve to death as their bellies fill with plastic<sup>13</sup>.

Pollution originates in different stages of the plastic life cycle and harms fishing activities as well. Hazardous chemicals such as bisphenols are released by microplastics entering marine food chains and bioaccumulating through trophic levels. The runoff from plastic recycling and incineration systems threatens to pollute waters used for fishing and other agricultural activities.

<sup>9</sup> The Energy and Resources Institute, Fact Sheet on Plastic Waste in India, 2018

<https://www.teriin.org/sites/default/files/files/factsheet.pdf>

<sup>10</sup> United Nations, UN News, 2 March 2021, <https://news.un.org/en/story/2021/03/1086172>

<sup>11</sup> Williams M and others, 'No Time to Waste: Tackling the Plastic Pollution Crisis Before It's Too Late' (Tearfund 2019)

<sup>12</sup> World Wide Forum, April 2022

[https://wwf.panda.org/wwf\\_news/?5406441/climate-plastic-treaty](https://wwf.panda.org/wwf_news/?5406441/climate-plastic-treaty)

<sup>13</sup> International Union for Conservation of Nature, November 2021

<https://www.iucn.org/resources/issues-briefs/marine-plastic-pollution#:~:text=Marine%20wildlife%20such%20as%20seabirds,to%20swim%2C%20and%20internal%20injuries.>

## Economic

Post-consumer single-use plastics have a poor economic value. The economic case for recovering and recycling these materials is weak. They are unable to be recycled and end up as non-biodegradable garbage polluting seas and oceans and posing a big threat to all marine life.

The pollution of the seas and oceans does not only affect marine life but also those who depend on it for their livelihood. According to Valuing Plastic, a UNEP-sponsored report created by the Plastic Disclosure Project (PDP) and Trucost, the annual natural capital cost of using plastic in the consumer goods industry is US \$75 billion<sup>14</sup>. This cost includes the financial costs associated with problems like marine environment pollution and air pollution brought on by burning plastic.

Plastic pollution also affects local businesses. Beaches trashed with marine litter are less likely to be visited by tourists, reducing income for beach communities by millions of dollars annually. In addition to driving away customers, beach clean-up efforts require high costs further impacting coastal communities in middle to low-income countries.

### 1.5 Stakeholders Involved

Several stakeholders are involved in both the production as well as the usage of Single-Use Plastics. Additionally, stakeholders are also involved in the import, stocking, distribution and sale of the same. Bottled-water manufacturing companies, Plastic bag

producing companies, and petrochemical companies are a few examples.

There is a need for regulation in the rules regarding the usage of Single-Use Plastics. The rules can be framed along the lines: a significant increase in the cost of production which would in turn require them (the stakeholders) to switch to a more sustainable material for their product.

### 1.6 The Legal and Regulatory Framework for the regulation of Single-Use Plastic in India

India's current legal and regulatory framework for regulating single-use plastic, as a nation, includes The Plastic Waste Management Rules, 2016<sup>15</sup> (amended in 2018<sup>16</sup> and 2021<sup>17</sup>); there also exist particular state laws that are currently in force to deal with plastic waste in those particular states.

The Plastic Waste Management Rules, 2016, amended the 2011 Rules and aimed to reduce the amount of plastic waste by taking several measures that include:

- a) Increasing the minimum thickness of plastic carry bags from 40 to 50 microns to facilitate collection and recycling, promoting its use for road construction, energy recovery and so on.
- b) Prohibition of the manufacture, import, stocking, distribution, sale and use of the enlisted single-use plastic, including polystyrene and expanded polystyrene:
  - i. earbuds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [thermocool] for decoration;

<sup>14</sup> UNEP Press Article, 23 June 2014

<https://www.unep.org/news-and-stories/press-release/plastic-waste-causes-financial-damage-us13-billion-marine-ecosystems#:~:text=It%20finds%20that%20the%20overall,pollution%20caused%20by%20incinerating%20plastic.>

<sup>15</sup> Ministry of Environment, Forest and Climate Change India, Notification, March 18, 2016. <http://www.mppcb.nic.in/proc/Plastic%20Waste%20Management%20Rules,%202016%20English.pdf>

<sup>16</sup> Ministry of Environment, Forest and Climate Change India, Plastic Waste Management (Amendment) Rules, March 27, 2018. <https://cpcb.nic.in/displaypdf.php?id=cGxhc3RpY3dhc3RIL1BXTV9HYXpldHRILnBkZg==>

<sup>17</sup> Ministry of Environment, Forest and Climate Change India, Plastic Waste Management Amendment Rules, August 13, 2021. <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1745433>

- ii. plates, cups, glasses, cutlery such as forks, spoons, knives, straws, trays, stirrers, wrapping or packaging films around sweet boxes, invitation cards, cigarette packets, plastic or PVC banners of less than 100 microns, and stirrers.
- c) Establishing an efficient waste management system.

A significant addition in 2016 was the legal mandate on plastic manufacturers and retail establishments that utilise plastic as a major constituent, to act in accordance with the system of re-collecting the plastic waste: Extended Producer Responsibility.

Furthermore, a few past state initiatives are elaborated upon below. Additionally, these states have individually planned to take into account and implemented the guidelines of the 2021 amendment, which will come into effect from July 2022:

### ***Maharashtra***

In 2018<sup>18</sup>, the Government of Maharashtra issued a notification banning the manufacturing, usage, sale, distribution, and storage of plastic materials that included one-time usage (single-use plastic), a penalty between Rs. 5000 and Rs. 25,000 was imposed for a violation of these rules. However, this ban did not sustain due to the low level of awareness, strong lobbying by the industry and a significant lack of alternatives to the material.

### ***Uttar Pradesh***

In 2018<sup>19</sup>, the Uttar Pradesh Government imposed a ban on polythene bags as well as other single-use

plastic items, alongside a ban on non-biodegradable polythene. The ban was rolled out in phases, to make the state plastic-free. First-time offenders would be fined Rs 1,000 and could be imprisoned for up to one month, according to the rules. Second-time offenders will face a six-month prison sentence and a fine ranging from Rs 5,000 to Rs 20,000. Those discovered making, storing or carrying illegal plastic bags for the first time face up to six months in prison and a fine ranging from Rs 10,000 to Rs 50,000. If you violate the ordinance for the second time, you might face a year in prison or a fine of up to Rs 1 lakh.

### ***Goa***

Banning the supply of plastic raw material, stopping the manufacturing, sale, and use of banned SUP items, and promoting alternatives to SUP are all examples of supply-side interventions in Goa. To ensure that the phase-out is completed, the state government runs random inspections of plastic waste providers to ensure that the materials are not being given to banned single-use plastic companies. The state government also intends to create an app-based system to monitor the manufacturing, stockpiling, distribution, sale, and usage of prohibited single-use plastic goods.<sup>20</sup>

## **II. Impact of Single-Use plastic on local Indian communities**

### **3.1 Impact of Single-Use plastic on the Local Fishing Communities**

According to conservative estimates, eight million metric tons of plastic enter the world's oceans yearly<sup>21</sup>. That is the equivalent of two Empire State Buildings

<sup>18</sup> Singh, Dipti . "Maharashtra Pollution Control Board Issues Public Notice on Banning Single-Use Plastic." Maharashtra Pollution control board issues public notice on banning single-use plastic. The Free Press Journal. March 11, 2022. <https://www.freepressjournal.in/mumbai/maharashtra-pollution-control-board-issues-public-notice-on-banning-single-use-plastic>.

<sup>19</sup> Srivastava, Kanchan. "A Year On, Plastic Waste Returns to Uttar Pradesh Despite Ban." The Wire. July 17, 2019. <https://thewire.in/environment/uttar-pradesh-plastic-waste-return-ban>.

<sup>20</sup> Goa Creates 3-Part Action Plan Ahead of Plastic Ban from July 1 | Goa News - Times of India." *The Times of India*, [timesofindia.indiatimes.com, https://timesofindia.indiatimes.com/city/goa/state-creates-3-part-action-plan-ahead-of-plastic-ban-from-july-1/articleshow/91242436.cms](https://timesofindia.indiatimes.com/city/goa/state-creates-3-part-action-plan-ahead-of-plastic-ban-from-july-1/articleshow/91242436.cms). Accessed 13 June 2022.

<sup>21</sup> Britta Denise Hardesty, CSIRO and Chris Wilcox, CSIRO, Eight million tonnes of plastic go into the ocean every year



worth of plastic entering the water every month.<sup>22</sup> For generations to come, plastic pollution will have devastating effects on marine species and ecosystems. Plastic pollution from land to sea is one of the most prevalent environmental issues faced by the planet today.<sup>23</sup> Marine and coastal ecosystems are the main pillars that support the lives of local coastal communities. The fishing community is one of the coastal local communities that make the sea and the coast their main source of livelihood. Therefore, the degradation of the quality of marine and coastal ecosystems is a threat to fishermen's life.

In general, the garbage that pollutes coastal areas is split into two categories: organic and non-organic waste. Pieces of wood, tree roots, and bamboo are among the organic trash that can be found. Organic waste is simple to degrade, and its presence does not constitute a significant threat to coastal ecosystems and populations. Non-organic waste is the most significant pollutant of the water and coastal regions. The most common types of marine and coastal plastic litter are single-use disposable food containers, packaging, and plastic bags<sup>24</sup>.

Pollution of plastic litter, both those that are still in the sea and those that have piled up on the surface of the water bodies, presents a problem of its own to coastal communities, including fishermen. When fishing nets are dragged or hauled ashore after being left in the water for several hours, they include not just fish but

also plastic garbage. Sorting fish and plastic garbage has become a routine trend among fishermen. The garbage is then left to pile up on the seashore once the fish and plastic have been separated. This process makes the fishermen's work duration longer than it should be. Indeed, fishermen have attempted to clean up the trash and dispose of it at the nearest landfill, but because the amount of waste continues to grow and the local government's control of coastal waste management is inadequate, fishermen have chosen to leave the plastic waste heaped on the water bodies.<sup>25</sup> Since fishermen rely on marine and coastal habitats as their major source of food, plastic and garbage pollution have a direct impact on their livelihoods. As the state of the oceans and rivers has worsened due to marine debris and rubbish, the catch of fishermen's sea fish has plummeted. Polluted seawater and, as a result, a smaller fishing zone have made it more difficult for fishermen to catch fish. This condition has a direct impact on the economic status of fishermen.

A drop in the catch has a proportional impact on the well-being of fishermen's households. Most traditional fishermen and labour fishermen, who make up the fishing community's largest socioeconomic group, suffer from poverty and poor levels of social welfare.<sup>26</sup> When primary livelihood from fishing gets impacted, fishermen are forced to rely on secondary or other sources of income which may not always be efficient for them. As a result, fishermen's wives frequently

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Eight million tonnes of plastic go into the ocean every year – Tribune International (Australia) (tribune-intl.com)

dsa

<sup>22</sup>Dillon Hanson-Ahumada, The Devastating Impact of Plastic Pollution on Our Oceans and Marine Life, The Devastating Impact of Plastic Pollution on Our Oceans and Marine Life | NRDC

<sup>23</sup>Hanson, A.M., (2019). Women's Environmental Health Activism Around Waste and Plastic Pollution in the Coastal Wetlands of Yucatan. Topics in Gender and Water, Sanitation and Hygiene.

<sup>24</sup>Minister for Green Skills, Circular Economy and Biodiversity, Single-use food containers and other single-use items: call for evidence,

Single-use food containers and other single-use items: call for evidence - gov.scot (www.gov.scot)

<sup>25</sup>Maanvi Singh, How India's Fishermen Turn Ocean Plastic Into Roads, How India's Fishermen Turn Ocean Plastic Pollution Into Roads (nationalgeographic.com)

<sup>26</sup>Aarti Kelkar-Khambete, Traditional fisherfolk of Kerala - An article about their socio-economic organisation and the special relationship they share with the sea and the environment, Traditional fisherfolk of Kerala - An article about their socio-economic organisation and the special relationship they share with the sea and the environment | India Water Portal

assist the family's economic situation by trading or opening small stores to meet basic needs.<sup>27</sup>

To summarise, single-use plastic has extremely negative effects on the environment, including a decrease in the quality of seawater, and severe damage to marine inhabitants while subsequently leading to a sharp decline in fishermen's livelihood, and the detrimental consequences on their survival chances.

### III. Comparative Analysis - assessing the impact of policies in other countries

Along with India, many other countries are making efforts to reduce the production and consumption of Single-Use plastics. Here are the examples of such countries and their policies towards it:

#### *Indonesia*

Indonesia has banned single-use plastic.<sup>28</sup> It has decided to use multiple policies and ideas to reduce its consumption of single-use plastic. Firstly, manufacturers should be encouraged to utilise collected and recyclable packaging and to decrease the usage of single-use plastic. Second, regulations supporting radical efficiency methods for plastic reuse and repurposing are being developed. Thirdly, they are working towards innovation regarding the reduction of plastic.<sup>19</sup> In rivers such as the 'Citarum,' waste collection dams are being installed to clean up this river. This floating dam is built from local materials and catches all of the waste floating in the first 60 centimetres of the water.<sup>29</sup> This can be used in India in

order to collect the excess plastic waste floating in water bodies.

#### *Brazil*

Brazil, the world's fourth-largest producer of plastic waste, recycles only 1.28 per cent of the 11.4 million tonnes of garbage it generates each year<sup>30</sup>. As a result, approximately 7.7 million tonnes of plastic garbage from Brazil find its way to the landfills<sup>31</sup>. Recently, Guanabara Bay in Brazil faced a paucity of fish supply due to the amount of plastic waste in its waters. An Italian enterprise in Brazil has begun a program consisting of 25 fishermen families. These fishermen are determined to clean the bay. The project aims to help local fishermen with minimum wages for work while aiming to collect 100 tonnes of trash within the next 12 months.<sup>32</sup> This can be used in India as an incentive for fishermen to collect the waste gain some money out of it. Companies can use this waste as plastic credits and also get the incentive to recycle more.

#### *Thailand*

When looking at the Plastic waste management system in Thailand it is extremely similar to the issues faced by India's Plastic waste management system. Like India, Thailand also needs to address the challenge of designing a system which bans single-use plastic products while at the same time providing alternate reusable products and also improving waste collection coverage to ensure that all collected waste is sent to appropriate treatment facilities.

Thailand has used many collaboration approaches which include a Memorandum of Understanding

<sup>27</sup> Wilda Fesanrey and Samsia Umasugi, The Role of Fishermen's Wife in Increasing Family Income, (PDF) The Role of Fishermen's Wife in Increasing Family Income (researchgate.net)

<sup>28</sup> Lucenteza Napitupulu, Hidayah Hamzah and Sakinah Ummu Haniy, 3 Key Interventions to Support the Ban on Single-Use Plastic, 3 Key Interventions to Support the Ban on Single-Use Plastic | WRI Indonesia (wri-indonesia.org)

<sup>29</sup> <https://www.dw.com/en/a-floating-dam-against-plastic-trash/av-53352072>

<sup>30</sup> Wion News on Twitter  
<https://twitter.com/wionews/status/1534516844220100615?s=24&t=hCUOAKEtSFrvQDSyBkQRJw>

<sup>31</sup> Wion News on Twitter  
<https://twitter.com/wionews/status/1534516844220100615?s=24&t=hCUOAKEtSFrvQDSyBkQRJw>

<sup>32</sup> Wion News on Twitter  
<https://twitter.com/wionews/status/1534516844220100615?s=24&t=hCUOAKEtSFrvQDSyBkQRJw>

(MoU) with food delivery platforms, to lessen the use of single-use plastics. The MoU is a voluntary agreement between the Pollution Control Department and food delivery platforms and restaurants to collaborate on activities to reduce the problem of plastic waste by reducing single-use plastic products in food delivery operations.

Apart from that Thailand has also introduced many programmes which promote public education and awareness about plastics. They include recycling programmes in communities and education programmes promoting the use of single-use plastic products as well as campaigns related to the reduction of plastic bags in fresh markets and supermarkets.<sup>33</sup>

### **Rwanda**

Rwanda had initially developed a policy in 2004 on plastic shopping bags. Then in 2008, regulations related to the prohibition of manufacturing, importing, use and sale of polythene bags were introduced and extended to all packaging plastics. Then in 2019, a new law came that covered other plastic materials as well which contribute to plastic pollution.

Rwanda conducted wide-reaching and ongoing awareness-raising and sensitization programmes reaching all levels of the population and carried it out through different media channels like TV, radios, etc. Apart from this Rwanda has made sure that illegal transportation of plastic does not take place by ensuring regular inspections to control compliance and control of the entrance of plastics at all country borders and this has also contributed to better success of the policy.<sup>34</sup>

Recently Rwanda has banned all non-degradable plastic bags, however, recent reports have suggested

that while the ban looks impressive on paper it has created major issues for people who rely heavily on them considering Rwanda does not have enough alternatives<sup>35</sup>. This is a major learning for India as well. Directly banning plastic without having the infrastructure to face the repercussions would only invite more issues.

The countries above all have policies that address the plastic problem. Some are successful and some have failed. This, in fact, can be seen as learning for India which can adapt the successful policies to the existing system and be careful not to repeat the same mistakes as the countries that have failed.

## **IV. Actionable recommendations and solutions**

Keeping in mind the adverse impacts of SUPs and their impact on local and marginalised communities following are the actionable recommendations and solutions India can take to bring down the current levels of production, distribution, and consumption of plastics and single-use plastics in the country:

### **Community-Based approach**

- *Community-based approach:* Since the impact of SUPs is largely felt by local communities, as seen above, it may be prudent to take a community-based approach in shaping solutions to the problem. India can try to engage local, marginalised, and small communities at first. Organisations such as non-profits, and profit organisations working for climate justice, can reach out to local communities like rag pickers and fishing communities and engage them to help collect waste while giving them some sort of incentive. This would work

<sup>33</sup>UN Environment Programme, Addressing Single-use plastic products pollution using a life cycle approach, Pg 38.

<sup>34</sup>UN Environment Programme, Addressing Single-use plastic products pollution using a life cycle approach, Pg 34,

<sup>35</sup>Kinder, Plastic-free is not problem-free: Rwanda struggles despite ban, <https://kinder.world/articles/problems/plastic-free-is-not-problem-free-rwanda-struggles-despite-ban-17698>



especially well with fishing communities since plastics affect their ecosystem directly. Companies should also measure the quantities and types of plastic that the communities collect and use the plastic collected either to create new products or use the plastic to create energy.. CSR funding can act as an incentive for companies to engage in such activities since this can become a part of their annual CSR target.

- *Co-processing*: Co-processing is a waste management system in which waste materials are converted into alternative fuels and/or raw materials.<sup>36</sup> Co-processing will allow the trapping of energy and also utilise the leftover ash. This is an effective option companies can consider after having collected the waste by the engagement of local communities.
- *Awareness campaigns for single-use plastic*: Environmental awareness campaigns should be held across communities to acquaint them with the problems associated with Single-Use Plastics so that they can be conscious of their usage of the same. These campaigns should not target only a particular group but all income groups and communities. To ensure that these programs can reach all levels of the population, different types of media such as television, radios, newspapers, and so on should be employed. These programs should also be targeted toward fishing communities and be designed according to their needs.
- *Regular beach clean-ups*: Beach clean-ups with the help of volunteers should be carried out to spread awareness amongst the youth about preventing plastic from going into water bodies. The VeryNile initiative, for instance, in Egypt brings together a diverse group of volunteers and partners to work on

finding long-term solutions for cleaning up the Nile, recycling solid trash collected from the river, and reducing the use of single-use plastics.<sup>37</sup>

### Government Sanctioned

- *Effective Waste management*: Even today, India has ragpickers on the streets working without any sanitary equipment such as gloves or masks. Inhaling microplastics for a longer duration of time is extremely dangerous. Thus, the government should ensure that the municipalities, local government bodies, etc. help such ragpickers and provide them with hygiene equipment such as gloves, masks, sanitisers, etc. so that they are able to collect this waste without harming themselves in the process.
- *Bio- Plastics*: Due to the lack of alternatives, the production and use of plastics keep on increasing. Here, bioplastics present themselves as a viable alternative. Bioplastics are fully or partially produced from natural resources (sugarcane and corn) rather than fossil fuels yet they possess properties identical to their conventional version. Since they are made from renewable resources, bioplastics are sustainable, largely biodegradable and biocompatible. However, bioplastics have some problems also. Firstly, not all bioplastics are biodegradable and the land required for bioplastics competes with food production because the crops that produce bioplastics can also be used to feed people. Bioplastics are also relatively expensive.
- *Segregation of waste at the source*: Wastes like plastics, organic, metals and paper should all be segregated at the source. In Bangalore, individuals and businesses must separate trash before it is collected by municipal staff. This is a practice that

<sup>36</sup> <https://tontoton.com/co-processing-what-more-do-we-need-to-know-about-it/>

<sup>37</sup>“Feature: Egypt’s Nile Cleanup Initiative Raises Environmental Awareness, Creates Jobs - Xinhua | English.News.Cn.” *Feature: Egypt’s Nile Cleanup Initiative Raises Environmental Awareness,*

*Creates Jobs - Xinhua | English.News.Cn*, [www.xinhuanet.com](http://www.xinhuanet.com), 9 June 2021, [http://www.xinhuanet.com/english/africa/2021-06/09/c\\_139997092.htm](http://www.xinhuanet.com/english/africa/2021-06/09/c_139997092.htm).

should be implemented across all states at municipal levels. Landfilling and dumping should be avoided by investing more funds in storage facilities due to landfills being a major source of methane- a greenhouse gas, whose surplus causes the Earth's atmosphere to trap more heat which results in the increase of temperatures above normal. Recycling companies can then pick up the segregated wastes from these storage units and recycle them. Most importantly, landfills should be properly managed so that they do not become a source of greenhouse gases and toxins. This process should be done in a phase-wised organised manner so that waste can be collected and reused again.<sup>38</sup>

- India should add compostable single-use plastic products to the list of single-use plastics banned as when we look at the real-life practical scenario, the country does not have the mechanism to compost the waste.
- Another solution can be to develop the required mechanism: increase the number and efficiency of industrial composting units. Industries can be incentivized by keeping certain eco-friendly materials tax-free. The government should allow them enough time to transition as well and offer them tax rebates for being eco-friendly. Since food delivery companies create a lot of SUP waste the government can come up with programs and schemes in collaboration with companies like Zomato and Swiggy to change their packaging to more eco-friendly and biodegradable products by providing them with incentives like tax rebates and subsidies.

*Taking suggestions from states:* Establishment of plastic crusher machines, similar to the ones at The Golden Temple, Amritsar, Punjab; incentivize the

recycling of used plastic by providing money whenever an individual does so. Inspiration should also be taken from Sikkim which is a 100% organic and plastic-free state. Kerala's *Suchitwa* mission should be taken as an example of a great initiative by the government for a cleaner and healthier environment, the mission focuses on zero plastic and phasing out single-use plastics. But it was shut down due to a lack of funds, the government should have a special focus on redirecting funds for such projects. Plastic Waste Management laws are constantly changed and amended by legislators which makes it difficult to measure their impact. Any law the government passes in the future should be in effect for a longer period to increase its impact as well as to enable the calculation of the positive change (if any) brought by it.

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<sup>38</sup>“Waste Management Crisis in India - Recycling Magazine.” *RECYCLING Magazine*, [www.recycling-magazine.com](http://www.recycling-magazine.com), 6 May 2020, [https://www.recycling-magazine.com/2020/05/06/waste-](https://www.recycling-magazine.com/2020/05/06/waste-management-crisis-in-india/#:~:text=Urban%20India%20generates%2062%20million,just%2011.9%20million%20is%20treated.)

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