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From Pollution to Progress: Integration of Plastic Waste Management and SDG's

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ABSTRACT

Every aspect of human life is impacted by plastic, including technology, packaging, home appliances, cars, buildings, water transportation, museums, hospitals, and educational institutions. Plastic is increasingly being used to improve industrial operations because it is a less expensive raw material. The packaging industry is one industry that has profited immensely from the surge in plastic consumption, creating more job possibilities across many nations. Plastic grocery bags and food scraps make up the majority of non-biodegradable domestic plastic waste. Plastic is increasingly being used in numerous electronic components, such as integrated circuits, printed circuit boards, chips, and light-emitting diodes, as a result of recent advancements in the electronics industry. Because plastic is malleable in terms of shape, fabrication, and customer-friendly qualities, especially when it comes to aesthetically pleasing agricultural equipment and components, the production of plastic parts has increased in the biomedical, agricultural, and automotive industries. Road pavements are made with asphalt mixtures that contain over 90% by weight of recovered plastic waste from municipal and industrial sources in an attempt to lessen the strain on landfills and the need for extraction. This paper attempts to identify causes of mishandling of plastic trash and gaps in available legislation, as well as to provide solutions. The research seeks to analyses a legal answer to the prevailing problem of plastic trash.

I. Introduction

The 21st century supplied us of the luxuries that one could not imagine living without. Each day, novel discoveries emerge into all fields, & we have gotten somewhat hooked to them. One such invention is plastic, which has drastically revolutionized our lives in a variety of ways. Plastic garbage in the environment causes problems and poses a threat to existing forms. We rely heavily on plastics in our daily lives. It is both necessary and optional at times. Whatever the explanation may be, plastics are becoming an essential part of our daily life. Unconsciously, we make use of plastics in a variety of forms from the moment we get up until the moment we go to sleep. Due to the fact that plastics are so deeply embedded in our lives, we have entirely lost the ability to comprehend what life would be like if they were not present. They may be found in a wide variety of places, ranging from toothbrushes, face creams, bicycle, airplanes, aqua bottles, pharmaceuticals, credit cards, packaged food,

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mobile phones and in what not. The distinction lies in the fact that in certain places it is completely required, while in other places it is only a matter of comfort or ignorance. The fact that the trash that plastics generate has become a worldwide problem that we are unable to solve is a cause for concern, regardless of whether the use of plastics is motivated by a need, a desire for comfort, or a lack of requirement.[1] We are fighting to halt its usage and the danger it poses. Plastics may be found in various forms almost everywhere. Despite our best efforts to avoid using plastics, they find their way into our day to day lives.

Plastic pollution has become a global problem. Plastic dumping into the surroundings is expected to increase by fifty percent by 2040, contaminating our food, water, and air. Plastic pollution must be addressed collectively, it is the seriousness of problem that this year on the occasion of World Envt. Day, theme was "Beat the Plastic Pollution". António Guterres[2] said:

"*Plastic waste clogs rivers, pollutes the ocean, and endangers wildlife" on World Environment Day. It invades every area of Earth, from peak of the highest mountain to the ocean depths, from brain of a human to the breast milk a mother feeds her newly born child, as it breaks down. We must go further, quicker".*

The official celebration of the Day at Jeju, Republic of Korea, stressed the need to stop plastic pollution, a worldwide catastrophe which impacts a major part of life.

"Governments, businesses, citizens, and the international community alike are all key players in making the circular economy for plastics a reality," said Lee Byounghwa at Jeju memorial. "We must defeat plastic pollution before it kills us. Step away from convenience and start with little acts together. Change occurs when everyone acts."[3]

When compared to the average of 28 kilograms used worldwide, each of us uses around 11 kilograms of plastic each year.[4] The most significant problem associated with the use of plastics in the present day is the growing amount of garbage that is produced as a consequence of the absence of appropriate waste disposal systems for plastics, especially for disposable plastics. Due to the existence of complex polymer, plastics can only be recycled seven to nine times until they are no longer recyclable. Additionally, it takes between five hundred and one thousand years for plastics to totally disintegrate. Sixty percent of the plastic trash that is dumped into the large water bodies across the globe each year comes from India.

We like the ease it provides, but the destruction it causes need our attention as well.[5]

Plastic garbage is being manufactured and accumulated in the environment to an extent that has never been seen before as a consequence of careless consumption, insufficient recycle activities, and dumping in landfills. The amount of plastics generated in recent years far exceeds that which is now being produced. According to the Environment Protection Agency, the world has around 8.3 bt[6] of plastic, 6.3 bt of which is garbage[7].

All things considered, looking at the data and facts at hand, we can safely say that the issues we've been facing with plastics and pollutants—specifically micro and nano plastics—floating

around in our atmosphere are not something we can sweep under the rug. The aim of this work is to throw light on the dark side of plastic pollutants in our ecosystems, to draw a line connecting plastic waste management with sustainable development goals, to underscore the significance of managing plastic waste, and to offer up-to-date insights on pollution by plastics, trash management strategies, policy proposals, & recommendations.

II. How Plastic Debris Affects Natural Habitats

When compared to other materials, plastic production has skyrocketed since the 1970s. By 2050, global primary plastic production is projected to reach 1,100 million tons, if current growth rates persist. Another concerning trend is the increasing prevalence of one time use plastic materials. These things are made to be used and throw after one use. Packaging accounts for about thirty six percent of total plastic production; of this, around 85% is landfill or uncontrolled trash which includes one-use plastics items to contain food & drink. Additionally, fossil fuels, often known as "virgin" feedstocks, are used to make almost 98% of all single-use plastics. An estimated 19% of the world's GHGs[8] in 2040 will come from conventional plastics made from fossil fuels.[9]

'Every minute, 1,000,000 plastic bottles are sold across the world' & it is believed to skyrocket in next few years, causing a disaster for the environment that might perhaps add to the phenomenon of global warming. Plastics are getting absorbed by biological techniques, or an aggregate for each factor, based mostly on time. These contaminants have an impact on the environment and are commonly transported across 3 phases: land, water, and air bionetworks. Future impact evaluations should either account for the effects of micropollutants on GHG emissions or conduct a more thorough evaluation of the soil form to understand these effects. Even while the growth of renewable energies is mostly from polymeric resources which could minimize these emissions from industrial plants, chemically converting technologies will no longer be able to dispose of the enormous amount of produced gases. In addition to triggering climate feedback mechanisms, plastic-induced changes in solar waves in the water line may change the physical conditions on ocean bottom & close to-floor layers.[10]

- **The Environmental Dangers Posed by Plastic Waste**

Plastics sphere engagement in the ground layer GHG inventory has a new unreflective influence on the previously mentioned negative impacts of plastic pollutants in the seas. This production encouraged by the bio-geo-chemical components of nearby waters; however it is maintained by lively microbial processes which consume & transport Carbon dioxide & Nitrogen dioxide.[11] The extent of MP and NP styles influence nutrition decisions & are associated with plastic sphere microbial ranges has to be investigated. Similarly, it is important to understand how these changes may alter the plastic sphere's significant contribution to floor biogeochemical cycles, which include climatically active GHGs.[12]Micro & nano pollutants causes significant change in the soil heat, which is generally followed in agronomy areas in intense climatic circumstances. Top-soil

heat instabilities & subsurface ambiances create an impact on soil and subsequently to other environmental services. Soil heat flux influences its decomposition rate, which results into degradation of quality of other activities related to land.[13]

Changes in physic-chemical parameters are also acknowledged to create an important effect on forested area; specifically, it may cause soil erosion, woodland flames, & desertification at unimagined heights, resulting in a massive failure of biodiversity & coming-generation environmental activities. The temperature rises in soil & changes in physicochemical factors recognize to have a critical position in the extinction of micro- & macro flora & fauna. [14]

- ***Effect of Plastic Pollution on Mankind***

Approximately Two hundred sixty kinds of biological creatures and invertebrates have been identified, which were either captured in plastics or directly consumed. Men, on the other hand, are at a higher danger if they ingest flora and fauna plagued by poisons from tainted plastic goods or littered debris. Animals can find themselves in a pickle when it comes to plastic pollution, getting caught in the crossfire in two main ways: through their bodies and by getting tangled up, but absorption is also a common tale. While big plastics throw a wrench in the works for land animals, tiny plastics sneak in through the back door via their meals.

As a result of this ingestion process, chemicals pile up in the system, putting the ones at the pinnacle of the chain in the hot seat. Under different circumstances, plastic waste can play host to toxins and give rise to stubborn organic pollutants that stick around like a bad penny. Once this happens, these chemicals hit the roof or tidy up the surroundings, and when animals take a bite, those chemicals waltz right into the organism's system.[15]

When plastic garbage is dumped in the water, it chokes the life out of, puts to rest, or taints aquatic life. Ocean life may be poisoned extremely cheaply & without effort by plastic contaminants, which then contaminate water and food. People might also become irritated by absorbing chemicals used in plastic manufacture through their pores and skin. During the majority of plastic production processes, a few artificial compounds such as biphenyl A, phthalates, and flame retardants are often used to provide favorable distinctive qualities. In the grand scheme of things, the fitness of humans can take a hit from their basic building blocks (like Biphenyl A), the extras thrown in (such as plasticizers), or a mix of both (for instance, antimicrobial polycarbonate). Research shows that Biphenyl A can throw a wrench in the works, raising the stakes for breast cancer, prostate cancer, pain, metabolic disorders, and a whole host of other issues. In women, it can lead to a whole host of fitness troubles like packing on the pounds, endometrial hyperplasia, a string of miscarriages, infertility, & PCOS.[16].

III. PWM[17] Laws - India

The 1ST legislation was Recycled Plastic (Manufacture & Usage) Rules, 1999, which was the first piece of plastic-specific law.[18] Purpose of the act was to regulate the packaging of food goods with recycled plastics. They concentrated onto closely adhering to Bureau of Indian Standards for recycling, properly labeling carry bags and plastic containers, and prohibiting poly bags of thickness

of >20 µm[19]. These laws were replaced in 2011[20] by PW (Management & Handling) laws, which established requirements for usage, In addition to raising the min. thickness of poly bags to 40 µm, the collection, sorting, transportation, and disposal of rubbish made of plastic are also being addressed. These restrictions were replaced by the PWM[21] Rules of 2016, which enlarged the thickness of poly bags to 50 µm & increased the liability of plastic manufacturers & generators to construct an efficient trash management scheme.

Environmentalists questioned the amendments made to these standards in 2018, 2021, and 2022. In 2024, the law was again amended to enhance current plastic litter management legislation. The changes brought basically focused on Extended Producer Responsibility (EPR) obligations, mandating manufacturers to guarantee the appropriate collection & recycling of PW[22]. This includes setting specific targets for plastic waste collection & recycling. Definition of what constitutes PW has also been broadened to include additional types of plastic materials, thereby increasing the scope of the regulations. The amendments have also introduced bans on more single-use plastic items that have significant environmental impacts, among other major changes it also focuses upon promotion of biodegradable alternatives to traditional plastics, encouraging industries to innovate in this area, and running awareness & education initiatives to educate the people about the impact of PW & the importance of accountable waste management practices. These proposed amendments reflect India's ongoing commitment to combat pollution and improving waste management.

IV. Connection between SDG[23]s & Plastic Waste Management

Following several improvement objectives, the UN ON 15[TH] Sept announced the SDGs to be adopted throughout the globe to achieve sustainability and development in all spheres. The goals aim for focusing collectively on most critical multidimensional socioeconomic-environmental worldwide problems. There are 17 SDGs and 169 goals. The objectives that are directly or indirectly connected to the problem of plastics are as follows:

- **Relation with Goal 1[24]:** The atmosphere & earth is so sensitive to wastage generated by plastics which also have a severe impact on day to day living of common man, particularly of those living by the shores in developing nations who are dependent on the sea food and activities for living, due to marine plastic pollution their right to livelihood is getting severely injured.[25] Low income or no income people are especially exposed to climatic dangers & disasters. As a result, initiatives to promote resilient settings with less plastics and exposure are essential for overall all growth i.e socially, economically & environmentally. New issues may arise as a result of the detrimental effects of plastics contamination onto the productivity of its value chain in agriculture or aqua culture & consequently revenue generating opportunities may be created. In order to enhance livelihoods, it is necessary to engage in world trade among developed & developing nations for plastic

refuse & an informal trash management sector.[26]

- **Relation with Goal 2[27] :** Plastics present in farmland, produce, & waterways threaten both the viability of food production systems & the safety of our food supply. It has been found that when plastic coat residues accumulate in a field, it pessimistically impacts its physicochemical qualities linked to soil health & food production. With each extra hundred kilogram per hectare of the residue, it was found that crop output dropped by an average of 3%. Soil parameters, such as organic matter, accessible phosphorus, water penetration rates, and plant height and root development, were all negatively impacted. It is estimated that more than five lakhs' tons of PW had built up into soils, leading to a 6-10% drop in cotton output in certain contaminated areas; China being biggest consumer of plastic cover in agricultural systems. Consequently, soil fertility, agricultural output, food security, and public health are all negatively impacted by plastic contamination in soils.[28]
- **Relation with Goal 3[29] :** Numerous researches have been conducted in the field regarding the ingestion of micropollutants by living beings through the consumption of seafood, the packaged water in plastic bags and bottles, sodium, and the air. Nevertheless, the possible health risk associated with micropollutants in humans is not particularly concerning, primarily due to the scarcity of research on the subject. It has been announced that plastic particulate matter has been identified in the intestine and excrement. Consequently, the welfare of all living organisms is adversely affected. Consequently, it is imperative to implement measures to reduce plastic pollution in order to accomplish this objective
- **Relation with Goal 6[30]:** Micropollutants presence is contingent on the frequency of container usage & source of treatment facilities. Consequently, the WHO acknowledges that they are potential hazards in drinking water. A study of water samples of municipal & bottled in 14 countries revealed that 80% of the samples contained approx. four plastics particles in a liter of water. A separate investigation that exclusively examined bottled water discovered that plastic contaminants were present in 90% of the samples. The introduction of these pollutants into the marine system occurs both directly via effluent discharge and indirectly through runoff & this process results into change of soil nutrients visible in agricultural practices. The Indian government has launched Clean Indian Programme popularly known as Swachh Bharat Abhiyan, a comprehensive initiative that engages various stakeholders, including govt. bodies, private sector, and the community. The initiative aims to clean up cities and segregate solid refuse, including plastic waste, in order to provide clean water and sanitation to all citizens. It is probable that the consumption of packaged water &, as a result, pollution due to overuse of plastic will be reduced by the provision of pure and secure water. In addition, the proper discard of PW reduces the pollution

& contagion of fresh-water bodies which are used for drinking sources by the living beings, such as humans & animals. Furthermore, communities can obtain secure and pure water from water purification and cleansing devices which utilize internal aquatic bodies.[31]

- **Relation with Goal 7[32] :** Compared to landfills, plastic waste can be utilized to produce energy as an alternative which will solve the problem and help in securing the energy needs. Conversely, incineration process of plastic waste results in substantial emissions of greenhouse gases & other harmful air pollutants. Globally, it is anticipated that plastic may generate 1.34 Gigatons of greenhouse gases annually by the year 2030 and 2.8 Gigatons by the year 2050[33]. GHG emissions & air pollutants realeased are in direct opposition to goal thirteen and goal fifteen. Chemical recycling of PW converted into fuels via technique of pyrolysis have garnered interest worldwide. The waste from plastics is heated in a surrounding without any oxygen during pyrolysis process, which converts the polymers into monomers. In comparison of incineration for refuse-to-energy conversion, the chemical recycling is having the possibility of significantly reducing the greenhouse gases emissions & other contaminants.
- **Relation with Goal 8[34]:** Damages done to environment & costs linked with its clean-up can result in significant economic losses in developing economies brought about by marine plastic. It is anticipated that marine debris will result in a loss of approximately US$1.2 billion annually in the Asia-Pacific region.[35] If they fail to invest in the cleansing of its coastline, the monetary loss resulting from the failure of tourism shall be substantial, and the cost of the clean-up will be high. This could be perceived as an opportunity for economic development, as these countries require substantial infrastructure to ensure effective waste management. The circular economy may be achieved by managing waste of plastic through corporal or chemical recycling. Though managing the issue of pollution created by plastics actually, there is significant potential for employment creation in the circular economy for substance management. The informal recycling sector is responsible for the management of a substantial amount of plastic waste which is no less than a ticking time bomb, a breeding ground for trouble, and fraught with health and social pitfalls. Bringing the informal sector into the fold of public and private waste organisation agencies will turn out to be a win-win situation, paving the way for both environmental and economic gains while also offering a decent and respectable way to make a living. A better management of plastic waste will bear fruits of improvement and viability.
- **Relation with Goal 9[36]:** To increase effective alternatives, like biodegradable

plastics, & to innovate more effective methods for managing plastic waste, significant efforts would be necessary. Today, bio-based plastic comprises merely of around two percent of the overall plastics production, however there are substantial scope for innovation & the replacement of conventional plastic. Research is expanding on the drawing out of pyrolysis oil, as well as a variety of innovative secondary products, including plastic wax, multiwalled carbon based nano-tubes, & other high-value compounds. Utilization of waste generated from plastic in concrete for the production of floor and wall tiles, pavers, and roads are also gaining popularity. It was reported that ground-breaking start-ups that collaborated with unorganized trash collectors in waste clean-up businesses were mutually advantageous. Plastic is ever-present, and its substitution with alternatives may be challenging & time-taking. As a result, research or innovation in reutilization of the trash so generated, along with physical & chemical recycling, would be highly beneficial.[37]

- **Relation with Goal 10[38]:** For decades, worldwide business of PW has served as the sculpt for its management in a country. These practices have come under fire for shifting the heavy load of plastic pollution from the developed world to those still finding their feet. These practices are a ticking time bomb, leading to a sea of plastic pollution and a widening gap in environmental fairness. Throwing plastics from wealthy nations into struggling countries is just pouring salt in the wound, widening the gap and causing a world of trouble for those already on the ropes. This will only add fuel to the fire, leading to even greater environmental damage for populations that are already facing the music, especially in a world that's wrestling with food security issues. Additionally, the destruction of their natural ecosystems by plastic debris will have a detrimental effect on the tourism industries of certain economies that rely on it to sustain biodiversity. This will result in a conflict among the local economies & an additional exacerbation of the existing inequalities.[39]
- **Relation with Goal 11[40]:** City infrastructures, including stormwater drainage and sewage systems, are being clogged by the inappropriate disposal of synthetic refuse, resulting in pervasive pollution and waterlogging. Building the right infrastructure in both the haves and have-nots will be the name of the game to tackle waste on land and water alike. If we don't get our act together on land, the tide of plastic waste in our oceans will keep rising like a bad penny. It's high time we put our ducks in a row and tackle this issue head-on, or we'll be swimming in a sea of trouble. This was expected to skyrocket by at least tenfold by 2025. The cities are set to burst at the seams with folks moving in, and by 2030, it's a safe bet that around fifty

percent of the global population would be calling urban places home sweet home. Consequently, it will be imperative to enhance the infrastructure of cities to ensure the proper management and recycling of refuse, including plastics. The hazards linked with its contamination would continue to escalate & could have an impact on the life & livelihoods of individuals in both urban & rural areas if this is not addressed appropriately.

- **Relation with Goal 12[41] :** Significant no. of researches demonstrates that plastics production & use are unsustainable, and there is an absence of appropriate management of plastic waste. The annual consumption of plastic has jumped the bar of 320 million tons. Out of the total, not as much of 10% is recycled, 12% incinerated, & the remaining seventy eight percent is either discarded in the landfills or leaked into the surroundings. Approximately 11% of the global plastics debris is deposited in the oceans and affects marine ecosystems. The situation of plastic appears to be extremely grim under business-as-usual conditions. A comprehensive policy is necessary to address this problem. It's high time we take a step back and rethink how we tackle this problem. We need to cut down on plastic production before we can really get the ball rolling on sustainable practices. Let's put our eggs in a basket of increasing the production & consumption of plastics that are good for the planet, especially when it comes to those one time-use, low-value & disposables.[42]

Consequently, objective of Goal twelve point four is to "achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil in order to minimize their adverse impacts on human health and the environment." In the same vein, the goal twelve point five mandates that "by 2030, the total amount of waste generated must be substantially diminished through prevention, reduction, recycling, and reuse." In the near term, it could be helpful to focus on improving garbage collection and management. This might be advantageous. However, in the long run, a solution that is more sustainable would require the transition to a circular economy, which will remove trash and plastic that is only used once from the manufacturing cycle. This will entail the development of models for producer responsibility via the creation of innovative product designs that make it easier to recycle, reuse, and reduce the amount of plastic packaging that is used. According to estimates, around fifty percent of all plastics are manufactured for one-use applications, with a vast bulk of these plastics being used for the wrapping of food items.

- **Relation with Goal 13**[43] The majority of stages of plastics life result in emission of GHGs. Like, plastic is produced from polymers that are obtained through the combustion of fossil fuels. Consequently, a substantial quantity of GHGs is released through the production, movement, incineration, burning in open air & degradation of the product in direct light of sun in the end of its lifespan. Globally, approximately four hundred million tons of GHGs is presently released annually throughout their existence cycle. The figure is predictable to rise by one point three gigatons/year by 2030 and two point eight gigatons/year by the year 2050. In order to combat climate change, it is vital that we encourage obligatory reuse, the development of recycling know-how which are less harmful to the surroundings, & the use of energy conversion rather than incineration for the purpose of converting trash into energy.[44]
- **Relation with Goal 14**[45]**:** The aquatic organisms are being severely impacted by the accumulation of micro and nano-plastics in the water ecosystems of both fresh & marine water, which is a direct result of inadequate management. The UN has identified micro and nano plastics as a planetary threat as a result of their ubiquitous presence in oceans. In order to mitigate water plastics contamination on a global scale, SDG 14 emphasizes on importance of "conserving and sustainably utilizing the oceans, seas, and marine resources for sustainable development." United Nations has established a target fourteen point one which aims to "significantly reduce and prevent marine pollution of all types, particularly from land-based activities, including marine debris and nutrient pollution, by 2025." Goal 14 is the sole SDG that explicitly addresses plastic pollution through an indicator, 14.1.1b, which measures the density of plastic debris. However, it is not taking onto microplastics (plastics less than five microns), despite the fact that microplastics are a significant source of contamination & a hazard to marine & aquatic ecosystems. Like previously mentioned, the presence of significant quantities of plastics in marine ecosystems necessitates immediate action to safeguard the oceans and improve marine health, which is essential for the fulfillment of numerous other SDGs, such as food security and famine.[46]
- **Relation with Goal 17**[47]**:** Sustainable management of plastics & creation of better, cost-effective alternatives should be the principal emphasis of research and innovation in industrialized nations, which possess more resources and facilities for research & development. Moreover, the Sustainable Development Goals will be realized by tackling pollution due to plastics among developed & developing countries via transfer of eco-friendly technology, associated capacity building, and financial investments. Pollution due to plastics is becoming a worldwide problem that can only be addressed by collaborative efforts among governments, national & international organizations, the commercial sector, and civil society. In order to address this global issue, it is imperative that all

governments unite to mobilize & allocate the necessary resources to reduce plastic pollution. There is a need to increase the scope of inventions that can reduce the pessimistic effects of plastic through partnerships in order to ensure that it is just for developing nations.[48]

V. Suggestions for Tackling the Plastic Pollution Problem

- Manufacturing & production, utilisation & discard of plastics can be initially reduced through modifications to product design, such as the substitution of alternative materials for plastics. Additionally, the prevention of plastic waste generation may be achieved through modifications to design practices, such as the reduction of product weight. By reducing the environmental footprint of plastics, the adverse environmental impacts of plastics could be more directly mitigated by transitioning to bio-based or biodegradable plastics.
- By increasing the rate of waste collection and recycling, improved waste management systems would enable the capture of refuse plastics prior to their introduction into the natural environment. This would enable the removal of plastics that are already there in the natural environment through clean-up & remediation activities, like shore cleaning & the use of technologies to capture plastics from the oceans.
- Using economic instruments, such as taxes, to assist in the phase-out of non-essential plastic items and hold manufacturers & importers of these products accountable for the disposal of its refuse.
- The Policies, principles, & guidelines must be synchronized by specific local actions that are in accordance with national agendas.
- Eliminate or prohibit the use of products that are not recyclable, such as multilayered plastics.
- Clearly define single-use plastics and prohibit the production of items that contain them.
- Simplify and enforce the regulations and policies regarding Extended Producer Responsibility (EPR).
- Encourage the recycling industry by providing monetary benefits.
- Municipal agencies to be required to participate in the segregation process at the source.

VI. Conclusion

Plastics have been the dominant material in our markets for an extended period of time due to their exceptional properties. Given our dependence on plastics, it will be challenging to supplant them. Therefore, it is necessary to substitute them by alternative at the supermarket level, as simply cheering consumers to move towards alternative products will not suffice. The issue is not the use of plastics; rather, it is the excessive production and consumption of plastics, as well as the inability to manage the refuse generated by them in an environmentally responsible manner. The primary source of concern is our present approach to plastic production, consumption, & disposal. The primary obstacles to the regulation of plastic pollution include the unorganized system of collection and

efficient aggregation, the absence of segregation of plastic refuse, the livelihoods associated with plastics production, and the poor economic value of low-grade (thin) plastics.

The negative consequences of plastic manufacturing are increasing, particularly in the form of micro & nanosized plastics that are having a significant impact on our environment. The biological properties of nature are being significantly impacted negatively by both sorts of plastics, which are having a substantial influence on the land and water. Both SDGs & meteorological extrusion are linked with plastic pollutants. The Goals were designed with an intention of addressing major global concerns; so that they offer a worldwide stage where nations can come together & effectively deal with the causes and solutions for the global problem of pollution due to growing PW & their management in order to support further important goals, like the promotion of sustainable economic development, food security, & human health.

Issues related to plastics are in a direct or indirect relation with world's aspirations to achieve the SDGs. There is requirement to expand clean mechanisms to resolve these issues in order to facilitate greater monitoring, innovation, creation, & collaboration between agencies & people's technical expertise in order to make collective action. It is imperative to promote research and innovation in order to reduce, reuse, recycle, and acquire superior plastics, as well as to identify green alternatives to plastics. Additionally, it is crucial to emphasize the importance of opportunity solutions. Moreover, it is crucial to proactively promote & enforce the use of alternative materials & encourage groups and residents to collaborate in reducing plastic pollution. The current state of waste management is dismal, particularly in developing international locations, despite the available information regarding the effects of plastic pollutants. It is evident that plastic pollution is a significant obstruction to sustainable development. In order to accomplish our objectives, it is imperative that we address plastic pollution with urgency.

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