

# INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

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Volume 7 | Issue 2

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2024

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# A Study on Marine Plastic Pollution and its Preventive Measures

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## ABSTRACT

*Marine plastic pollution is an escalating ecological issue, with an estimated 8 million metric tons of plastic waste entering the ocean annually. This study investigates the origins and pathways of marine plastic pollution, evaluates its impacts on marine ecosystems, analyses extant international regulations and policies, and identifies effective preventative measures. The crucial topic of marine plastic pollution and its mitigation is the main emphasis of this extensive investigation. A review of the international policies and regulations currently in place to address this growing issue, an analysis of the sources and pathways of marine plastic pollution, an evaluation of its effects on the fragile marine ecosystem, and an assessment of the efficacy of different preventive measures are the main goals. The research attempts to offer insightful information by looking at these important areas, which can help direct conservation efforts, influence policy decisions, and support the global preservation of marine habitats. This study aims to be a significant contribution to the ongoing battle against marine plastic pollution by using a comprehensive methodology that includes research, analysis, and assessment. A descriptive research methodology with a convenient sample of 204 participants from Chennai was utilised. Results demonstrate that primary sources of marine plastic are terrestrial, including plastic waste from coastal areas entering waterways and ultimately oceans. Plastic pollution poses significant threats to marine life via ingestion and entanglement. Current international policies have proven insufficient in stemming plastic waste and ocean leakage. More effective preventative measures are imperative, encompassing waste management infrastructure improvements, reduction of single-use plastics, increased recycling, and enhanced public education. This study concludes that mitigating marine plastic pollution necessitates a holistic approach addressing waste management, upstream production and consumption, policy reform, and technological innovation globally. These findings provide insights to inform future research and policy efforts to address this ecological challenge.*

**Keywords:** *Marine plastic pollution, ecological issue, ecosystem, upstream production, technological innovation, policy efforts.*

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## **I. INTRODUCTION**

Marine plastic pollution poses a grave threat to our oceans and ecosystems. This study aims to explore the extent of this issue, analyse its environmental impact, and propose preventive measures to mitigate the damage. By understanding the sources and pathways of plastic pollution, we hope to contribute to the development of effective strategies for a cleaner and healthier marine environment. This study seeks to unravel the intricate web of marine plastic pollution, examining its origins from various sources such as land-based activities and shipping. The environmental consequences, ranging from wildlife endangerment to ecosystem disruption, will be scrutinised to grasp the urgency of preventive actions. Our research endeavours to identify and assess existing measures while proposing innovative solutions to combat this pervasive issue and foster a sustainable future for our oceans. By evaluating the effectiveness of current preventive measures, we aim to develop a nuanced understanding of what works and what requires refinement. Through a multidisciplinary approach, this research aspires to contribute actionable insights to global efforts combating marine plastic pollution, striving for a world where our oceans thrive in a plastic-free environment. The socio-economic dimensions of marine plastic pollution, investigating how it affects coastal communities and industries. By analysing international policies and collaborations, we aim to identify gaps and propose a holistic framework for prevention. This study not only addresses the urgent need for action but also serves as a call to collective responsibility, emphasising the interconnectedness of our actions and the fate of our oceans. Within the tapestry of this study, we'll unravel the intricate interplay of consumer behaviour, waste management practices, and technological innovations. Examining case studies and success stories, we aim to extract valuable lessons and insights. Our goal is not only to raise awareness but to empower individuals, industries, and policymakers to actively participate in the global mission to reduce, if not eliminate, marine plastic pollution. As we navigate this sea of challenges, let this study serve as a compass guiding us towards practical and impactful solutions for a cleaner, healthier marine environment. Our oceans are drowning in plastic. Millions of tons of plastic enter the seas annually, primarily from land-based sources. By 2050, plastic is projected to outweigh fish in our oceans. Over 800 marine species are affected, suffering from entanglement, ingestion, and toxic contamination. This plastic pollution has devastating impacts. Marine life is entangled and injured by plastic, their digestive systems are blocked, and they are poisoned by harmful chemicals. Plastic disrupts ecosystems, alters habitats, and introduces invasive species. Microplastics contaminate seafood, potentially impacting human health. Coastal tourism and fisheries suffer due to polluted beaches and declining marine life. Plastic pollution often goes unnoticed, lurking beneath the surface

and infiltrating the most remote corners of our oceans. Microplastics, tiny fragments less than 5 millimeters in size, are particularly insidious. They're formed from larger plastic debris breaking down or originating from microbeads in cosmetics and cleaning products. These minute particles are readily ingested by marine life, entering the food chain and potentially impacting human health. The journey of plastic to the ocean is rarely a direct one. Plastic waste often travels through rivers, carried by wind and rain from overflowing landfills, littered streets, and poorly managed waste systems. This highlights the global interconnectedness of the issue, requiring solutions across different countries and sectors. Tackling marine plastic pollution requires a multi-pronged approach. Individuals can make a difference by reducing their plastic footprint, participating in cleanups, and raising awareness. Governments can implement stricter regulations, promote recycling infrastructure, and incentivize innovation in material alternatives. Businesses can adopt sustainable practices, reduce plastic packaging, and invest in circular economy solutions. Together, we can create a wave of change that protects our oceans for generations to come. Despite the daunting scale of the problem, there are reasons for optimism. Innovation is bringing forth biodegradable materials, plastic-eating enzymes, and ocean cleanup technologies. Public awareness is growing, driving policy changes and consumer demand for sustainable alternatives. By harnessing collective will and ingenuity, we can turn the tide on plastic pollution and restore the health of our blue planet. Stemming the tide of plastic in our oceans demands a multifaceted approach, focusing on prevention at its core. The battle begins with individual choices: carrying reusable bags and water bottles, opting for products with minimal packaging, and refusing single-use plastics like straws and utensils. Extended Producer Responsibility policies can hold manufacturers accountable for the lifecycle of their products, while robust waste management infrastructure ensures proper disposal and recycling. Investment in research and development can unlock innovative solutions like biodegradable materials and efficient plastic capture technologies. Empowering individuals with knowledge about the consequences of plastic pollution and fostering responsible consumption habits are vital. Collaborative efforts between governments, industries, and civil society can drive policy changes, promote sustainable alternatives, and encourage responsible waste management practices. prevention is far more cost-effective and impactful than cleanup or remediation. By embracing these individual and collective actions, we can build a future where our oceans are free from plastic pollution, thriving with healthy ecosystems and abundant marine life. Encourage products designed for disassembly and reuse, utilising recycled materials in production. Promote the development and adoption of biodegradable or compostable materials for packaging and other applications. Advocate for regulations and

incentives banning microplastics in cosmetics, cleaning products, and synthetic textiles. Implement bans on single-use plastics like bags, straws, and utensils, with exemptions for essential medical uses. Enact EPR policies that hold manufacturers financially responsible for the collection, recycling, and disposal of their products. Introduce deposit-refund systems for beverage containers and other recyclable materials to incentivize proper disposal and collection. Foster a culture of conscious consumption, refusing unnecessary plastics, reducing personal plastic footprint, reusing items wherever possible, and diligently recycling accepted materials. Choose companies committed to reducing plastic use, using recycled materials, and offering sustainable alternatives. Organize or participate in community cleanups to remove existing plastic debris from waterways and coastlines. Community-driven Initiatives empowers local communities to develop and implement their own solutions for plastic waste management, tailored to their specific needs and context. Education for All Ages interact education about plastic pollution and sustainable practices into school curriculums and community awareness programs across all age groups. Behavioral Economics Incentives utilise insights from behavioural economics to design nudges and incentives that encourage pro-environmental choices related to plastic consumption and disposal.

#### **(A) Objectives**

- To investigate the source and pathways of marine plastic pollution
- To assess the impact of plastic pollution on marine ecosystem
- To analyse the existing international policies and regulations addressing marine plastic pollution
- To identify the effectiveness of preventive measures.

#### **(B) Review of literature**

**Emma Schmaltz and Emily C. Melvin (2020)** published a paper on plastic pollution solutions. The goal of this study was to address this gap by creating a comprehensive inventory of technologies currently used or in development to prevent the leakage of plastic pollution or collect existing plastic pollution. The findings is that a comprehensive approach is needed that combines technology, policymaking, and advocacy to prevent further plastic pollution and the subsequent damage to aquatic ecosystems and human health. **Helen V. Ford and Nia H. Jones(2022)** published a paper on The fundamental links between climate change and marine plastic pollution. The paper explores how plastic contributes to greenhouse gas (GHG) emissions from the beginning to the end of its life cycle.It was found that both issues occur throughout the marine environment, and we show that ecosystems and species can be

particularly vulnerable to both, such as coral reefs that face disease spread through plastic pollution and climate-driven increased global bleaching events. **G.G.N. Thushari, J.D.M. Senevirathna (2020)** published a paper on Plastic pollution in the marine environment. It highlights the different aspects related to plastic pollution in coastal and marine environments. This paper demonstrates the current status of plastic pollution in the marine ecosystem to make people aware of a plastic-free, healthy blue ocean in the near future. **Bethanie Carney Almroth and Hakan Eggert (2019)** published a paper on Marine plastic pollution: sources, impacts, and policy issues." Review of environmental economics and policy. It studies the introduction to plastic materials, marine plastic pollution, and its potential effects on marine ecosystems and human health. It was found that the direct impacts of marine plastics on human health have not been well established, and no studies explicitly examine this issue, although plastic debris has been identified as a potential human health issue. **Kurniawan, Setyo Budi, et al(2021)** published a paper on Current state of marine plastic pollution and its technology for more eminent evidence: a review. The objective is to show how great the impact of plastic on the living environment has become. The findings presents an intensive discussion related to the evidence of plastic pollution in the environment, some established policies and regulations about plastic pollution and the technology in providing and revealing more evidence of plastic pollution. **Villarrubia-Gómez, Patricia, Sarah E. Cornell, and Joan Fabres(2018)** published a paper on Marine plastic pollution as a planetary boundary threat–The drifting piece in the sustainability puzzle. The objective is to find the use of plastic in modern society and the inadequate management of the resulting waste have led to its accumulation in the marine environment. The findings are that Irrespective of the recognition of plastic as a novel entity in the planetary boundaries framework, it is certain that marine plastic pollution is closely intertwined with global processes to a point that deserves careful management and prevention. **Abbott, Joshua K., and U. Rashid Sumaila(2019)** published a paper on Reducing marine plastic pollution: policy insights from economics. The objective is to examine the economic literature on waste management and integrated environmental policy to assess how particular policies target these individual pathways and can efficiently reduce flows of plastics into waterways. It was found that the applicability of these policies in coastal developing nations that often rely upon the informal sector for waste management services. We conclude by identifying important issues for future research. **Jambeck, J. R., et al. (2015)** published a paper on Plastic waste inputs from land into the ocean. A Considerable progress has been made in determining the amount and location of plastic debris in our seas, but how much plastic actually enters them in the first place is more uncertain. The researcher combine available data on solid

waste with a model that uses population density and economic status to estimate the amount of land-based plastic waste entering the ocean. Unless waste management practices are improved, the flux of plastics to the oceans could increase by an order of magnitude within the next decade. **Andrady, A. L. (2011)** published a paper on Microplastics in the marine environment. This review discusses the mechanisms of generation and potential impacts of microplastics in the ocean environment. Given the increasing levels of plastic pollution of the oceans it is important to better understand the impact of microplastics in the ocean food web. **Rochman, C. M., et al. (2013)** published a paper on Anthropogenic debris in seafood: Plastic debris and fibres from textiles in fish and bivalves sold for human consumption. It was assessed that the presence of anthropogenic debris in fishes and shellfish on sale for human consumption. The first findings of plastic debris in fishes directly sold for human consumption raised concerns regarding human health. **Igewe chukewdiu (2017)** The author says that water is life without pollution, but death when it is polluted means that more surfaces across the globe are polluted. Factor, that affects water is the use for both domestic and industrial purposes. The main objective is to avoid the spread of epidemic that can lead to death of humans who are the most precious. Finding water and yet it is one of the scariest commodities especially in the developing countries of the world. **John leju elstinoladu etal (2018)** The author says, water pollution in Juba county is one the major problems affecting the community in recent years. Factoring that the rural urban migration caused by internal conflict and small industrialisation in Juba has accelerated the problem of water objectively, it is recommended that there should be proper management of water bodies and water disposal systems. Finding awareness programs and formulate of should be determined better the impact of pollution. Conclusion: The future necessary to determine better the impact of water pollution on human health and on the environment. **Anil k Dwivedi(2017)**The author says “that more than 70%of the freshwater in liquid form of our country is converted into being unfit for consumption”. Factors affecting the water pollution are increasing not only in India but in other countries are also suffering from the water problems. The quality of water is more severe. Objectives the Indian philosopher believe that “thought of a person depends on the type of food and water to which he fed”. Conclusion “It is demand of the time to move towards sustainable development we must notice that ours is not the last generation to flourish on this earth, remember they will be own sons or grandson. **DR. Ramphal (2013)** The Author says “In the control pollution control board (CPCB)identified served polluted stretches on 18 major rivers in India. Factors, not surprising, a majority of these stretches were found in and around large urban areas. The high incidence of severe contamination near urban areas indicates that the industrial and domestic sectors' contribution

to water pollution is much higher than their relative importance implied in the Indian economy. Conclusion geogenic contamination including salinity, iron, and arsenic have affected groundwater in over 200 districts spreads across 19 states. **Saroj Kumar sing (2016)** The author says “the importance of water for sustenance of life, cannot be overemphasised whether it is use of running water in our homes, rearing cattle and growing crops in our farms, or the increase uses in industry, remain immeasurable. Factoring human contribution to water pollution is enormous by way of defecating, dumping of refuse, industrial waste and washing of clothes etc. Objectives our industrial should go advance in trying to recycle these waste instead of dumping them for rainwater to sweep these refuse into our rivers and stream making them under sea. **MD Arman Arefin, et al (2017)** The author says water pollution is one of the significant damages to general welling f Bangladesh. During water quality is inadequate overseen and checked and checked Bangladesh position at number 86 among 142 country with respect to drinking water quality water it certainly winds u plains one of our most noteworthy assets water is used practically in every vital human tastes and procedures the defilement of water bodies least complex word implies water pollution. **Chaudhary FN, etal (2017)** The author says water pollution is a very important problem of 21 st century. Factor which are affecting water pollution are addressed due to water pollution. Pure water is becoming less common day by day Objectives of water pollution is industrialization and increase in more and more ill. Objectives death and disease are are caused world wide due to water pollution conclusion both developed and developing countries are facing water pollution problems. **Dr.A. Royal Edward Williams,etal (2018)**The author says water pollution is the contamination of water bodies that forms of environment degeneration occurs when pollutants are directly or indirectly discharged into water bodies with adequate treatments to remove harmful compounds variables water contains many compounds objectives a few to these compounds are calcium and carbon. Type of water pollution surface, oxygen groundwater pollution. **Jyoti Das et al (2021)** As the population grows and the uncontrolled industrialization urbanisation rises as well it is high time use should give proper attention to the facts of rivers pollution in our country which is developing harmful impact both on human health an environment, aquatic ecosystem objectives aphelion of studies have been done on different aspect of river water pollution. Conclusion this will help to generate from early life. **Sehar Anwar, et al (2021)** water is an essential element for the presentation of life on earth objectives, maintaining the food chains and humanisation the living strands are closely connected to fresh and clean water accessibility. Factor, water pollution the major and serious threats to public health as drinking water quality is poorly managed and monitored throughout the world. Pollutants are of types as bacteria virus worms,



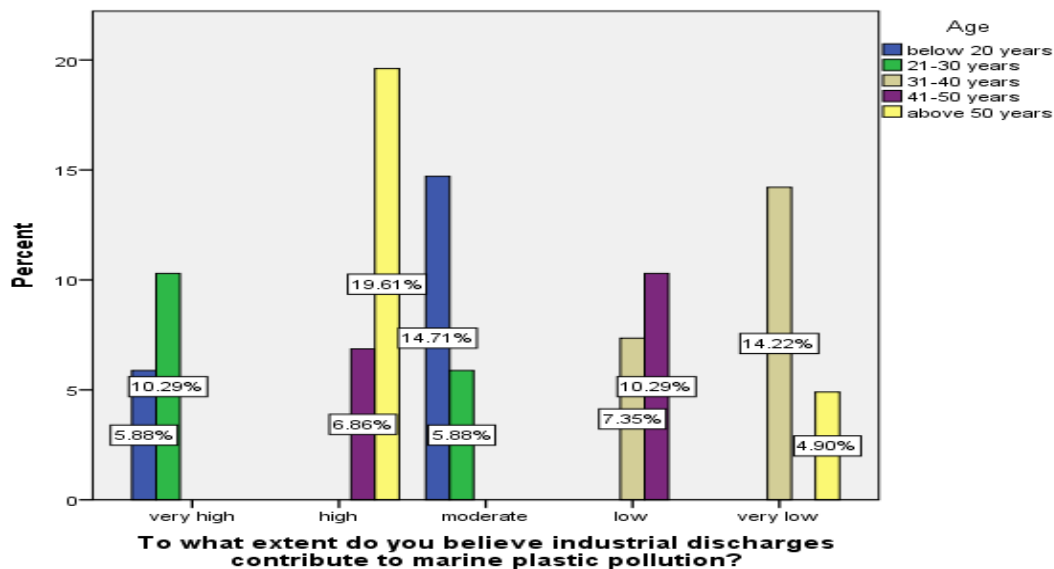
parasites, acc metals toxins plastics, pesticides and fertilisers. Conclusion according to the World health organisation (WHO), waterborne diarrhoeal diseases are responsible for over 2 mill deaths annually across the world.

**(C)Methodology**

The research method followed here is descriptive research. The data collected through a questionnaire and the sample size is 204. A convenient sampling method is adopted in the study to collect the data. The samples were collected in and around Chennai. The researcher used graphs, a nova and chi squares to analyse the data collected. The independent variables include age, gender, place of residence, educational qualification and occupation. The dependent variables include do you believe industrial discharge contributes to marine plastic pollution, impact of tourism contribute to marine plastic pollution in coastal areas, plastic pollution contributes to the description of marine ecosystem, effectiveness of international policies in addressing the issue of marine plastic pollution, source reduction contributes to the prevention of plastic pollution.

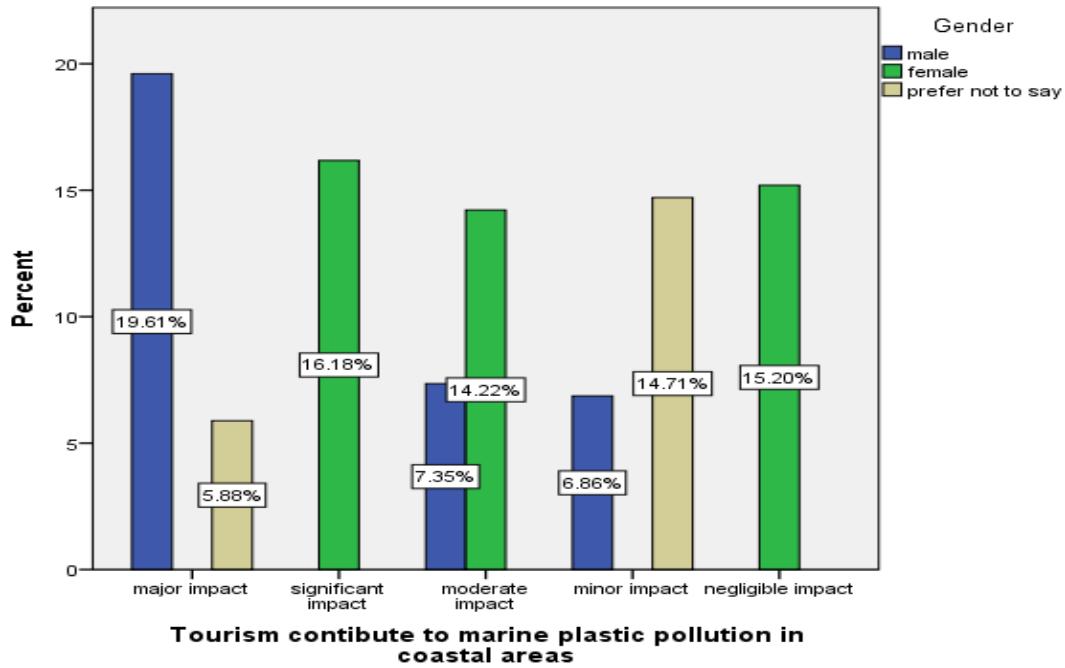
**II. GRAPHICAL ANALYSIS**

**Figure-1**



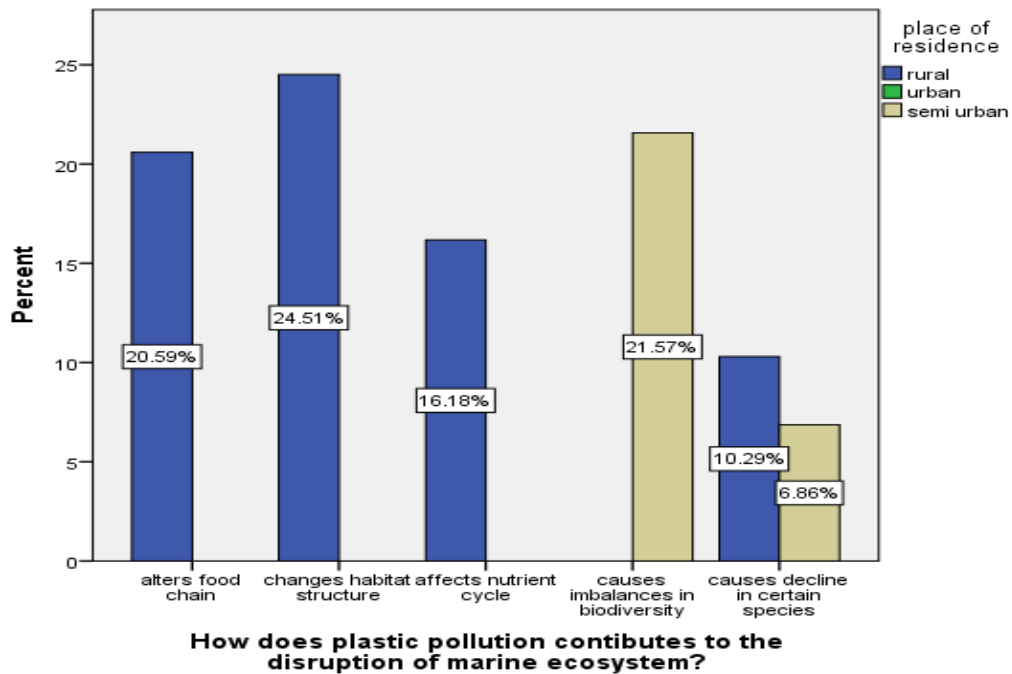
**Legend:** This figure represents the age of the respondents and to what extent do you believe industrial discharges contribute to marine plastic pollution.

Figure-2



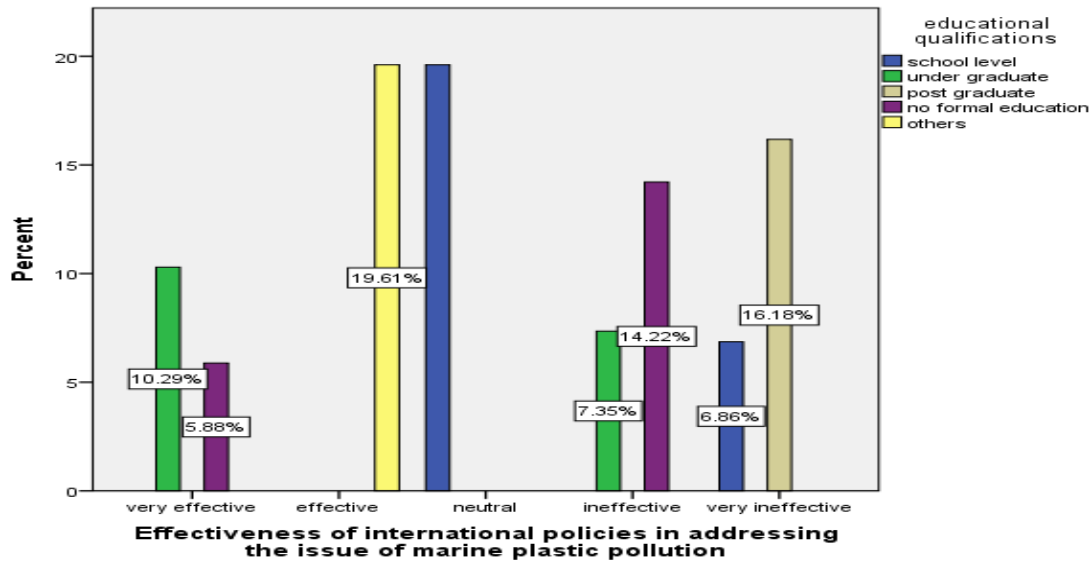
**Legend:** This figure represents the gender of the respondents and the question whether tourism contributes to marine plastic pollution in coastal areas.

Figure-3



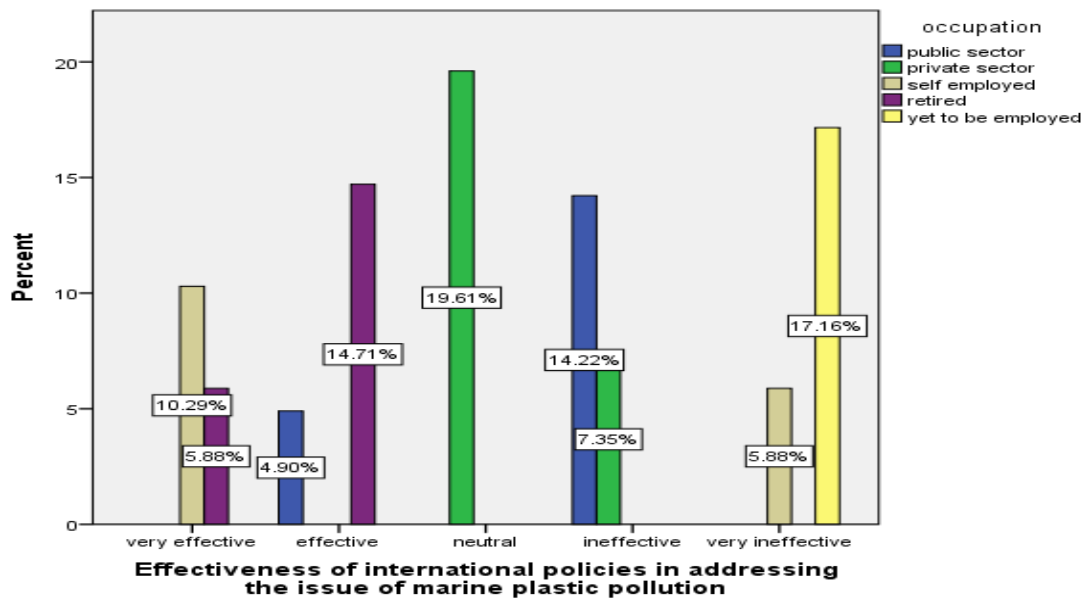
**Legend :** This figure represents the place of residence and questions whether plastic pollution contributes to the disruption of marine ecosystems.

Figure-4



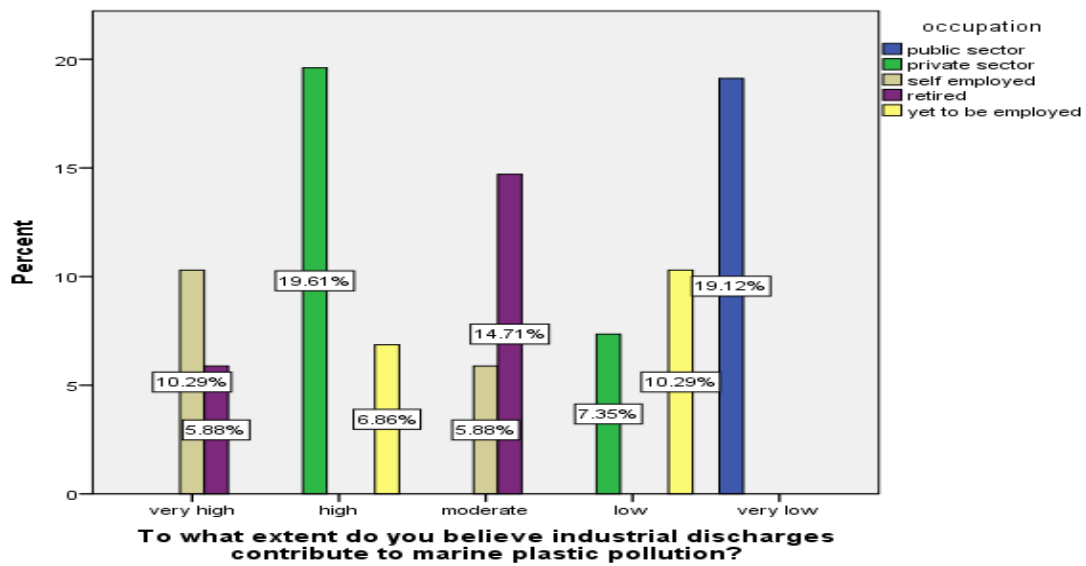
**Legend:** This figure represents the educational qualifications of the respondents and the question of the effectiveness of international policies in addressing the issue of marine plastic pollution.

Figure-5



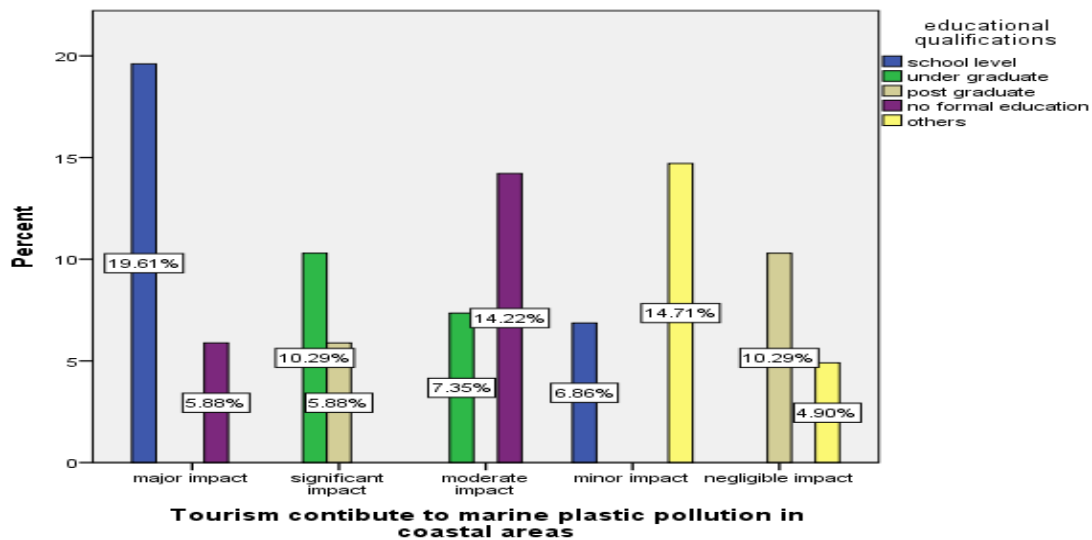
**Legend:** This figure represents the occupation of respondents and the question of the effectiveness of international policies in addressing the issue of marine plastic pollution.

Figure-6



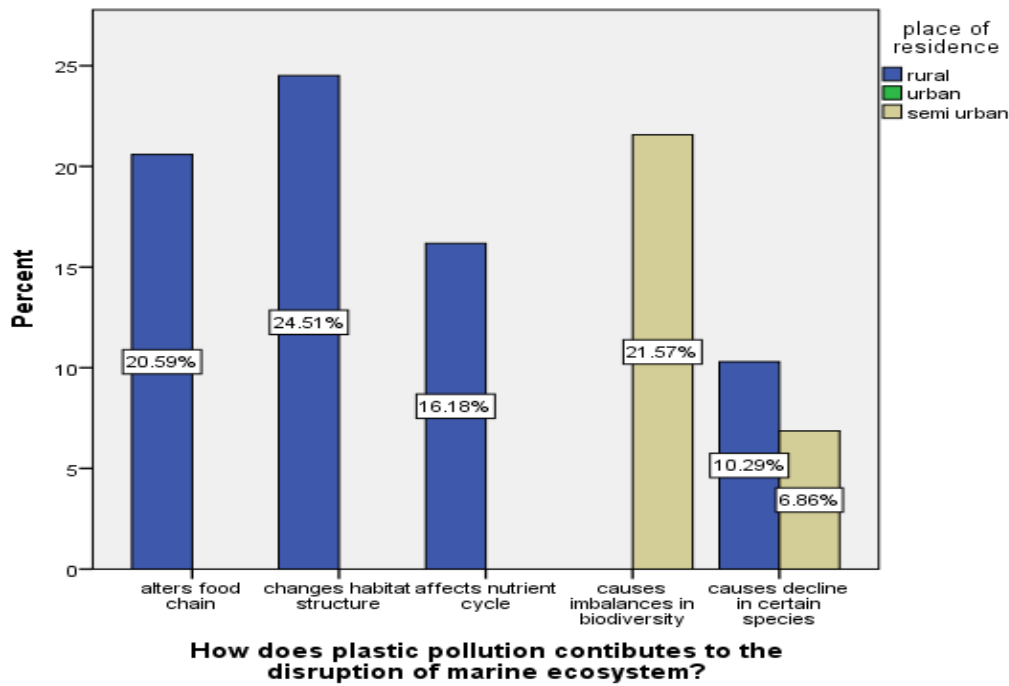
**Legend:** This figure represents the occupation of respondents and to what extent do you believe industrial discharges contribute to marine plastic pollution.

Figure-7



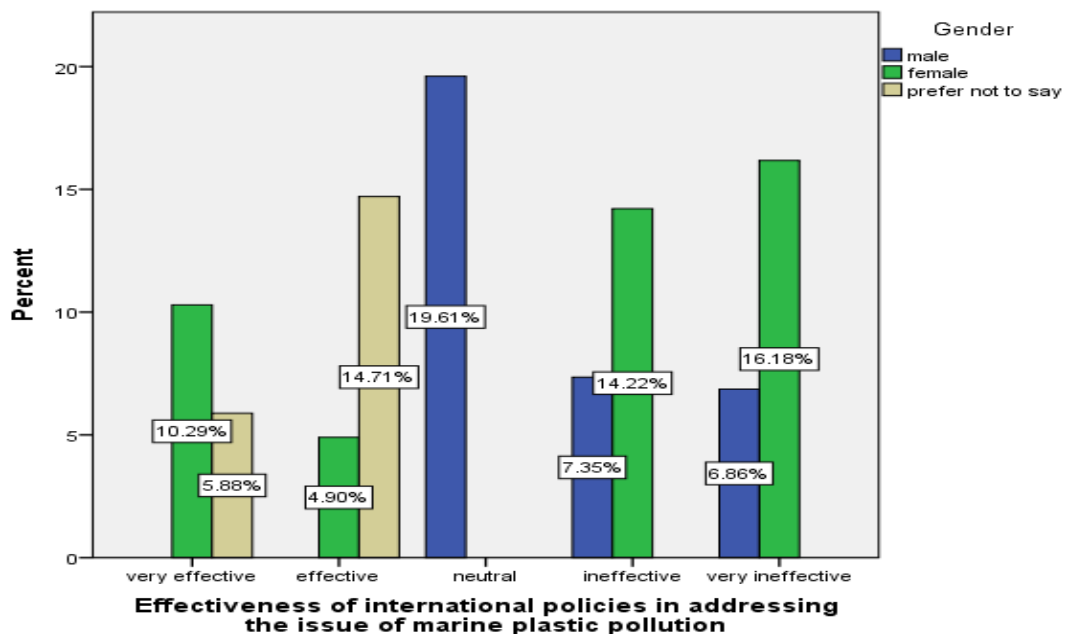
**Legend:** This figure represents the educational qualifications of the respondents and the question whether tourism contributes to marine plastic pollution in coastal areas.

Figure-8



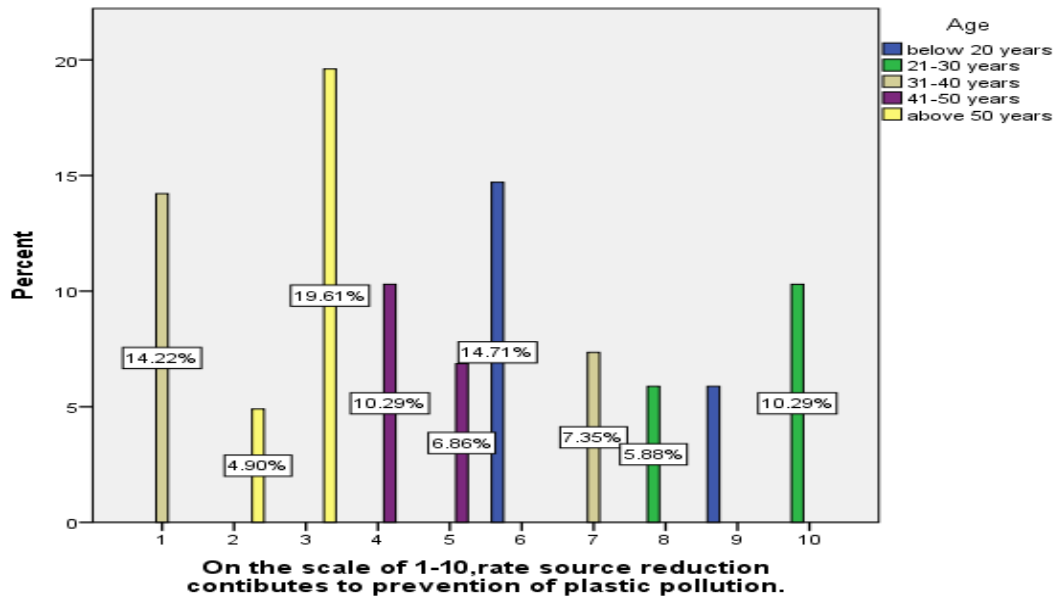
**Legend:** This figure represents the place of residence and the questions whether plastic pollution contributes to the disruption of marine ecosystems.

Figure-9



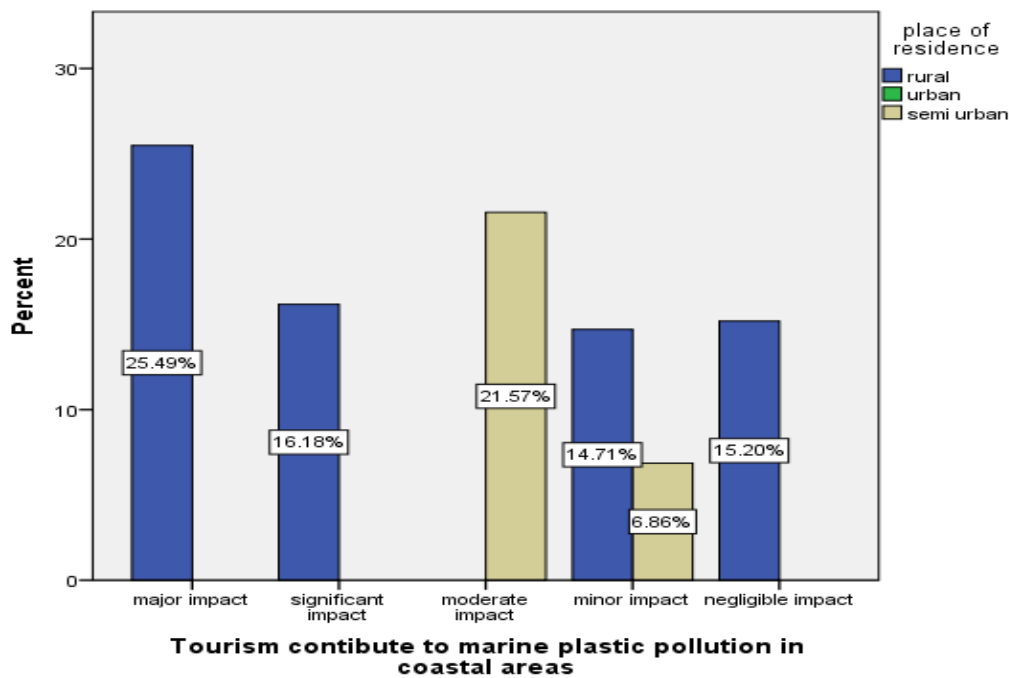
**Legend:** This figure represents the gender of the respondents and the question of the effectiveness of international policies in addressing the issue of marine plastic pollution.

Figure-10



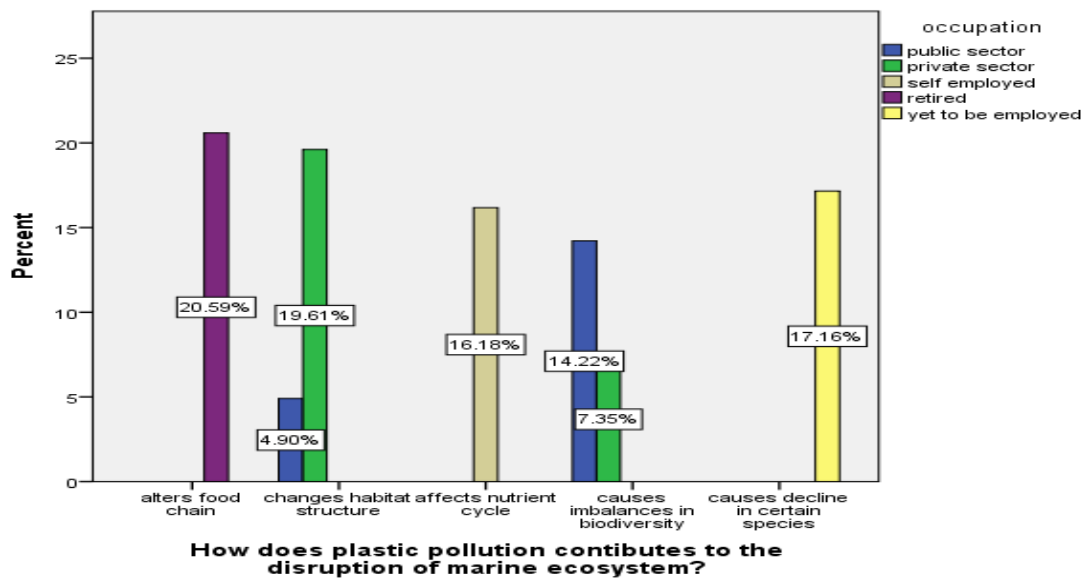
**Legend:** This figure represents the age of the respondents and the question whether on the scale of 1-10, rate source reduction contributes to the prevention of plastic pollution.

Figure-11



**Legend :** This figure represents the place of residence and the question whether tourism contributes to marine plastic pollution in coastal areas.

Figure-12



**Legend:** This figure represents the occupation of respondents and questions whether plastic pollution contributes to the disruption of marine ecosystems.

### III. RESULT

**Figure-1** represents the age of the respondents and to what extent do you believe industrial discharges contribute to marine plastic pollution. 19.61% of the above 50 years highly believe the reason for plastic pollution is industrial discharges. **Figure-2** represents tourism that contributes to marine plastic pollution with respect to gender. 19.61% of the male respondents agree with major impact and 16.18% agree with significant impact. **Figure-3** represents the place of residence with whether plastic pollution contributes to the disruption of marine ecosystems. 24.51% of the rural respondents say it affects the habitat structure. 21.57% of the semi urbans goes with it causing an imbalance in biodiversity. **Figure-4** represents educational qualifications with respect to the effectiveness of international policies in addressing the issue of marine plastic pollution. 19.61% of the school level respondents opted for effective and 16.18% of post graduates opted for very ineffective. **Figure-5** represents the occupation and the effectiveness of international policies in addressing the issue of marine plastic pollution. 19.61% of the private sector employees goes neutral while 17.16% of yet to be employed goes very ineffective. **Figure-6** represents the occupation and the industrial discharges contribute to marine plastic pollution. 19.61% of private sector employees opted for high while 19.12% of the public sector employees opted for very low. **Figure-7** represents educational qualification and tourism contributes to marine plastic pollution. 19.61% of the respondents who completed their schooling says it contributes to major impact while 10.29% of the post graduates say

negligible impact. **Figure-8** represents the place of residence with respect to plastic pollution that contributes to the disruption of marine ecosystems. 24.51% of the rural respondents goes with changes habitat structure while 21.5% of the semi-urban goes with causes imbalances in biodiversity. **Figure-9** represents the gender with respect to the question of effectiveness of international policies in addressing the issue of marine plastic pollution. 19.61% of the male respondents say neutral while 10.29% of the females say very effective. **Figure-10** represents the age with respect to the question of source reduction contributing to the prevention of plastic pollution. 19.61% of the above 50 years rated 3 to it while 14.22% of 31-40 years rated 1 and 14.71% of below 20 years rated 6 to it. **Figure-11** represents the place of residence with respect to the question of whether tourism contributes to marine plastic pollution. 25.49% of the rural respondents say major impact and 21.57% of semi-urban respondents say moderate impact. **Figure-12** represents the occupation of the respondents with respect to the question of plastic pollution contributing to the disruption of marine ecosystems. 20.59% of the retired respondents say it alters food chain, 19.61% of the private sector respondents say it changes habitat structure and 17.16% of yet to be employed respondents say causes decline in certain species.

#### IV. DISCUSSION

**Figure-1** The higher percentage of respondents above 50 years attributing marine plastic pollution to industrial discharges could be influenced by their lived experiences. **Figure-2** It may be valuable to delve into the reasons behind these opinions to inform targeted environmental initiatives or educational campaigns. **Figure-3** The variation in responses across different places of residence suggests a nuanced perspective on how plastic pollution affects marine ecosystems. **Figure-4** Further exploration could delve into specific concerns or knowledge gaps at different educational levels to inform more targeted and impactful policy advocacy and communication strategies. **Figure-5** A more in-depth analysis could explore specific concerns within the private sector and the unemployed population, informing targeted strategies to engage these groups in advocating for or shaping more effective policies. **Figure-6** the contribution of industrial discharges to marine plastic pollution could be influenced by their distinct professional perspectives. **Figure-7** views on tourism's contribution to marine plastic pollution could be linked to varying levels of environmental awareness and knowledge. **Figure-8** The response divergence between rural respondents (24.51% changes in habitat structure) and semi-urban respondents (21.5% causes imbalances in biodiversity) suggests a localised perception of how plastic pollution affects marine ecosystems. **Figure-9** The gender-based disparity in perceptions regarding the effectiveness of international policies on marine plastic pollution, with 19.61% of males saying neutral and 10.29% of females considering them



very effective, may reflect diverse perspectives influenced by various factors. **Figure-10** The variation in responses regarding the effectiveness of source reduction in preventing plastic pollution across age groups suggests differing perspectives. **Figure-11** Rural residents, potentially more connected to natural environments, may perceive a major impact due to direct observations or experiences. **Figure-12** The diverse responses across different occupations regarding the impact of plastic pollution on marine ecosystems highlight varied perspectives.

## V. CONCLUSION

In conclusion, marine plastic pollution poses a severe threat to our oceans and marine ecosystems. Its detrimental effects on marine life, ecosystems, and human health underscore the urgent need for global collaboration in reducing plastic use, improving waste management, and promoting sustainable practices to ensure a healthier future for our planet's oceans. Moreover, the long-lasting impact of microplastics on marine organisms, the disruption of food chains, and the economic repercussions on fisheries further emphasise the critical nature of addressing this issue. Comprehensive strategies, such as international agreements, public awareness campaigns, and innovative technologies, are essential to mitigate and ultimately prevent the pervasive problem of marine plastic pollution. It is a shared responsibility to safeguard our oceans and preserve the delicate balance of this vital ecosystem. While international laws and agreements, such as the Basel Convention and the London Convention, aim to regulate and control the transboundary movement of plastic waste, their effectiveness has faced challenges. Enforcement issues, lack of uniformity in implementation, and gaps in coverage have hindered their impact. Strengthening and harmonising these legal frameworks, coupled with increased collaboration among nations, are crucial for addressing the complexities of marine plastic pollution at a global scale. International efforts must evolve to match the urgency of the issue, fostering a more unified and robust approach to combat this environmental threat effectively. Additionally, the effectiveness of international laws can be enhanced through the development of new agreements specifically targeting marine plastic pollution. Collaborative research, data-sharing mechanisms, and the establishment of enforcement mechanisms can contribute to a more comprehensive and coordinated global response. Public awareness and engagement are also key components, as informed citizens can drive demand for stricter regulations and sustainable practices. Strengthening international partnerships, investing in technological innovations, and promoting a circular economy can collectively fortify the impact of international laws in mitigating the pervasive challenges posed by marine plastic pollution.

## VI. REFERENCES

1. Schmaltz, Emma, et al. "Plastic pollution solutions: emerging technologies to prevent and collect marine plastic pollution." *Environment international* 144 (2020): 106067.
2. Ford, Helen V., et al. "The fundamental links between climate change and marine plastic pollution." *Science of the Total Environment* 806 (2022): 150392.
3. Thushari, Gajahin Gamage Nadeeka, and Jayan Duminda Mahesh Senevirathna. "Plastic pollution in the marine environment." *Heliyon* 6.8 (2020).
4. Almroth, Bethanie Carney, and Håkan Eggert. "Marine plastic pollution: sources, impacts, and policy issues." *Review of environmental economics and policy* (2019).
5. Kurniawan, Setyo Budi, et al. "Current state of marine plastic pollution and its technology for more eminent evidence: a review." *Journal of cleaner production* 278 (2021): 123537.
6. Abbott, Joshua K., and U. Rashid Sumaila. "Reducing marine plastic pollution: policy insights from economics." *Review of Environmental Economics and Policy* (2019).
7. Villarrubia-Gómez, Patricia, Sarah E. Cornell, and Joan Fabres. "Marine plastic pollution as a planetary boundary threat—The drifting piece in the sustainability puzzle." *Marine policy* 96 (2018): 213-220.
8. Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A.,... & Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768-771.
9. Andrady, A. L. (2011). Microplastics in the marine environment. *Marine Pollution Bulletin*, 62(8), 1596-1605.
10. Rochman, C. M., et al. (2013). Anthropogenic debris in seafood: Plastic debris and fibers from textiles in fish and bivalves sold for human consumption. *Scientific Reports*, 3, 1-8.
11. Eriksen, M., et al. (2014). Plastic pollution in the world's oceans: More than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea. *PLoS ONE*, 9(12), e111913.
12. Igewe Pv chukwudi (2017), A review of environment effect of surface water pollution, *Journal of advanced engineering research and science*, ISSN -2349-6495, Issue 12 December 2017, volume 4, pp:128-137.
13. John leju Ustinov ladu et al, (2018) "Investigation on the impact of water pollution on

- human health in the Juba country republic of South Sudan ”. Journal of environment pollution and human health. Volume:6, issue 10 December 2018,Doi 10-12691,PP 89-95.
14. Anil K Dwivedi(2017) “ Research in water pollution international research journal and Applied science. Volume 4, Issue 1,January 2017,ISSN (2349–4077),PP-118-142.
  15. Dr.Ramphal (2013) “An empirical study about water pollution indice” International journal in management and social science, volume 1, Issue 3 July 2013. ISSN 2321-1784, PP:52-58.
  16. Saroj Kumar singh(2016) water pollution,sources, effects and control measures. Journal of agroecology and natural resources management, volume 3,issue 1 January 2016, ISSN -2394-0786,PP -64-66.
  17. Md.Arman Arefin, Avijit Malik (2017) sources and causes of water pollution in Bangladesh. Volume 3, journal of physical science, issue 9 December 2017,ISSN 2091-0762.
  18. Chaudhry FN and Malik MF (2017) Factor affecting water pollution “journal ecosystem an open access journal, issue march 31,2017. ISSN (2157-7625) PP(1-3).
  19. DR.Royal Edward Willian’s,et al, water pollution in india. “ Shanlax international journal of commerce” issue 5 February 2018. ISSN 2320-4168, volume 6, PP: 94-96.
  20. Sehar Anware, et al (2021) water pollution has different factors “International journal of bioscience, volume 19 Issue 18 December 2021 ISSN 2220-6655,PP 44-51.

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