

PLASTIC APOCALYPSE: UNMASKING THE THREAT LURKING BENEATH OUR SEAS

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Plastic pollution has emerged as a silent apocalypse, stealthily encroaching upon our oceans and endangering marine ecosystems at an alarming rate. Beneath the serene surface of our seas lies a crisis of epic proportions, one that demands our immediate attention and action. As we delve into the depths of this issue, it becomes painfully evident that the convenience of single-use plastics has come at an unforgivable cost to our planet. The disastrous heap of plastic is damaging our environment and also one of the reason for causing pollution. This non-biodegradable material is also wreaking havoc on marine life. From tangled sea turtles to ingested microplastics by fish, the consequences of our plastic addiction ripple through the food chain, ultimately affecting us. The enormity of the problem is magnified when we consider the vast garbage patches that have formed in our oceans, such as the infamous Great Pacific Garbage Patch. These floating islands of plastic debris serve as stark reminders of our unsustainable consumption habits and the urgent need for stringent plastic waste management measures.

Although most consumer plastics are designed for single-use and have limited recycling capacity, rising worldwide production and consumption have resulted in unprecedented plastic trash accumulation and pervasive environmental damage. According to the OECD global plastic outlook, 353 metric tonnes of plastic garbage were produced globally from year 2000 to 2019. Due to the expansion of emerging markets, plastic consumption has increased fourfold over the previous three decades. Worldwide plastics output doubled to 460 million tonnes, accounting for 3.4% of the world's greenhouse gas emissions.

Global plastics use is expected to quadruple between year 2020 and 2060, from 460 Mt to 1,321 Mt. Between 2019 and 2021, the usage of single-use plastics increased by 2.6 percent on an annualized basis, from 133 Mt to 139 Mt. Inevitably, almost 9% of plastic trash is recycled, 19 % has been burnt, 50 % is disposed of in landfills, 22 % evades waste management systems and so contaminates land and water. An estimated 30 million tonnes of plastic garbage are thought to be in seas and oceans with an additional 109 million tonnes building up in rivers. 1,000 rivers are responsible for a staggering 80% of the annual plastic waste that flows into our seas.

Plastics, made up of over 10,000 chemical substances, pose risks to human health and the environment. In February 2022, the United Nations adopted a resolution to create a legally binding instrument to combat plastic pollution across its life cycle, aiming to finish negotiations by the end of 2024, this treaty named as Global Plastic Treaty. Also experiments have been conducted to improve plastic recyclability and generate bio-based or biodegradable polymers. Biodegradable plastics can be produced using starch-based, cellulose-based, microbial, algae-based, and protein-based methods. Starch-based bioplastics combine starch and polymers, reducing carbon footprint. Cellulose-based bioplastics use modified cellulose, while microbial bioplastics ferment organic materials. Algae-based bioplastics extract polysaccharides. These technological advancements can help in minimizing the destructive impact of plastic pollution on our marine ecosystems and, eventually, the health of our planet.

Pakistan, with a population of around 240 million, faces a significant environmental challenge stemming from inadequate waste management infrastructure. As per a UNDP assessment, Pakistan generates approximately 20 million tonnes of solid waste annually, with 5 to 10% of it being plastic waste, a substantial portion of which ends up in our oceans. In recent years, Pakistan is making a lot of effort to combat plastic pollution, as single-use plastic bags have been banned since October 2019, with strict penalties for violators, while also initiating efforts to address plastic waste. Prime Minister Shehbaz Sharif heralded the initiation of Pakistan's anti-plastic pollution campaign as the federal cabinet endorsed the "Single Use Plastics Prohibition Regulations 2023" on World Environment Day. This comprehensive regulation sets the stage for eliminating single-use plastics. Notably, government entities have been mandated to adopt refillable water containers, demonstrating their resolute dedication to pollution combat. The appeal extends to the public, urging collective action to combat plastic pollution in Pakistan. In addition to this, Senator Sherry Rehman, Federal Minister of Climate Change, urged Pakistan to adopt the 7Rs strategy for combating plastic pollution through a circular economy model at a policy dialogue on World Environment Day 2023. The strategy focuses on 7Rs such as resource management, research, responsibility, recycling, reusing, redesigning, and reducing plastic waste to benefit the environment.

Amid the plastic pollution crisis, there is hope as communities, organizations, and governments globally mobilize to combat it. In offices, schools, and colleges, collective recommendations can make a significant impact. This involves reducing single-use plastics through advocacy for reusable alternatives, establishing strong recycling programs, and educating on proper recycling practices. Opting for eco-friendly supplies made from recycled or biodegradable materials helps in reducing plastic waste. Promoting digitization and electronic communication minimizes both paper and plastic consumption. Furthermore, organizing plastic-free events, encouraging eco-friendly commuting, integrating plastic pollution awareness into curricula, and fostering eco-clubs are effective steps. Emphasizing sustainable transportation and reducing paper usage also plays a role in

minimizing the environmental impact. Additionally, innovations in plastic recycling, eco-friendly packaging, and international agreements to reduce plastic waste are steps in the right direction. Though lot of advocacy efforts are being done to combat the plastic apocalypse, however, it is imperative to bolster our efforts by meticulously implementing and rigorously enforcing stringent plastic waste management policies, fostering recycling practices, and diminishing plastic litter. Moreover, we ought to encourage the use of biodegradable and sustainable packaging materials, while also promoting public awareness and education on plastic waste reduction. Nevertheless, it is the collective responsibility of individuals, industries, and nations to address the plastic apocalypse and ensure the preservation of our oceans for generations to come.