iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** XI **Month of publication:** November 2021

DOI: https://doi.org/10.22214/ijraset.2021.38965

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue XI Nov 2021- Available at www.ijraset.com

Understanding the Relationship between Plastic Waste and Climate Change with the Need to Move towards Sustainable Plastic Waste Management

Dr. Sumanta Bhattacharya[1], Dr. Sparsha Moni Chatterjee[2], Bhavneet Kaur Sachdev[3]
[1]*Research Scholar at MAKAUT , Public–Foreign-Defence Policy Analyst , C.E, CH.E, CCIO, M.Tech, MA in Development Studies, LLB, MA in Security and Defence Law, DIA&D, DG&GS, PGCPP&A , MPI(oxford University)*
[2]*Ex Vice Chancellor of IIST Shipbur, Member of Executive Council AICTE, Former Director of Technical Education, Chairman of BOAA, IIHT, Ministry of Textile (Govt of India).Member of Development commission (Govt of India).*
[3]*Political Science hons (Calcutta University) Masters in Development studies*

Abstract: Plastic is the most deadly product which can amplify the climate change affect. It is a solid waste which is durable . Plastic waste is a 400 years of problem, where the plastic production contributes to 99% change in the climate by the burning of fossil fuels and then transportation , the over all process in the production of plastic has resulted in climate change, followed by only 9 % of the plastic waste is recycled . 90 % are thrown into the river , every year 8.6 million tones of plastic waste is dumped in the oceans , seas which has ultimately affected humans we can easting , drinking and breathing plastic resulting in the death of thousand of people across the globe, we need to cut down our production rate and reuse and recycle what ever is possible, we need to adopt the use of jute or cloth bags instead of plastic carry bags , use banana leaves instead of paper plates, use of copper bottles for water . The plastic waste should be properly managed and thrown into the required place or in bins instead on the road side or near the rivers. It is a very important to keep our environment free from plastic which can resolve a quarter of the problem related to climate change.

Keyword: Plastic waste, climate change, durable, fossil fuels, environment, oceans, recycled, reuse

I. INTRODUCTION

Today people across the globe are trying to reduce the dependency on fossil fuels and move towards sustainable environment .The main target in the globe is to tackle the impact of climate change , to save the future . Fossil fuels which are non renewable source of energy has been used since thousands of years , for the production of many metal , in the automobile industry and other purpose which has contributed to water and air pollution . Today we have adopted circular economy to reduce our waste . With unlimited use of natura resources , today the world is facing food and water shortage which is product of climate change . The way we have been using natural is obvious that a time will come it will reserve back on us . Greenhouse gases have drastic affected the lives of people .Poverty and environmental degradation have given rise to climate change . A country which 700 rivers is facing water and food crisis that is Bangladesh . A country with unfastened resources is doing nothing much to tackle the climate change . South Asian countries are drastically effected by climate change . Developed countries are adopting smart and sustainable way of living by using technology and nature driven ways to reduce the impact of climate change on this planet , with growing population , it is estimated that by 2050 the population will rise to 10 billion and more and more resources will be used with rapid deforestation , giving rise to mining and logging . If we talk about the Amazon rainforest it is burning today , a product of man made disaster , the amazon forest which produces 20 % of the oxygen could have lessen the impact of climate change if not used for cattle rearing , mining etc . Today every minute we are cutting so many trees which is contributing to climate change , The world is adopting sustainable lifestyle by minimizing their dependences on fossil fuels , there is massive use of renewable energy for producing electricity and running of electric cars across the globe , We adopting urban mobility , practicing smart farming and indoor farming , planning more trees , moving towards digitalization :Digital education and economy .There is smart technology usage ,to prevent earthquake , For instance Japan is developing earthquake prone houses using technology . Sweden , Dutch , Denmark are reducing their carbon emission.. Europe is on its way to achieve the sustainable development goals to counter climate change . European Union is planned to produce zero emission by 2050 .One of the main element to tackle climate change is proper waste management system in the world.

©IJRASET: All Rights are Reserved

Waste management and recycle and reuse are the main element by which we can cut down green house emission, food waste , water waste , e-waste should be critically handled to over thrown the problem of water crisis and result in the less producing of problems by making them durable and producing repair product .

II. RESEARCH METHODOLOGY

For the purpose of this exploration, I have used an amalgamation of two of the archetypical social sciences research tools application –as they are authentic and brilliant method to assemble statistics from multiple appellant in an methodical and convenient way. Question were asked to the common youth, public policy Analyst, urban people, farmers, interviews –consisting of several interrogation which were dispersed among representative of each contender group .

III. OBJECTIVE OF THE RESEARCH PAPER

The main areas of exploration in this paper incorporates

1) How plastic waste has an affect on climate change .
2) What are the affects of plastic waste on the environment and human beings .
3) What can be done to eliminate plastic waste
4) What has the government done in India to manage plastic waste in India and limit its use.

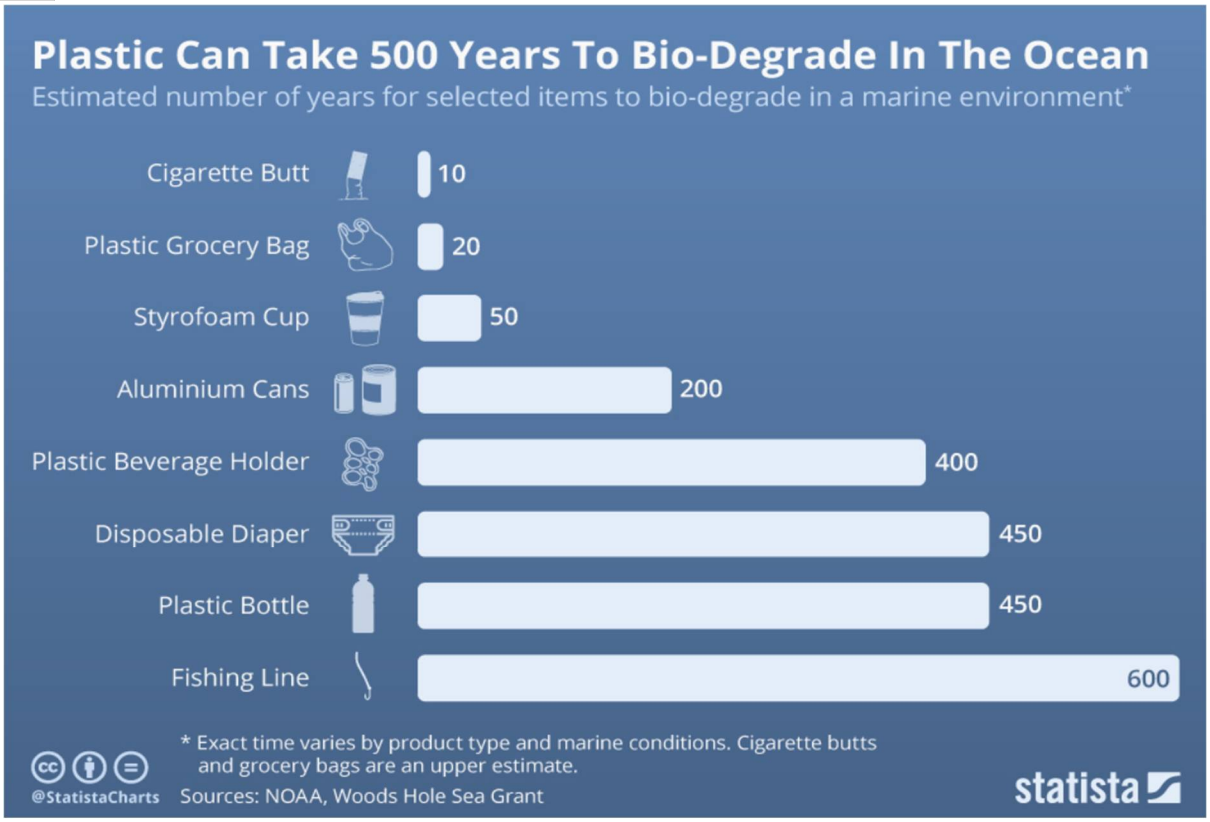
IV. LITERATURE REVIEW

The biggest element of climate change is plastic waste /Plastic pollution . 8.6 million tonnes of plastic is thrown directly into the river /oceans resulting in marine deaths . Every year 800 million above plastic is produced and hardly 8 % is recycled , rest are opening dumbed on open grounds , a single plastic is maximum used for 20 minutes , we use uncountable plastic products from plastic bottles ,plastic plates , pipes , food wrappers , cans made up of plastic , you will most of the plastics used in super markets for packing . Multiple layer of plastic is used for packaging , it is used the production of every single thing . From 1950s to 1970s the production of plastic was limited and the waste could be managed , from 1990s -the plastic waste generated doubled and tripled years after years and so did the production , in the 2000s , the plastic waste rose more in a single decade than the last 40 years . Today around 300 million tonnes of plastic waste is produced every year and which has resulted in environment degradation. You find trillion amount of plastic found near the beach side or dumped in an open landscape which results in thousand infections and produced odour smell , a plastic waste is kept for 400 years , majority of the plastic waste can't be recycled because of its manufacturing quality . More than 8.3 billion tonnes of plastic has been produced since the 1950s out of which 60% land up in landfill or in the natural environment. In fact 99% of the plastics are produced using chemicals and oil .Plastic are produced by the burning of fossil fuels in particular oil and natural gas, which produce massive amount of greenhouse emission. Today 4 % of the oil is used for production and 4% is used for refining it . It is assumed that by 2050 , 20 % of the oil will be used in the production of plastic . It is very difficult to reduce the use of plastic in our daily lives because of its long durability and light weight. The single use plastic are at every corner of the globe .Oil , coal and natural gas are the pillar for the production of plastics where oil is extracted from the earth ,People drill wells into the ground , drill horizontally, where chemicals , injecting sands and water break up the rock to release oil , which are then transported to other places using pipelines , trucks and other mode of transportation , this transportation and extraction of these fossil fuels produce emission amount of carbon dioxide . 12.5 to 13.5 million tons of carbon dioxide is emitted in the production and transportation of oil and gas , after that the production of plastic also produces emission amount of greenhouses gas , it's a long process and has huge impact on the climate .

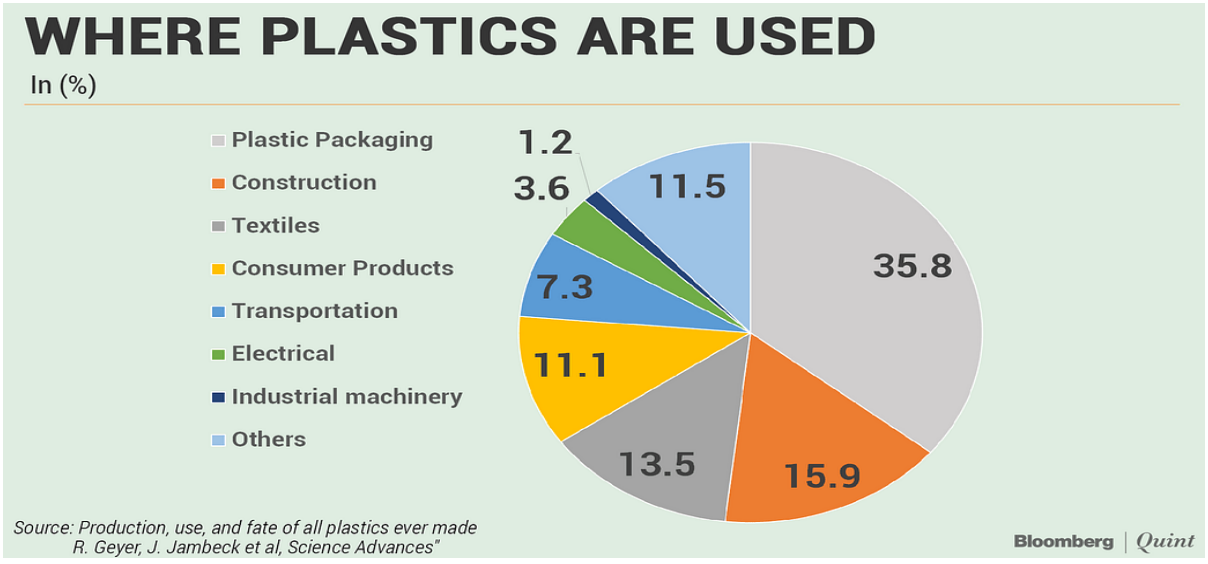
V. FINDINGS

Every minute one million plastic bottle is purchased, 5 trillion single used plastic is annually used worldwide. 12% of the plastic waste is incinerated and the rest 79% are found in the landfills, dumped here and there. Cigarette butts have tiny plastic fibres which are the mostly found and considered to be a common category plastic waste in the environment. Most of the plastic is carried out by the rivers and from there it enters the sea and oceans. It is found that 90 % of the plastic waste is carried out by 10 rivers which includes Chang Jiang 1,469,481, Indus 164, 332 tons, Nile 84,792 tons, Ganga Brahmaputra, Megha have 72, 845 tons, Hai He 91,858 tons, Huang He 124,249 tons , Niger 35,196 ton , Mekong 33, 431 tons, Amur 38,267 ton, Zhujiang carries 52,958 ton, they start in the rives from century infecting marine life and causing death. Most plastic don't full dissolute, plastic particles make turn small and small and then they are intaken by fishes and other marine considering it to be food. Plastic bags can double the transmission of disease like Malaria .

©IJRASET: All Rights are Reserved



Plastic is creating a 400 years problem, that's like 16 generations 91% of the plastics are not recycled, plastics used as much fossil fuel as airlines, 99% of the plastic contributes to climate change .Marine life are under threat .1 million seabirds die every year, ultimately affecting us, we are eating plastic ¼ of fish have plastic in their gut , we are drinking plastics, 83% of tap water samples contain plastic, we are breathing plastics microplastics are linked to air pollution. Half of the world's plastic comes from Asia, government, retailers, manufacturers, consumer's needs to come together for a solution. Plastic ocean is another problem which includes billions of plastic bottles and 5 billion plastic bags .Plastic is a type of solid waste which means it will occupy space when we throw it away. So we see how plastic waste has an impact on the climate change , India generates 15 million tonnes of plastic waste annually out of which only one fourth is recycled , due to the poor solid waste management system in India , this has put burden on the landfills and poor socio economic condition of the plastic picker .



©IJRASET: All Rights are Reserved

UNPD India, has collaborated with the Hindustan Coco Cola Beverage Private Limited and HDFC bank and Coca Cola Indian Foundation are working on the current system to reduce the impact of plastic waste . The collaboration promotes collection , segregation and recycling of all the plastic and adopt circular economy . This will establish a socio technical model which will focus on taking the plastic waste management from an unorganized to an organized sector , form material recovery centres for sustained practices of waste management , Development of technology -supported knowledge management and exodus cloud based trace , digital governance . The projects has been operating in 26 cities and there are 22 material recovery centres for sustainable waste management . Many individual groups have been working on the reuse of plastics in India ,there is beach clean up workshop to make the beach plastic free in many parts of India where young volunteer participate . India has pledged to ban all single used plastics . There are many state in India which have completed banned the use of plastic bags or there is partial used of plastic bags like in Andhra Pradesh , Gujarat there is a complete ban , West Bengal uses partially . Sikkim is the only state in India where plastic is totally banned and it produces the least solid waste and is a less carbon region . We have seen malls and many brands have adopted paper bags and some have started promoting clothe bag , at airports and flights the use of plastic bottles have completed banned , Today many houses and road are being constructed using plastic waste , people from all corners and the government are trying to use the plastic in some way to minimize the waste . Tamil Nadu , West Bengal and Nagaland are using plastic waste for polymer bitumen road construction . Goas , Tamil Nadu , Chhatitsgarh and Gujarat are transporting their plastic waste into cement plants . We see a reduction in the production of plastic but the plastic which has remained over the past 400 years are still existing due to their durability they have remained in the same way if disposed on the landfill or the environment .



VI. WAY FORWARD

Climate change needs to be controlled and for that the burning of fossil fuels needs to be end, in short ending the use of plastic can minimize climate change in India . We need to completed ban the use of plastic bans instead promote the use of jute and cloth bag which will be long lasting and can be used for uncountable times .We need to put a ban on plastic bottle , billions of plastic water bottles is manufactured and ever min million are solid , instead we should start using bottles made from copper or steel which a few companies are manufacturing , it will keep the water cool also and reduce the use of plastic bottle , in café and restaurant inside of serving water in plastic bottle , they can serve the water in bottles made up of glass . Drinking water taps should be installed at the road side so that people can fill their own water instead of purchasing a plastic bottle . The plastic bottles which are left or thrown on the roads can be collected and use for planting plants , they can in one place promote afforestation and its like reuse of a product . India since ages have been using leaves instead of paper plate to serve it people , we come in South Indian states , and traditional south India foods are eating on banana leaves and many food guarding for poor and other food is served in leaves , This can be adopted in every country to reduce the use of plastic plates . Today many tea stalls use small pots or paper cups to serve tea instead of plastic glasses which can be move ahead and adopted . Plastic waste can be used for home decorating , for gardening and making roads and boats also . Every family first needs to make their household plastic free , the beginning should be from the routes , by which we can reduce plastic waste and production of plastic in India .

©IJRASET: All Rights are Reserved

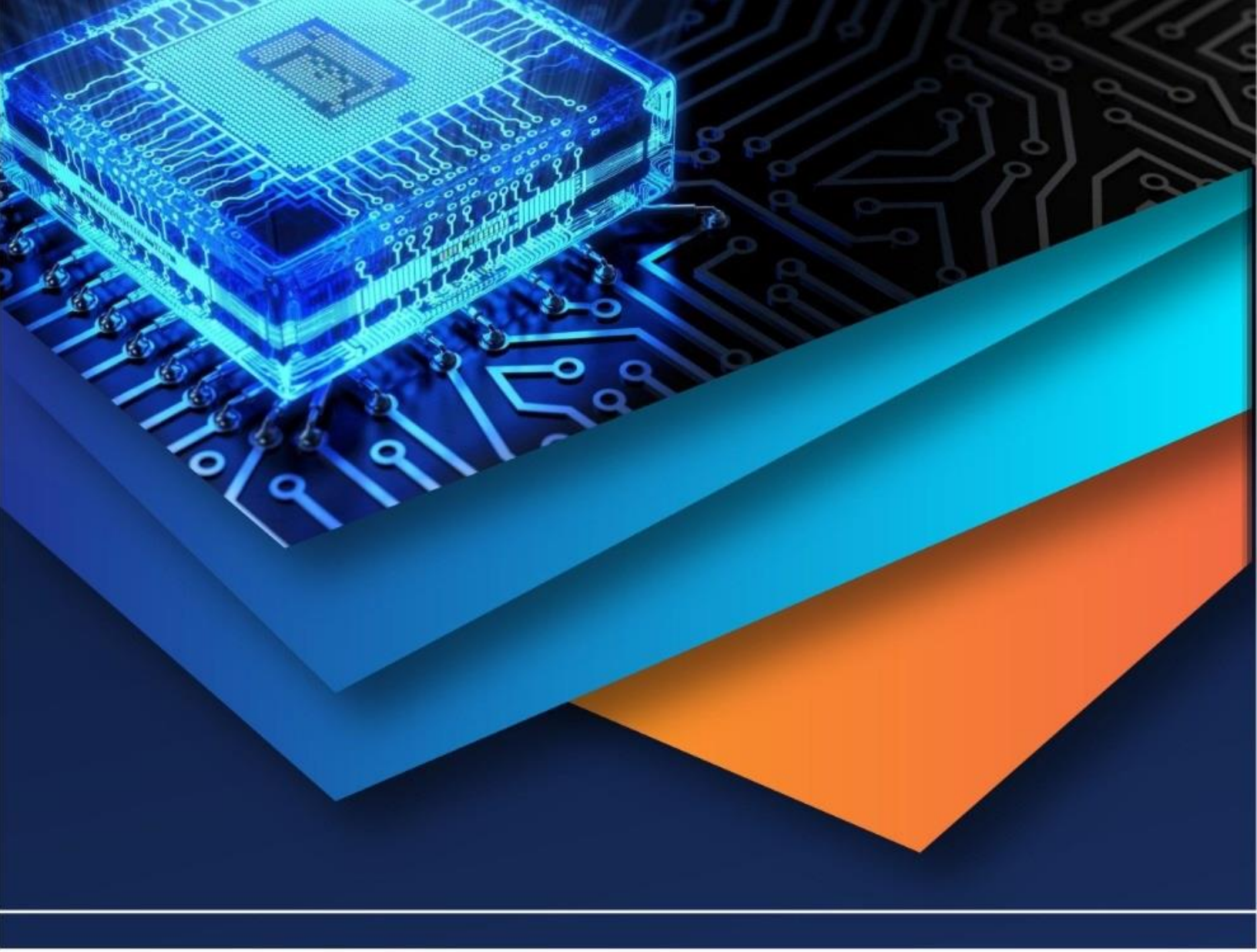
VII. CONCLUSION

Plastic waste has killed many people , apart from its impact on climate change , 99 % of the production of plastic has contributed to climate change , the demand of plastic uses is increasing with each passing day , we cant think a day with plastic in our life from packaging to carrying something in our hands we require the use of plastic . Food wrapping , plastic water bottles everything is made out of plastic . We produce 800 million above plastic in a year , out of which only 9 % is recycled , 90% enter the water bodies resulting the dead of marine life and now we have started eating and drinking plastic , plastic is found in the water , in the fish and in the air we breathe , contributing to serious health issues .Many countries including India has adopted ban on single plastic use bags , the plastic waste is being used for different purpose , we are cutting our plastic production rate in the hope to reduce climate change and make the environment heath .

REFERENCES

[1] Gopi Karelia, Sonia Bhaskar, 2019, January, Plastic bans in five states, here how India fared in fighting plastic pollution in 2018.
[2] Plastic pollution-it's time for change-UNEP
[3] Brooke Bauman, 2019, August , How plastics contributes to climate change , Yale Climate Connections.
[4] Banjot kaur, 2019, January, Indian states implementation of plastic ban a mixed bag, DownToEarth.
[5] PTI, 2020, June, India may suffer devastating Climate Change impact in 80 years: Study.
[6] Banerjee T, Srivastava, R.K, 2014, July, Plastics waste management in India: An integrated solid waste management approach . ResearchGate
[7] Alhazmi H, Almansour H , F , Aldhafeeri Z , Plastic waste Management: A Review of Existing life cycle Assessment Studies . MDPI
[8] V K Chandegara, S.P Cholera, J.N Nandasana, M.T Kumpavat, K.C Patel, 2015, February, Plastic Packaging Waste Impact on Climate Change and its Mitigation .ResearchGate .
[9] Plastic waste and climate change – What's the connection ? WWF -Australia .
[10] Plastic & Climate : The Hidden Costs of a Plastic Planet , Centre for International Environmental Law .

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)