



Lex Terra

Centre for Environmental Law, Advocacy and Research (CELAR)
National Law University and Judicial Academy, Assam

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ABOUT CELAR

The fundamental aim of the Centre for Environmental Law, Advocacy, and Research (CELAR), National Law University and Judicial Academy, Assam, is to participate in advocacy and research on public interest environmental concerns. It endeavours to do so by holding workshops and seminars to educate and improve skills, convening conferences to encourage an exchange of ideas, conducting training programmes for capacity building in environmental law issues, undertaking legal research, and publishing newsletters and journals regularly.

The main objectives of CELAR can be elucidated as follows:

- Providing students with hands-on advocacy experience and direct exposure to the issues to inspire and educate them.
- Strengthen access to justice by conducting high-quality multi-disciplinary research on current environmental legal issues.
- Advocate for reforms in environmental law through scientifically sound legislative proposals.
- Organize training programmes for civil servants, law enforcement agencies, non-governmental organisations, and media professionals to improve their legal capacity on environmental laws and policy.
- Publish environmental law publications and bulletins on a regular basis.

Thus, to meet the last objective, Lex Terra is an initiative undertaken by CELAR. Through Lex Terra, we strive to provide a voice to various aspects of the environment, published quarterly, to create a community of environmentally conscious individuals from the legal and non-legal fraternity. Each issue of Lex Terra features important environmental news from across the world and from within the nation. This bulletin is meticulously compiled by CELAR members and is dedicated to enviro-legal enthusiasts around the country.

MESSAGE FROM THE CHIEF MENTOR

It is, unfortunately, true that inadvertently, we humans are responsible for the deterioration of this planet without recognising the negative consequences of minor things we do to contribute towards its dilapidation. Education and awareness generation can be one of the positive moves to fix the irreparable damage that we have done to our Mother Nature, and in furtherance to such moves, we as a legal institution, are continuously striving to bring environment related news and views for several environmentally sentient readers.

In this context, it delights me to note that the Centre for Environmental Law, Advocacy and Research (CELAR), National Law University and Judicial Academy, Assam, is releasing a new issue of its webzine, 'Lex Terra'. Lex Terra aims to be an e-forum that involves, promotes and engages students, scholars and anyone interested in environmental law, to express and share their opinions and ideas. It is our fervent expectation that this webzine will keep providing an academic forum to bring all ecologically conscious minds together to deliberate on environment related developmental decisions.

I congratulate the entire team of CELAR for bringing out this webzine which justifies one of the significant mandates of National Law University and Judicial Academy, i.e., rendering a socially relevant legal education. I appreciate the efforts made by the student editors and peer reviewers in bringing out this webzine. I also bring on record the constant guidance being provided by CELAR teacher members to the students.

I am certain that this modest endeavour of CELAR will continue to stimulate and proliferate enviro-legal awareness.

Prof. (Dr.) V.K. Ahuja,
Vice-Chancellor, NLUJAA

EDITORIAL NOTE

“What is the use of a house if you haven't got a tolerable planet to put it on?”

The United Nations Secretary-General António Guterres has warned that the era of global warming has ended and the era of global boiling has arrived. In a speech at a press conference on climate change on July 27, 2023, Guterres said that the world is "on a highway to climate hell" and that "the air is unbreathable and the heat is unbearable." He called on leaders to take "dramatic, immediate climate action" to limit global temperature rise to 1.5 degrees Celsius.

Guterres's statement comes as the world is experiencing record heat waves, droughts, and wildfires. In recent months, temperatures have soared above 50 degrees Celsius in parts of India and Pakistan, and wildfires have burned across Europe, the United States, and Canada. The scientific consensus is that climate change is caused by human activities, such as the burning of fossil fuels. The release of greenhouse gases into the atmosphere traps heat, causing the planet to warm. The effects of climate change are already being felt around the world, and they are expected to become more severe in the future. If global warming is not limited, the world could face catastrophic consequences, such as widespread food shortages, mass displacement, and the extinction of species. Guterres's statement is a wake-up call to the world. It is time for leaders to take action to address climate change, or we will face the consequences.

So that these issues don't go unnoticed, we work to give a platform through Lex Terra for those who can't find a home in the popular press or academic journals. The 42nd issue of Lex Terra is now available, and the editorial board of Lex Terra is incredibly pleased to publish it. This issue shines a light on environmental issues that, regrettably, don't get as much attention as they should.

In the first article, the authors Divyanshi Shukla and Vidushi Jaiswal provides an in-depth examination of deep seabed mining and its potential implications, with a specific focus on India. The study explores the emerging field of deep seabed mining, which involves extracting valuable minerals and resources from the ocean floor. The article highlights the significance of the minerals of the seabed in India's economic development and emphasises the need for exploring alternative sources beyond traditional mining on land. This article addresses the technical aspects of deep seabed mining, outlining various extraction methods and technologies employed in this industry. It examines the challenges associated with mining in the deep sea, including the extreme conditions, environmental concerns, and the potential impact on marine ecosystems. Furthermore, it analyses India's participation in international discussions and collaborations related to deep seabed mining, highlighting the need for global cooperation and the equitable sharing of benefits. Lastly, the authors postulate a detailed analysis of the deep seabed mining industry, its potential in India, and the need for sustainable practices in this emerging sector.

In the second article, Ved Bukhariya addresses how the rise of electric vehicles has brought attention to the legal and environmental aspects associated with them. In India, the manufacturing and recycling of batteries, a crucial component of electric vehicles, are still in their early stages. To tackle this, the author proposes India to focus on developing battery manufacturing capabilities and implementing efficient recycling practices. The new battery waste regulations aim to promote battery recycling through extended producer responsibility and waste management regulations. These rules offer advantages such as a centralized online portal for registration and filing, environmental compensation based on the polluter pays principle, and reduced dependency on raw materials through the use of recycled materials in batteries. In the latter half of the article, the author discusses various drawbacks, including the lack of comprehensive coverage on worker safety and transportation impacts. Clarity on required clearances for battery recycling plants is also lacking.

Overall, while the Indian battery waste rules have made progress, there is room for improvement to align them with international standards and address crucial aspects of battery waste management.

The authors, Nami Saikia and Anumita Kar, in their article try to emphasize upon the need to an effective and efficient solid waste management in the city of Guwahati, nestled in the lush landscapes of Assam, grappling with a grave environmental concern which is the mounting problem of solid waste. As the city grows in population and urbanization accelerates, the management of solid waste has become a pressing issue, demanding immediate attention and effective solutions. The authors say that rapid urbanization and population growth in Guwahati have led to a significant increase in solid waste generation and that the city produces thousands of tons of waste every day, consisting of household garbage, commercial waste, construction debris, and industrial by-products. Sadly, the existing waste management infrastructure has struggled to keep up with this alarming rise in waste production, resulting in severe environmental consequences and they go on to provide certain suggestions such as the city authorities need to focus on implementing an integrated and sustainable waste management system. The authors take the readers through certain important judicial pronouncements to present a nuanced picture of the problem persisting in the country with specific aim at Guwahati.

The fourth article by Shagun Shrivastava and Sadia Hasan Khan recognizes India's commitment to fighting climate change and its improved ranking in the Climate Change Performance Index. It highlights Green GDP, which measures economic development while considering the environment. India's approach to calculating Green GDP is discussed, including sustainable development and resource consumption indicators. Limitations of Green GDP evaluation are mentioned, such as difficulty quantifying ecological damage and lack of global consensus.

The need for a dedicated institution to release Green GDP estimates and improve data dissemination is emphasized. Suggestions include reducing environmental damage, holding corporations accountable, and adopting Green GDP assessment at the state level. India's incorporation of Green GDP in policy-making is acknowledged, with a call for further improvements in calculations and data collection.

In her thought-provoking article, Priyanka Saikia presents a comprehensive analysis of the dire state of solid waste management in Moran Town. Through meticulous data collection methods, the author's research provides compelling evidence regarding the lack of awareness and intent on the part of the public, as well as the disappointing inaction by municipal authorities. The author's study involved surveys, interviews, and on-site observations, allowing for a nuanced understanding of the prevailing challenges. The data highlights a worrying disconnect between the public's understanding of proper waste disposal practices and the actual implementation of those practices. Additionally, the research underscores the absence of effective waste management initiatives and strategies from the municipal authorities. By shedding light on these critical issues, Saikia's work serves as a clarion call for change. It emphasizes the urgent need for community engagement and education to address the prevailing gaps in waste management. Furthermore, the study underscores the pivotal role that municipal authorities must play in proactively implementing sustainable waste management practices. Saikia's analytical study serves as a rallying point for collective action, urging both the public and local authorities to come together and establish a robust and efficient solid waste management system in Moran Town. Only through collaborative efforts can we strive towards a cleaner and healthier environment for all.

Shreya, in her article, discusses the proposed amendment to the Environment Protection Act 1986, which aims to bring substantive changes to the existing framework. The amendment shifts the nature of the Act from criminal to civil, replacing imprisonment with enhanced penalties for non-compliance or contravention of the provisions. Additionally, it introduces the creation of an “Environmental Protection Fund” where the Adjudicating Officer determines the amount to be remitted after assessing environmental damage. While the amendment decriminalizes violations, it retains the provision for imprisonment in cases of failure to pay penalties. The article discusses the proposed changes aimed to strike a balance by imposing higher penalties ranging from which contribute to the Environmental Protection Fund. However, the article highlights the need to carefully consider the proportionality of penalties and the potential unintended consequences of excessive fines on businesses and innovation.

The article by Rashi Kumari and Sarthak Kumar proposes the concept of “optimal pollution” as an alternative approach to a zero-carbon policy in Northeast India. The authors argue that optimal pollution occurs when the cost of reducing pollution equals the actual damages caused, resulting in a net damage cost of zero. However, the idea of optimal pollution may face opposition from environmentalists and sustainable development advocates. The authors acknowledge that strict pollution control measures can hinder industrialization but stress the need for careful evaluation of the consequences of adopting this approach in Northeast India. They emphasize the importance of conducting further research, gathering empirical evidence, and seeking expert opinions to understand the environmental, social, and economic implications of optimal pollution. The article highlights the necessity of conducting a comprehensive cost-benefit analysis specific to the region, considering its unique geographical and climatic factors, cultural heritage, and vulnerability to climate change. Sustainable development is deemed significant, and policies should be formulated to promote responsible industrialization while minimizing adverse effects on the environment and local communities.

The suggestion to revise existing environmental laws and regulations should be critically examined, taking into account potential trade-offs and unintended consequences.

Raahat Tara, in her article, discussed climate-induced migration and stressed the need for policies and legislation to address the same. The author emphasizes the need for a global definition of who qualifies as a climate change refugee and how it would be a key step in the better execution of the laws. She also discusses how, in the lack of any other law in India, the government may use the Disaster Management Act's broad powers to aid and redress climate change refugees. Additionally, recommendations for the state's role in the victims' assistance and rehabilitation as well as the importance of creating a framework for policy development in light of Indian legislation and the International Convention on Refugees have been made in the article.

The article by Perla Bali Sai Charitha discusses the laws and environmental implications related to granite quarries. It explains that granite quarrying is similar to mining and has been rapidly growing due to the increasing demand for granite in construction. This article highlights the laws in India that regulate granite quarrying and focuses on environmental preservation. It presents two case studies conducted in different locations in India, which reveal the environmental and health impacts of granite quarrying. The author emphasizes the importance of addressing the negative effects of granite quarrying on the environment and human well-being. The article stresses the need for quarry operators to comply with environmental laws and take responsibility for reducing emissions and restoring and reusing waste materials. Overall, the article provides insights into the laws and environmental implications of granite quarrying, shedding light on the need for sustainable practices and the protection of both the environment and human health.

The authors Anamika Singh and Harsh Raj Singh, in their article, advocate the hazards of crop residue burning, emphasizing its detrimental impact on the environment, public health, and the national economy. The authors highlight the reasons behind this practice, including the time and economic constraints farmers face. However, it underscores the urgent need for alternative solutions, such as utilizing bio-enzymes, public-private partnerships, technology adoption, and diversification of crop-based farming. Furthermore, the article emphasizes the negative impacts of crop residue burning, including atmospheric pollution, health hazards, soil degradation, and economic losses in the tourism sector. It calls for mass awareness, stricter enforcement of laws, and the active involvement of farmers, state governments, and the central government to address this pressing issue. Lastly, the authors weigh on the importance of finding suitable alternatives and implementing sustainable practices to mitigate the threats posed by crop residue burning to both the environment and public well-being.

In the last article, the author Khushi Lunawat emphasizes upon the problem caused on the environment by fast fashion in the society by the process of companies producing enormous amount of clothes in order to satisfy the so-called fashion trends. The author also highlights the negative impacts these cloth making companies have on the workers often leading to low wage, hazardous working conditions and working for long hours ultimately affecting their health. Further, the author emphasizes on the need for a legislation for the maintenance of sustainability in fashion. Lastly the author suggests some ways through which people can have a sustainable approach towards fashion like that by switching clothes made of chemical dyes to that of made by block printing method.

Finally, the publication of this issue would not have been possible without the assistance and encouragement of Lex Terra's pillar of strength and Editor-in-Chief, Dr. Thangzakhup Tombing, Assistant Professor of Law, NLUJAA.

We would also like to express our gratitude to Prof. (Dr.) V.K. Ahuja, Vice-Chancellor of NLUJAA, for his keen interest and guidance, which made this issue of the publication possible. We also thank the esteemed Registrar of NLUJAA, Dr. Indranoshee Das, for her continuous support and for being our source of motivation throughout this endeavour. Lastly, the small but dedicated team of peer reviewers and editors deserve a special mention. This issue and all the publications in the past would not have been a reality without your sincere efforts and active engagement.

As I sit here, penning these final words as the Deputy Editor in Chief of "Lex Terra," waves of emotions crash over me like a tumultuous sea. It is with a heavy heart that I bid farewell to this cherished magazine and, more importantly, to all of you—the passionate advocates for our planet's well-being.

Throughout the years, "Lex Terra" has been a beacon of hope, illuminating the path towards a greener and more sustainable future. We have strived to shed light on the critical issues facing our environment, from the destruction of delicate ecosystems to the threats posed by climate change. It has been our mission to empower you, our readers, with knowledge and insight to protect and preserve the precious Earth we call home.

With a bittersweet heart, I pen the final edition of "Lex Terra." It has been an incredible journey advocating for our planet's protection. Your unwavering support and passion have been the driving force behind every word printed. As I step away, I leave with hope that our collective efforts will endure. Let's continue fighting for a greener future, for nature's sake and that of generations to come. Thank you, from the bottom of my heart, for being the driving force behind "Lex Terra" and for instilling hope in me that a better world is possible.

Agniva Das
Deputy Editor-in-Chief
Lex Terra Editorial Board 2022-23

A COMPREHENSIVE PERUSAL OF THE DEEP SEABED MINING AND ITS FUTURE: AN INDIAN OUTLOOK

Divyanshi Shukla & Vidushi Jaiswal***

By referring to the deep oceans as the “Atmosphere of the submerged land”, Arvid Pardo compared the air on the Earth to the water in the sea.¹ In his address, he illustrated the potential of the deep ocean by imagining human exploration of the ocean's depths and the opportunities that lay ahead. The deep ocean has vast reserves of minerals with manganese nodules constituting the most important predominant marine deposits, in terms of both commercial and academic interests.² The demand for raw resources is rising as new technologies advance more quickly. The extraction of minerals from the ocean floor is gaining popularity due to the depletion, declining quality, and conservation of land natural resources.³ If we want to reach net zero global emissions by 2050, the International Energy Agency (IEA) estimates that the world will need six times as much mineral inputs in 2040 as we need now.⁴ For minerals like lithium, graphite, cobalt, and nickel among others, demand is anticipated to skyrocket, which means mining will only increase in the near future. The potential for this new business to satisfy the soaring worldwide demand for cobalt, which is essential for creating lithium-ion batteries, is expected to drive its worth to US\$30 billion yearly by 2030. The global supply of minerals used in sustainable energy sources like wind turbines, electric vehicles, and solar cells would be increased by minerals mined from ocean seafloor.⁵

The anticipated scarcity of the so-called “essential minerals” would drive up prices and prompt an immediate increase in mine production to fulfil the demand. However, in practice, the process of opening up large new mines is far from straightforward. The emerging deep-sea

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¹ Monica Allen, *An Intellectual History of the Common Heritage of Mankind as Applied to the Oceans*, (1992), <https://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=2104&context=theses>.

² Ranadhir Mukhopadhyay, Sankalp Naik, Shawn De Souza, Ozinta Dias, Sridhar D Iyer & Anil K Ghosh (2019), *The economics of mining seabed manganese nodules: A case study of the Indian Ocean nodule field*, MARINE GEORESOURCES & GEOTECHNOLOGY, https://www.researchgate.net/publication/334150271_The_economics_of_mining_seabed_manganese_nodules_A_case_study_of_the_Indian_Ocean_nodule_field/citation/download. (accessed on 24/1/2023).

³ C.N. Jenkins & L. Joppa, *Expansion of the global terrestrial protected area system*, BIOL. CONSERV., 142, (2009), pp. 2166-2174, 10.1016/j.biocon.2009.04.016.

⁴ International Energy Agency, *The role of Critical Minerals in Critical Energy Transition*, WORLD ENERGY OUTLOOK SPECIAL REPORT, (May 2021) <https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>. (accessed on 29/1/2023)

⁵ *Id.*

mining industry is faced by both technical and legal challenges. The negotiations conducted under the aegis of the International Seabed Authority in its 27th session have had implications for the deep-sea mining industry with various nations advancing their concerns against this activity.⁶ Analysis of these imperatives and the variety of benefits that humanity can (and in some cases already does) get from the Area is necessary as seabed mining moves closer to becoming a reality.

This article discusses why an engagement of the environmentalists with the deep-sea mining industries is paramount. It provides a detailed analysis of an Indian mission that has gained importance lately because of the stand that India posed in the recent conference held in Kingston, Jamaica where the delegation stated that a consensus on the mining code should be reached so that they can realize the project in 2023.⁷ Lastly the article suggests a sustainable way forward through deep seabed mining activity.

I. INTERNATIONAL REGIME GOVERNING DEEP SEABED MINING

Deep sea contains a wealth of valuable metals and resources, some of them in unique or highly enriched concentrations. Around 95 per cent of the deep sea remains unexplored till date.⁸ With seabed mining edging closer to becoming a reality, there is a need to critically analyse its practicality and how to go about it because most of the discourse revolving around deep seabed mining does not deal with the issue of sustainability of the blue economy.

Deep seabed mining is in its infancy. Even after extensive exploration, only a few nations are able to establish an institutional and legal framework. New breakthroughs are possible and certainly to be made. The industry is so nascent that the International Seabed Authority (ISA),⁹ the body that regulates all mining-related activities on the sea floor in areas beyond national jurisdiction, is yet to develop rules. However, as of now the United Nations Convention of Law of the Seas (UNCLOS), constituted by International Seabed Authority (ISA), regulates mining and related activities in the international seabed.

⁶ Andrew Thaler, *Deep-sea mining's rapid technological progress is met with increased calls for a precautionary pause at the closing meeting of the 27th session of the International Seabed Authority*, (Dec, 26, 2022), *Deep-sea mining's rapid technological progress is met with increased calls for a precautionary pause at the closing meeting of the 27th session of the International Seabed Authority*. – DSM Observer, (accessed on 27/1/2023).

⁷ *Supra* note 6.

⁸ Ludwig Darmstaedter, *Handbuch zur Geschichte der Naturwissenschaften und der Technik*, S. 521. Springer, Berlin (1908).

⁹ ISA, *About ISA*, <https://www.isa.org.jm/about-isa>, (accessed on 21/1/2023).

The area beyond national jurisdiction, where deep seabed mining takes place, is regarded as the “common heritage of mankind.”¹⁰ The common heritage principle encapsulates the seemingly conflicting developmental, commercial, and ecological imperatives.¹¹

Deep seabed mining comes under the ambit of marine scientific research as mentioned under Article 143 of the UNCLOS.¹² Accordingly, if done for peaceful purposes and benefit of mankind as a whole, the ISA shall promote and encourage the conduct of marine scientific research, and shall coordinate and disseminate the results of such research and analysis when available.¹³

Deep Ocean Mission’s Samudrayan will work on similar lines as it aims to explore and extract polymetallic nodules. It will also support the Blue Economy priority area of deep-sea exploration of ocean resources and this will, in turn, give rise to more growth ventures to explore ocean resources for clean energy, drinking water, and the blue economy.

Deep sea mining has the potential to contribute to the realization of Sustainable Development Goal 14, i.e., life below water,¹⁴ if managed efficiently and sustainably mined with effective, non-polluting technology, in compliance with international solidarity as embodied in the UNCLOS.

II. INDIA’S ROAD TO DEEP SEABED MINING

India is the world's fourth biggest emitter of carbon dioxide after China, the US and the EU and has promised to cut its emissions to net zero by 2070.¹⁵ With the demand for renewable energy increasing and batteries forming the core of this technology and disadvantaged of land-based mining, deep seabed mining can be proved to be revolutionary if approached in a judicious way. It is especially important in the context of India because India is the first country among developing nations to carry out a deep ocean mission, it is surrounded by water on three sides. India will have to move with precautionary and adaptive approach so that sustainability

¹⁰ Tiele, et al., *A Benefit Sharing Mechanism Appropriate for the Common Heritage of Mankind*, UBA/IASS Workshop Summary Project No. (FKZ) 3717 25 227 0 (2019).

¹¹ R Collins & D French, ‘*A Guardian of Universal Interest or Increasingly Out of Its Depth?*’ International Organizations Law Review 1–31, (2019) doi: 10.1163/15723747-2019011.

¹² Convention on the Law of the Sea, Article 143, Dec. 10, 1982, 1833 U.N.T.S. 397.

¹³ Micheal W. Lodge, *We Must Advance Deep-Sea Science for the Benefit of Humankind*, <https://www.ecomagazine.com/in-depth/op-ed-we-must-advance-deep-sea-science-for-the-benefit-of-humankind> (last accessed 20/1/2023).

¹⁴ United Nations Sustainable Development Goals, *Goal 14: Life Below Water*, United Nations, New York, 2015. <https://www.un.org/sustainabledevelopment/goal-14-life-below-water/> (last visited 24/1/2023).

¹⁵ Matt McGrath, *COP26: India PM Narendra Modi pledges net zero by 2070*, (2 November 2021), <https://www.bbc.com/news/world-asia-india-59125143>, (accessed on 22/1/2023).

of the blue economy is assured and knowledge is integrated to minimize the potential harms caused by deep seabed mining.¹⁶

Keeping in mind India's unique maritime position, the Ministry of Earth Sciences (MoES) approved the "Deep Ocean Mission" to explore and harness deep sea resources and minerals.¹⁷

This mission also aims capacity building that will lead to increased ventures for employment. According to a release from the Ministry of Earth Sciences (MoES), the estimated polymetallic nodule resource potential in this area is 380 million tonnes (MT), containing 4.7 MT of nickel, 4.29 MT of copper, 0.55 MT of cobalt and 92.59 MT of manganese.¹⁸

The Samudrayan project, launched by the Ministry of Earth Sciences (MoES) as part of the Deep Ocean Mission, is one such project that seeks to achieve ecological knowledge about restoration abilities of the deep sea and to introduce more avenues for growth and ocean resources' exploration.¹⁹ In accordance with this project, a deep water manned submersible, Matsya 6000 will be sent to a depth of 6000 metres into the sea for deep underwater studies. It will also facilitate exploration of deep ocean resources including polymetallic manganese nodules. As noted by Mukhopdhyay, nodule mining in the Indian Ocean is "economically feasible assuming that an appropriate mining technology is developed and can be used in order to lift the nodules without causing much damage to the ecosystem".²⁰

Due to unknown fallout of tampering with the delicate ecosphere of ocean depths, the issue of sustainability arises as deep seabed mining comes with deep economic, political, and environmental challenges it poses. For instance, by following the direct obligations under international law in respect of seabed mining that include applying the precautionary approach, employing best environmental practice, and conducting prior environmental impact assessment.²¹

¹⁶ Jaeckel A., *Deep seabed mining and adaptive management: the procedural challenges for the International Seabed Authority*. Mar. Policy 70, 205–211 (2016).

¹⁷ *Supra* note 7.

¹⁸ PIB Delhi, *India's Exclusive Rights to Explore Polymetallic Nodules from Central Indian Ocean Seabed Basin Extended by Five Years*, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1500266> (last accessed 21/1/2023)

¹⁹ PIB Delhi, *Union Minister Dr Jitendra Singh launches India's First and Unique Manned Ocean Mission Samudrayan at Chennai*, (29 OCT 2021 5:44PM), <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1767579> (last visited 20/1/2023).

²⁰ R Mukhopadhyay, et al., 'The Economics of Mining Seabed Manganese Nodules: A Case Study of the Indian Ocean Nodule Field', 37 MARINE GEORESOURCES & GEOTECHNOLOGY 845–851, (2019).

²¹ Levin, L.A., et al., *Challenges to the sustainability of deep-seabed mining*. Nat Sustain, 3, NAT SUSTAIN, 784–794 (2020).

III. HOW LAND MINING IS RAVAGING THE ENVIRONMENT: A COMPARATIVE ANALYSIS OF INDIA AND OTHER DEVELOPING NATIONS

Even while the environmental, social, and corporate governance (ESG) footprint of land-based production can be enhanced, it will almost always be significantly worse than that of metals obtained from nodules.²² This is simply due to the nodule resource's fundamentally distinct starting position, which includes strong concentrations of four metals in a single rock, a fully usable rock mass, a common, arid environment with little life, and no threat to Indigenous land.²³ Land-based reserves are becoming harder to develop. Falling grades need greater capital expenditure to extract the same amount of metal while also requiring deeper and wider excavation for inferior ores.²⁴ The most biodiverse regions on earth, including South Africa, Indonesia, and the Democratic Republic of the Congo (DRC) are the regions where the core minerals are mostly situated.

For instance, the Indonesian archipelago, which is made up of numerous islands, is home to the biggest nickel reserves in the world, second only to Australia is a hub of serious inhibitions to health and working conditions of the local population which is engaged in this activity. Fishermen from Kurisa Village (Indonesia) claimed that the usage of coal plants has increased water temperatures and driven away the fish that were once their main source of income.²⁵ Villagers are instructed to work in the nickel-processing industries as the pollution drives the fish away, but many have fallen ill as a result of inhaling sulphur dioxide, nitrogen oxides, and coal ash. The sociological impacts from the activity has, therefore, considerably deteriorated the pristine environment that the local population once worked in and have had major health impacts. While Indonesia aspires to be a major participant in the EV market, villagers are left to deal with threats to their farms and livelihoods as well as environmental degradation brought on by the nickel-processing industry that is required to make EVs, much of which is still

²² Demand side: World Bank. (2020, April). The Mineral Intensity of the Clean Energy Transition; supply side: U.S. Geological Survey. USGS.gov | Science for a changing world. (n.d.). usgs.gov.

²³ Paulikas et al., *Life cycle climate change impacts of producing battery metals from land ores versus deep-sea polymetallic nodules*. JOURNAL OF CLEANER PRODUCTION, 275, (2020).

²⁴ Faber, et al., *Artisanal Mining, Livelihoods, and Child Labor in the Cobalt Supply Chain of the Democratic Republic of Congo*, UC BERKELEY: CENTER FOR EFFECTIVE GLOBAL ACTION. (2017).

²⁵ Antonia Timmerman, *The dirty road to clean energy: How China's electric vehicle boom is ravaging the environment*, REST OF WORLD, (Nov 28, 2022), <https://restofworld.org/2022/indonesia-china-ev-nickel/>.

powered by coal. Similar situation is faced by the local population from the remote areas of Congo and Chile. Cobalt mining in the DRC often involves child labor.²⁶

Similarly, if we juxtapose the situation of these nations with India, in India, major resources of cobalt and nickel are found in states like Odisha, Jharkhand and belts of Madhya Pradesh. For instance, about 92 per cent of nickel resources are in Odisha. According to the NITI Aayog report, 30% of Odisha's population and 47.99% of Jharkhand's population is poor and hence if terrestrial mining is done on a large scale in these regions, it will push the population into a worse situation caused by the environmental and social impacts. Therefore, to cut its emissions to net zero by 2070, deep seabed mining can prove to be revolutionary for India.

IV. WAY FORWARD: TOWARDS A MORE SUSTAINABLE FUTURE OF DEEP SEABED MINING

Most discussions revolving around deep seabed mining address what to mine, where to mine and why to mine, not how to deal with the issue of sustainability. In the contemporary scenario, however, these concerns are also important. To understand the multiple gaps in the framework of deep-sea biodiversity, baseline knowledge of flora and fauna is required.

From the case study of Indonesian and Chilean villages, it is clear that terrestrial mining has major environmental and social impacts including the displacement of communities, contamination of rivers and groundwater from tailings, damage to communities from tailings slides, violation of land rights, community repression, and unfavourable child labor/slavery practices. This also leads to various respiratory diseases to the local population. Therefore, deep seabed mining is the need of the hour if pursued in a judicious manner. Mining the metallic treasure from the deep sea is essential to cutting carbon emissions.

Ultimately, society will have to make choices in order to meet the needs of an increasing population while achieving a low-carbon emission future. A more durable and stable system should come from addressing the knowledge gaps. The market can better self-regulate through norms and a perspective of corporate social responsibility, while governmental institutions can take action to boost research funding and manage fragmented regulatory regimes. Many actors have a role to play in the solution. Government and stakeholder should try to find a middle

²⁶ Kelly, A. *Apple and Google named in US lawsuit over Congolese child cobalt mining deaths*, THE GUARDIAN (2019, December).

ground for mining companies and activists to strike a balance amidst the conflicting narratives around deep-seabed mining.

CRITICAL ANALYSIS OF BATTERY WASTE MANAGEMENT RULES, 2022: A COMPARATIVE ANALYSIS OF THE INDIAN AND EUROPEAN UNION'S RULES ON BATTERY WASTE

*Ved Bukhariya**

I. INTRODUCTION

With the rise of electric vehicles, focus also needs to be given towards the legal and environmental aspects surrounding it. Batteries which are an important component of electric vehicles are mostly imported in India and the manufacturing of such batteries is at a very nascent stage. With the rise of EVs, India needs to focus on both manufacturing and recycling of batteries. The new battery waste regulations are a much-needed direction in regard to promoting the battery recycling by regulating its waste management and imposing liability on producers to make sure that such battery waste is recycled through extended producer responsibility principle. The new rules have a lot of advantages for instance, the centralized online portal for registration and filing of returns, Environmental Compensation on polluters pay principle etc. However, these rules have drawbacks as they don't comprehensively cover a lot of important aspects, for instance, the safety of the workers involved in the process, and the negative effects of transportation. Furthermore, the rules seem to be inconsistent with the Basel Guidelines on battery waste. India can take cue from the battery waste rules of the European Union which has covered a lot of aspects which India has missed in its latest battery waste rules.

II. TRACING THE LEGAL BACKGROUND OF BATTERY WASTE RULES IN INDIA

The earliest legislation regarding battery waste handling and management began in 2001, when the Ministry of Environment, Forests and Climate Change, Government of India, published The Batteries (Management and Handling) Rules²⁷. Earlier there were no specific law dealing with battery waste specifically although there were some laws which were used to control waste for example, Environment (Protection) Act, 1986²⁸, Hazardous Waste (Management and Handling) Rules, 1989²⁹, Air (Prevention and Control of Pollution) Act,

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²⁷ The Batteries (Management and Handling) Rules, 2001.

²⁸ Environment (Protection) Act, 1986, No. 29, Acts of Parliament, 1986.

²⁹ Hazardous Waste (Management and Handling) Rules, 1989.

1981.³⁰ The 2001 rules were a major shifting point and the beginning point of legislation of the issue of battery waste in India. The rules laid down about the recycling of batteries and the responsibility of various stakeholders involved in the process of battery waste management for instance, the manufacturer, importer, recycler, consumer, bulk consumer.

Later on, in 2010, the 2001 rules were amended by the Batteries (Management and Handling) Amendment Rules, 2010,³¹ where some of the changes were broadening the definition of bulk consumer, changes regarding the registration of importers were made.

Finally, in 2020, Draft Battery Waste Management Rules³² were released which after incorporating public suggestions came into enforcement from 2022³³, superseding the earlier 2001 rules which became out of sync due to significant changes taking place in the battery industry.

III. SIGNIFICANT FEATURES AND ADVANTAGES OF BATTERY WASTE RULES 2022.

The 2022 battery waste rule marks a tectonic shift from the earlier 2001 rules. The 2022 rules are more comprehensive and cover the responsibility of various stakeholders along with broadening the scope of batteries from just the lead-ion batteries, unlike the earlier rules. This section tries to enlist the various features of the new rules and analyzes its possible advantages.

EPR Responsibility – The battery waste rules 2022, are based on the principle of ERP. OECD defines Extended Producer Responsibility (EPR) as “an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle”.³⁴ Thomas Lindhqvist of Sweden is credited with inventing EPR. Germany pioneered EPR in Europe in 1991, requiring manufacturers to accept responsibility for recycling or disposing of packaging material they supplied.

Rule 3(m) defines EPR as “responsibility of any Producer of Battery for Environmentally sound management of Waste Battery”.³⁵ Rule 4 requires the Producer to comply with Extended Producer Responsibility for the batteries that they introduce into the market in order to meet

³⁰ Air (Prevention and Control of Pollution) Act, 1981, No. 14, Acts of Parliament, 1981.

³¹ Batteries (Management and Handling) Amendment Rules, 2010.

³² Draft Battery Waste Management Rules 2020.

³³ Battery Waste Management Rules, 2022.

³⁴ *Extended Producer Responsibility*, OECD, <https://www.oecd.org/environment/extended-producer-responsibility.htm> (last visited Jan 28, 2023).

³⁵ Battery Waste Management Rules, 2022, r. 3(m).

the recycling or refurbishment obligations.³⁶ Schedule 2 mentions the EPR targets for different kinds of batteries.³⁷

Centralized online portal – The new 2022 rules establish a centralized online portal under rule 14, which says that “Central Pollution Control Board (CPCB) shall establish an online system for the registration and filing returns by producers, recyclers, and refurbishers of Waste Battery within six months of commencement of these rules.” The portal is to be used for registration of producer,³⁸ registration of refurbishers with State Pollution Control Board,³⁹ updating quantity of Waste Battery processed by entities on quarterly basis,⁴⁰ issuance of Extended Producer Responsibility certificates.⁴¹

Centralized online portal is a great step towards making the process swift and preventing red-tapism, corruption and delays to a great extent. The fact that It act as the single point data repository with respect to orders and guidelines related to implementation of these rule,⁴² makes it convenient for all stakeholders to be updated with the rules to be able to better comply with them. Worryingly, till date, 5 months after the notification of new rules, no such portal has been created by CPCB.

Environmental Compensation – The rules make the provision that “on the principle of Polluter Pays Principle, environmental compensation will be imposed for non-fulfilment of Extended Producer Responsibility targets, responsibilities and obligations set out in the rules.”⁴³ Further the rule 13(6) Makes it clear that Payment of Environmental Compensation shall not absolve Producer of EPR obligation set out under these rules.⁴⁴

Making the producer liable under polluter’s pay principle is much appreciated move, which has been established as a principle of environmental law both worldwide⁴⁵ and in India.⁴⁶ In addition, the laws stipulate that environmental compensation payments must be used for the

³⁶ Battery Waste Management Rules, 2022, r. 4.

³⁷ Battery Waste Management Rules, 2022, sched. II.

³⁸ Battery Waste Management Rules, 2022, r. 4(4).

³⁹ Battery Waste Management Rules, 2022, r. 8(1).

⁴⁰ *Id.* r. 8(4).

⁴¹ *Id.* r. 10(3).

⁴² *Id.* r. 14(4).

⁴³ *Id.* r. 13(4).

⁴⁴ *Id.* r. 13(6).

⁴⁵ Trail smelter case (United States, Canada), 3 UNRIAA, p. 1905, 1952; United States v. Hooker Chemicals & Plastics Corp., 850 F. Supp. 993 (W.D.N.Y. 1994).

⁴⁶ Vellore Citizen’s welfare Forum v. UOI AIR 1996 SC 2715; Indian council for Enviro-Legal Action v. UOI 1996 AIR 1446; MC Mehta v. Kamal Nath, (1997) 1 SCC 388; Research Foundation for Science Technology National Resource Policy v. Union of India, (2005) 10 SCC 510.

collection, refurbishment, or recycling of uncollected and non-recycled waste batteries,⁴⁷ In sync with polluters pay principle that “the polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecosystem, remediation of the damaged environment is a component of the process of sustainable development.”

Reduces Dependency on Raw Materials – The new rules by making It mandatory to use recycled material in the new batteries to specified extent will reduce the dependence of raw material. Although it will take time to bear any fruit, this is still an important move considering that there has been a global shortage of lithium (raw material generally used to produce batteries) due to the increased demands of EVs and such shortage is expected to rise in the near future⁴⁸. Furthermore, India spends significantly on importing raw materials for batteries and there has been a four-fold increase in such imports since 2016.⁴⁹ With predictions regarding a shortage of raw materials and also for safeguarding the environment recycling batteries is a must.

However, recycling will not sufficient to reduce dependency on raw material and there is a need to foster battery manufacturing in India, which is at a very nascent stage in India.⁵⁰ The recent PLI Scheme for battery manufacturing⁵¹ is a good scheme in this direction, however more needs to be done.

Prohibition and labeling requirements - Schedule I of 2022 rules, enlists the prohibition regarding usage of heavy metal content and labeling requirements on batteries.⁵² The rules make the prohibition regarding the use of cadmium and mercury, “Battery can contain cadmium up to 0.002%, and mercury upto 0.0005% that too only till 2025”. The prohibition is necessary considering the grave harmful effects of both of them with cadmium being

⁴⁷ Battery Waste Management Rules, 2022, r. 13(8)(i).

⁴⁸ Shruti Mishra, *Will looming lithium shortage undermine EV revolution?*, ECONOMIC TIMES AUTO, (Last visited January 24, 2022), <https://auto.economictimes.indiatimes.com/news/auto-components/lithium-shortage-is-freakout-moment-for-ev-players-coming-soon/91307899>; Neil Winton, *Lithium Shortage May Stall Electric Car Revolution And Embed China’s Lead: Report*, FORBES, (Last visited January 24, 2022), <https://www.forbes.com/sites/neilwinton/2021/11/14/lithium-shortage-may-stall-electric-car-revolution-and-embed-chinas-lead-report/>.

⁴⁹ Jacob Koshy, *Four-fold jump in Li-ion battery imports since 2016*, THE HINDU, (Last visited January 24, 2022), <https://www.thehindu.com/news/national/four-fold-jump-in-li-ion-battery-imports-since-2016/article30776630.ece>.

⁵⁰ NITI Aayog and RMI India, *Need for Advanced Chemistry Cell Energy Storage in India, (Part I of III) 2022*, < <https://www.niti.gov.in/sites/default/files/2022-02/Need-for-ACC-Energy-Storage-in-India.pdf>>

⁵¹ Department of Heavy Industry, *National Programme on Advanced Chemistry Cell (ACC) Battery Storage*, S.O. 2208(E) (Issued on June 9, 2021).

⁵² Battery Waste Management Rules, 2022, sched. I.

carcinogenic and potentially harmful to human health.⁵³ Rules make an exception in this prohibition for emergency and alarm systems, medical equipment.

The rules mention that the product shall comply with labeling requirements as prescribed by Bureau of Indian Standards. The rules mention the requirement of depicting “crossed out wheeled bin symbol” and require that a Battery or a button cell containing mercury, cadmium or lead should be marked with the respective chemical symbol —Hg; —Cd or —Pb.⁵⁴

IV. INADEQUACY OF BATTERY WASTE LAWS VIS-A-VIS THE BASEL GUIDELINES

Tracing the History of Basel Guidelines on Battery Waste

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was ratified in 1989 and went into effect in 1992.⁵⁵ It is the most extensive worldwide environmental accord on hazardous and other wastes. The Basel Convention controls the transboundary movements of hazardous wastes and other wastes and requires its Parties to guarantee that these wastes are handled and disposed of in an ecologically responsible way.⁵⁶

In December 2002, COP-6 accepted the Technical Guidelines for the Environmentally Sound Management of Waste Lead-Acid Batteries in respect to the environmentally sound management (ESM) of waste lead-acid batteries via resolution BC-6/22.⁵⁷ (Basel guidelines).

By resolution BC-15/11 made at its fifteenth meeting, the COP resolved to revise the technical guidelines on the ESM of waste lead-acid batteries and create a draft of the technical guidelines on the ESM of additional types of waste batteries for consideration at COP-16.⁵⁸

⁵³ Genchi, Giuseppe, Maria Stefania Sinicropi, Graziantonio Lauria, Alessia Carocci, and Alessia Catalano, *The Effects of Cadmium Toxicity*, 17 INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, 3782 (2020), <https://doi.org/10.3390/ijerph17113782> (Last visited January. 26, 2022).

⁵⁴ Battery Waste Management Rules, 2022, sched. I, 2(v).

⁵⁵ *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes*, UNEP, <https://www.unep.org/resources/report/basel-convention-control-transboundary-movements-hazardous-wastes#:~:text=Report-.Basel%20Convention%20on%20the%20Control%20of%20Transboundary%20Movements%20of%20Hazardous,came%20into%20force%20in%201992> (Last visited January. 26, 2022).

⁵⁶ *Id.*

⁵⁷ Technical Guidelines for the Environmentally Sound Management of Waste Lead-acid Batteries, December, 2002, BC-6/22, [hereinafter Basel Guidelines].

⁵⁸ *Technical Guidelines*, BASEL CONVENTION, <http://www.basel.int/Implementation/Wastebatteries/Technicalguidelines/tabid/9418/Default.aspx> (Last visited January. 26, 2022).

Small intersessional working group (SIWG) on the technical guidelines on the ESM of waste batteries was established pursuant decision BC-15/11.⁵⁹ The group has been tasked with carrying out a number of tasks that will result in the creation and updating of technical recommendations on used batteries. The guidelines are presently being updated and discussed; the new guidelines have not yet been made public.

Indian Battery Waste Rules 2022 With Reference to The Technical Guidelines of Basel Convention

India is a member of the Basel Convention and it ratified the convention in June 1992 and it was brought into force on 22nd September 1992.⁶⁰ India being a member of Basel convention is expected to frame its national policies in consonance with the Basel guidelines. Although the guidelines are limited to just lead ion batteries unlike Indian rules which extends to other batteries also, still the guidelines are quite comprehensive and addresses the issue of battery waste from producing to disposal and recycling.

Following are the points on which we can say that Indian rules are inadequate compared to the guidelines formed by the Basel Convention –

Safety of life of workers involved in the process not adequately addressed

The Basel guidelines tries to list down various safety measures to avoid any harm to workers involved in the process of managing waste batteries and processing them. For instance, Basil guidelines have provisions for medical surveillance of workers and keeping their health record,⁶¹ preventive measures to avoid exposure of workers to harmful substances⁶² medical control measures in case of exposed workers⁶³, avoiding manual battery breaking due to threat to life⁶⁴, training of workers⁶⁵ etc. The new Indian battery rules does not adequately cover the aspect of human safety of workers involved in the process, although the rule 4(12)(ii) requires that producer should ensure safe handling of Battery or Waste Battery such that no damage to

⁵⁹*Technical Guidelines*, BASEL CONVENTION, <http://www.basel.int/Implementation/Wastebatteries/Smallintersessionalworkinggroup/tabid/9417/Default.aspx> (Last visited January. 26, 2022).

⁶⁰*Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, United Nations Treaty Collection, https://treaties.un.org/pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-3&chapter=27&clang=_en (Last visited January. 26, 2022).

⁶¹ Basel Guidelines, § 5.3.2., ¶ 105 (e).

⁶² *Id.* § 6.4.1, ¶ 132.

⁶³ *Id.* § 6.4.2, ¶ 133.

⁶⁴ *Id.* § 4.1.2., ¶ 50(b).

⁶⁵ *Id.* § 5.3.1, ¶ 102(b).

human health and environment occurs,⁶⁶ the rules are silent on what measures should be taken to make sure no damage to human health happens neither there are some guidelines on what medical services will be given to a worker exposed to harmful substance during work.

It might be argued that there are general rules dealing with human safety at workplace such as The Factories Act,⁶⁷ The Building and Other Construction Workers Act,⁶⁸ The Occupational Safety, Health and Working Conditions Code 2020⁶⁹ and therefore addressing it expressly for battery processing is not required. However, these general rules can address the problem to a certain extent but are still inadequate as the dangers associated with battery waste are unprecedented and there is a need for special safety measures for battery waste as given in Basel guidelines for example, Basel guidelines requires specific PPE kit for workers depending on the work they are engaged in.⁷⁰

Lack of specific guidelines for storage and transport of batteries

Storage and transport of batteries at different stages of the process is an important aspect considering the risk of spillage of the harmful contents out of them and harming workers and people at large. Addressing this risk, the Basil guidelines provide guidelines for storage of batteries at pre-recycling stage and at collection point. These guidelines specify how they should be stored to minimize the risks associated. For instance, guidelines require that sealed acid-resistant containers should be used. Clause 30 of guidelines specifies measures which should be taken for safe transporting including specifying container needed, training of driver, keeping of specific equipment for spillage problem, transport vehicle should contain identifying symbols etc.⁷¹

The Indian rules on the other hand, do not mention any requirement which should be complied for their effective and safe transportation and containing them. The rule 17 of 2022 rules requires that “Central Pollution Control Board shall issue guidelines for environmentally sound procedures of collection, storage, transportation, refurbishment, and recycling of Waste Battery.”⁷² Till this date no such guidelines have been issued in the public domain and there is

⁶⁶ Battery Waste Management Rules, 2022, r. 4(12)(ii).

⁶⁷ The Factories Act, 1948, No. 63, Acts of Parliament,1948.

⁶⁸ The Building and Other Constructions Workers (Regulation of Employment and Conditions of Service) Act, 1996, No. 27, Acts of Parliament,1996.

⁶⁹ The Occupational Safety, Health and Working Conditions Code, 2020, No. 37, Acts of Parliament,2020.

⁷⁰ Basel Guidelines, § 5.3.I, ¶ 102(a).

⁷¹ Basel Guidelines, § 30.

⁷² Battery Waste Management Rules, 2022, r. 17.

no update on when they will come in future. Leaving framing of such important guidelines to the future is not rational and there is an urgent need of bringing such guidelines along with penalties for non-fulfillment of such guidelines.

Does not lay down guidelines of how the process will be carried out in an environment friendly way

The 2022 rules do not adequately address the issue of how the process of recycling the batteries will be done in an eco-friendly manner. Rule 12 says that Battery or Waste Battery shall be safely handled such that no damage to environment occurs but no further guidelines are made enlisting what things should or should not be done to safeguard the environment.⁷³

The Basel guidelines divides the process into three stages at recycling level namely, a) battery breaking b) lead reduction c) lead refining,⁷⁴ it lays down specific guidelines regarding how these processes shall be carried out to make it eco-friendly, for instance clause 50 of guidelines state the environmental impact of manual breaking and suggests that it shall be avoided due to the negative effect on environment and safety of workers.⁷⁵ The Basel guidelines also lists measures for how the fugitive emissions can be controlled in the process. Unlike Basel guidelines, no such specific guidelines have been mentioned in the Indian rules and just the responsibility of various stakeholders have been covered in the rules.

Lack of clarity over clearances required to set up recycling plants

The 2022 rules do not mention what clearances are required for setting up of a battery waste recycling plant. It does not mention whether EIA (Environment impact assessment) is needed for such activities and what should be done if such clearances are not taken. Clause 80 of Basil guidelines, mentions what are the things which needs to be taken care of in an EIA for such activities,⁷⁶ further clause 81 mentions what should be done in case the EIA has not been performed in which it goes against closing such plants altogether due the costs involved in replacing it and rather urges for technological improvements.⁷⁷

⁷³ *Id.* r. 12.

⁷⁴ Basel Guidelines, § 30.

⁷⁵ Basel Guidelines, § 4.1.2, ¶ 50(b).

⁷⁶ *Id.* § 80.

⁷⁷ *Id.* § 81.

2022 rules do not mention about such clearances and no other government document enlisting the clearances for battery recycling projects are available, other than these rules.

V. EU'S BATTERY WASTE DIRECTIVE: A COMPARATIVE ANALYSIS

The depleting supply of new raw materials for the production of batteries, which is increasingly growing in demand in both household electronics and industrial use, is expected to be the main driver of the Europe battery recycling market during the forecast period (2022-2027), with a positive CAGR of 40.0%. By 2027, the market is expected to be worth about US\$3.5 Bn.⁷⁸

The European Council approved the first version of Directive 91/157/EEC on batteries and accumulators on March 18, 1991.⁷⁹ It covered many battery types, including “industrial, automotive, dry-cell, lead-acid, alkaline, nickel-cadmium, nickel-metal-hydrate, lithium, lithium-ion, mercury, etc.” In 2006, EU repealed the 1991 directive and came up with new battery waste directive which since then regulates the battery and battery waste management.⁸⁰ The European Commission proposed to revise this Directive in December 2020 to match the law with the social and technological advancements that have taken place.⁸¹ The new EU directive will comprehensively cover the whole life of batteries right from production to better deal with the issue.

This section focuses on a comparative analysis of EU directive on battery waste vis-à-vis Indian rules 2022. The purpose of this section is to understand what Indian rules lack and how they can take cue from the EU to frame a more comprehensive peace of legislation.

These are the following points which EU directive covers but are lacking in Indian rules –

Promotion of eco-friendly batteries

⁷⁸ Tulika Mathur and Jyothika Borah, *Europe Battery Recycling Market Size, Segments, Outlook and Revenue Forecast 2022-2027*, KEN RESEARCH PRIVATE LIMITED,

https://www.researchandmarkets.com/reports/5680557/europe-battery-recycling-market-size-segments?utm_source=BW&utm_medium=PressRelease&utm_code=2cxp8v&utm_campaign=1808728+-+Europe+Battery+Recycling+Market+Size%2c+Segments%2c+Outlook+and+Revenue+Forecasts%2c+2017-2021+%26+2022-2027+by+Source%2c+Chemistry%2c+Recycling+Methods%2c+End-User+and+Major+Countries&utm_exec=chdo54prd (Last visited January 26, 2022).

⁷⁹Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances, 1991 O.J. (L78) 38.

⁸⁰ Council Directive 2006/66/EC on the approximation of the laws of the Member States concerning foods and food ingredients treated with ionising radiation 2006 O.J. (L266) 1. [hereinafter Council Directive 2006/66/EC].

⁸¹ *Green Deal: EU Agrees New Law on More Sustainable and Circular Batteries to Support EU's Energy Transition and Competitive Industry*, EUROPEAN UNION, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7588 (Last visited January 26, 2022).

Batteries differ in their composition, while some contain less harmful components like Sodium-ion, others contain harmful substances like cadmium, mercury. It is in the interests of health, safety and environment protection that use of more eco-friendly batteries should be promoted. Considering this need, the EU directive's article 5 calls for promotion of research and improvements in the overall environmental performance of batteries and accumulators throughout their life cycle.⁸² Further article 13 calls for the development of new recycling and treatment technologies, and promotion of research into environmentally friendly and cost-effective recycling methods.⁸³

The Indian rules could have gone further to promote the use of eco-friendly batteries by some relaxations for producers engaging in their production which would in effect have promoted the goal of the legislation. India can take cue from this provision of the EU Directive.

Considering the Environmental impact of transportation

Transportation of waste batteries accounts for a significant portion of battery waste recycling expenditures. A study was conducted to find the financial viability of recycling; in this, the cost of transportation was also considered.⁸⁴ In this study, in-country recycling in the UK clearly outperformed overseas recycling due to significantly reduced transportation costs. reflecting the major impact of transportation costs on the recycling process. The EU directive has acknowledged this issue; the 17th objective states that “collection and recycling schemes should be optimized, in particular in order to minimize costs and the negative environmental impact of transport.”

This seems to have been ignored by Indian laws, and there is no rule that addresses the cost of transportation in the recycling process.

Role and responsibility of consumers/end-users

Consumers and end-users play an important role in the process; waste collection from such end-users is a critical component for an efficient recycling process, as if they do not deposit

⁸² Council Directive 2006/66/EC, art. 5.

⁸³ *Id.* art. 13.

⁸⁴Lander, Laura & Cleaver, Tom & Rajaeifar, Mohammad & Nguyen-Tien, Viet & Elliott, Robert & Heidrich, Oliver & Kendrick, Emma & Edge, Jacqueline & Offer, Gregory, *Financial Viability of Electric Vehicle Lithium-Ion Battery Recycling*, ISCIENCE, <https://doi.org/10.1016/j.isci.2021.102787> (Last visited January. 26, 2022).

the waste as directed and instead mix it with regular domestic waste, it will create difficulties in performing recycling.

The EU directive tries to resolve this issue by making it convenient and cost-free for the end user to discard the waste in a proper manner. For instance, Article 8(1)(a) provides that member states shall enable end-users to discard waste portable batteries at an accessible collection point in their vicinity, having regard to population density, making it convenient for them to dispose of waste.⁸⁵ Further, Article 8(1)(c) requires that there shall not be any charge to end-users when discarding waste portable batteries or accumulators, nor any obligation to buy a new battery.⁸⁶ Further, Article 20 requires states to ensure that end-users are fully informed of the effects of substances used in batteries, collection and recycling schemes, and the desirability of separate collection of battery waste.⁸⁷ The above rules make sure that the end users know what their jobs are and are willing and able to do them.

The 2022 Indian rules significantly lack in this regard; the only provision in this regard is Rule 5, which makes it the responsibility of the consumer to i) discard battery waste separately from domestic waste and ii) ensure that waste batteries are disposed of in an eco-friendly manner by giving them to an entity engaged in collection, refurbishment, or recycling.⁸⁸ The provision only lists the responsibilities. It doesn't say how they will be met, and unlike the EU directive, it doesn't make it easier for end users to get rid of the batteries.

Drawing distinction between responsibilities of small and big producers

Small producers can be exempted from the responsibilities to some extent because their businesses are small, and making them responsible for recycling requirements can be difficult for them and may even force them to close their doors.

The EU directive has been cognizant of this fact, and Article 18 of the directive exempts small producers from the requirements of financing the cost of recycling given that it doesn't impede the proper functioning of the collection and recycling scheme.⁸⁹ No such distinction has been made in the Indian rules, and all producers, regardless of their size, have the same responsibilities.

⁸⁵ Council Directive 2006/66/EC, art. 8(1)(a).

⁸⁶ *Id.* art. 8(1)(c).

⁸⁷ *Id.* art. 20.

⁸⁸ Battery Waste Management Rules, 2022, r. 5.

⁸⁹ Council Directive 2006/66/EC, art. 18.

Procedure for treatment of battery waste

The EU Directive in Annexure III lists the basic procedures that should be followed for the treatment and recycling of battery waste so as to make the process eco-friendly.⁹⁰ The Indian rules make it the producer's responsibility to ensure it happens, but they do not specify how it will be done. Framing a procedure regarding treatment is very essential, and the Indian government should come up with such detailed guidelines as soon as possible without undue delay.

VI. CONCLUSION

The Battery Waste Management Rules, 2022, are a major and much-awaited step towards framing rules regarding battery waste to address the social and technological changes that have taken place in the industry, for instance the growing demand for EVs and subsequently batteries. The new battery waste rules have included various advantageous provisions, for instance, the adoption of the principle of extended producer responsibility, a central online portal for convenience, provisions for environmental compensation along the lines of the polluter's pay principle, etc. However, the rules are inadequate and not comprehensive enough to deal with the issue. The rules are out of sync with the Basel Convention's technical guidelines on battery waste for reasons including, but not limited to, a lack of attention to the issue of worker safety, a lack of guidelines on storage and transport of battery waste, etc. We need to take a cue from the European Union in this regard; they have framed a more comprehensive policy addressing various components that are not adequately addressed in Indian law. For example, the EU directive includes promoting eco-friendly batteries, considering the environmental impact of waste transportation, making it easier for end-users to dispose of battery waste, and so on. A comprehensive policy addressing the procedure in detail rather than just conferring responsibilities to various stakeholders is the need of the hour. The EU is about to come up with a more comprehensive directive that will cover the whole life of batteries, right from their production. India also needs to come up with a more comprehensive policy on the issue. However, we must refrain from adopting other nations' policies without studying the inherent differences between those nations and India.

⁹⁰ *Id.* Annexure III.

SOLID WASTE: A PRECARIOUS SITUATION OF THE ENVIRONMENT IN THE CITY OF EASTERN LIGHTS

Nami Saikia & Anumita Kar***

“The environment is where we all meet; where we all have a mutual interest; it is the one thing all of us share.”

-Lady Bird Johnson

I. INTRODUCTION

It is believed that to live a healthy life, the place in which we live should be clean. It may be determined from the preceding that to lead a healthy existence, the world environment in which we live must also be clean and composed. But the issue of solid waste has become a key concern not just in India, but across the world. Population growth, industrialization, and urbanization have all contributed to significant waste management issues.⁹¹ The ecological risk associated with solid waste is not any less important than some of the other concerns to which most of the world is now paying close attention.

The issue of environmental resource management is turning into a topic of grave concern not only in the state of Assam but throughout the entirety of India. The world's population is growing at an alarming rate, and at the same time, industrialization and urbanization are becoming more widespread. The ecological threat is just as serious as some of the other issues, including those to which immediate attention is being devoted in most of the world. Because of the pollution in the air, we breathe and the toxic water we drink, the priceless treasures that nature has bestowed upon us are deteriorating, and the lifespans of human beings are getting shorter as a result. Hence, the correct relationship between man and his environment is essential to both the welfare and the continued existence of the human race.

1.1. Understanding Solid Waste

Any item or material that has been thrown and is no longer in use by anyone anywhere is considered waste. Waste can exist in any condition, including solid, liquid, and gas. Solid

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⁹¹ MATHIAS SCHLUEP, *Waste Electrical and Electronic Equipment Management*, 4 ELSEVIER J. 397-403 (2014).

waste is defined as garbage, debris, refuse, or slush from a waste treatment plant, a water supply treatment plant, or an air pollution control facility, as well as other disposed of items. Solid waste is anything that cannot be deposited into streams and readily flow away, nor can it vanish into the atmosphere. A diverse range of human activities, including agriculture, industry, commerce, transportation, and home activities, create solid waste, which pollutes the environment and jeopardizes the health of living creatures. Agriculture waste, industrial waste, municipal garbage, commercial waste, and mining waste are all examples of solid waste.⁹²

In today's world, disposing of and managing solid waste is a serious challenge. The usage of commodities is gradually increasing as the population grows, particularly in urban areas. With the press of a few buttons, well-packaged goods, internet shopping, and other conveniences, life has gotten considerably easier. All of that causes an increase in garbage creation.

In the last several decades, the number of projects undertaken by the government, Non-Governmental Organizations, commercial corporations, and the general public has expanded dramatically. However, landfilling remains the leading solid waste disposal method in many nations throughout India, including Assam. It is commonly understood that current waste management policies are not long-term sustainable. Furthermore, the government has failed to execute solid waste management rules and has been unable to formulate a competitive strategy in this regard.⁹³

II. AGGLOMERATION OF CITY WASTES: A THREAT TO HUMAN HEALTH AND THE ENVIRONMENT

Waste cannot be eliminated from society. Waste can be converted into wealth with the help of recycling/utilizing/co-process of such waste substances. Recycling is a method through which waste becomes non-waste. The wastes should be collected, cleaned, and separated scientifically. No facility for utilization and co-processing is a major problem in the implementation of hazardous waste management rules in Assam. In addition to being uninhabitable, a growing city without a modern solid waste management system exposes its citizens and tourists to public health risks. Even though it has gained recognition as a gateway to the Northeast, Guwahati lacks an integrated solid waste management system. The city, which

⁹² SUBHAM MISHRA, *Solid Waste Management in NorthEast: An Analytical Study*, 50 WJEB 319, 319-328 (2008).

⁹³ T. P. DUTTA, *Solid waste management and the role of non-governmental organization in the disposal of solid waste management*, 2 ILI REVIEW (2000).

is 216 square kilometers in size, produces 575 tonnes of solid waste per day, yet waste collection and disposal are still done in an antiquated way.⁹⁴

2.1. Right to Health as a Fundamental Right

Article 21⁹⁵ of the Indian Constitution guarantees us the right to life, which is a basic right of every person. As a result, we have the right to live in a pollution-free environment, as declared by the Supreme Court in *M.C. Mehta v. Union of India*,⁹⁶ in addition to the right to health, as proclaimed by the Apex Court in *State of Punjab v. Mohinder Singh Chawla*.⁹⁷ However, unhygienic waste disposal in urban areas poses a significant threat to the health of city dwellers, constituting a violation of the people's fundamental right to live a healthy life. The biggest issue facing urbanite's health is a lack of government planning and an insufficient eco-friendly garbage disposal process.

III. MASTER PLAN GUWAHATI 2025: A GOVERNMENT'S INITIATIVE

The growing population in the city increases the production of solid wastes proportionally. The people on their part lack the basic knowledge about the hazards that can be caused by the improper disposal of such wastes and hence the wastes are seen lying in and across the busy streets, in drains and other such places thereby contributing to the environmental pollution, which in turn accelerates natural resources degradation, causing climate change and impacting the quality of life of the citizens.

3.1. Not in My Backyard

Solid waste management is a huge problem that needs to be dealt with as quickly as possible. With the Swachh Bharat Mission, the Indian government has made 'clean India' a primary priority. Waste from Guwahati's municipal government is being dumped in a wetland area. Currently, there is no established method of segregation. The anti-litter movement has grown beyond its initial calls for clean-up. People in cities and villages are stating they don't want waste to be disposed of nearby- Not in My Backyard.⁹⁸ Disputes arise when people object

⁹⁴ ANISH RAJ KALITA, *Study on nonbiodegradable solid waste in Guwahati city*, 81 INTECHOPEN (2019).

⁹⁵ No person shall be deprived of his life or personal liberty except according to procedure established by law.

⁹⁶ A.I.R. 2002 S.C. 1696 (India).

⁹⁷ A.I.R. 1997 S.C. 416 (India).

⁹⁸ SHIVA GHOSH, *Waste and its management for the sustainable urban poor development in Guwahati city*, 2 NEBIO (2017).

to where waste is dumped or landfills are built. Guwahati recycles only a small percentage of its garbage; the rest is dumped or littered around the city.

3.2. An Initiative to Tackle the Problem

In each of the wards under the purview of the Guwahati Municipal Corporation, a Non-Governmental Organization performs the door-to-door collection of garbage in exchange for a monthly fee of Rs. 30 from each household. However, there is no facility for the collection of biodegradable and non-biodegradable waste, and even if some houses give over segregated wastes, these wastes are mixed while being transported on pull carts or tricycles by garbage collectors employed by Non-Governmental Organizations. Additionally, inhabitants of hilly areas do not take advantage of door-to-door garbage collection services as it is cumbersome to access each door in hilly areas. To collect solid waste that has been thrown by commercial businesses on city highways, non-governmental organizations use auto tippers. The majority of communities that have access to dumping sites do not have large garbage bins, which is one reason why commercial establishments and a huge number of households discard their waste without sorting it along the highway. The fact that citizens of the city, owners, employees of business establishments, and street sellers engage in such unscientific practices of dumping and collecting solid waste speaks volumes about the level of awareness that the residents of Guwahati possess. Secondary collection of solid waste requires the Guwahati Municipal Corporation to deploy a fleet of compactors and tippers to gather the waste.

In 1965, following Section 10⁹⁹ of the Assam Town and Country Planning Act, 1959,¹⁰⁰ the State Government drew up a Master Plan for Greater Guwahati to address the fast urbanization that was occurring at the time as well as the urban problems that were associated with it. The Plan anticipated 1986. As an exercise of the powers granted to it by Section 14¹⁰¹ and sub-section (2) of Section 10¹⁰² of the Assam Town and Country Planning Act, the Town and Country Planning Organisation drafted the Modified Final Master Plan and Zoning Regulations for Guwahati in February 1987 and made them public at the same time. The Guwahati Metropolitan Development Authority, which was established by the Guwahati Metropolitan Development Authority Act 1985, was eventually given the responsibility of putting the Master Plan into action with Perspective 2001. The plan is subsequently revised

⁹⁹ Publication of the master plan.

¹⁰⁰ The Assam Town and Country Planning Act, 1959, No. 06, Acts of Parliament, 1959 (India).

¹⁰¹ Power of the State Government to modify the plan and the Regulation.

¹⁰² *Supra* note.10.

with perspective 2025 under the Guwahati Metropolitan Development Authority Act 1985.¹⁰³ The provision of a system for the management of solid waste that applies to all types of garbage is the fundamental objective of this.¹⁰⁴ Drainage that isn't prone to clogging, facilities for education, health, and security, as well as social and cultural activities, are to be arranged in a hierarchical sequence around the city.¹⁰⁵

IV. JUDICIAL STANCE ON SOLID WASTE

4.1. Suo Moto Public Interest Litigation of Gauhati High Court Concerning the Restoration of Deepor Beel.

Following the Supreme Court's judgement, the Gauhati High Court dismissed a Suo Moto petition as well as a Public Interest Litigation about the preservation and appropriate administration of Deepor Beel in Guwahati.

Deepor Beel is Assam's only certified Ramsar site as per the Ramsar Convention, according to the respondents. The Chief Secretary of Assam briefed the court that the state government is constructing a facility for scientific solid waste disposal at the Boragaon dumping site in cooperation with Indian Institute of Technology, Kharagpur and that the Guwahati Municipal Corporation has been asked to carry out the plan. Finally, the Guwahati Municipal Corporation filed an affidavit stating that the building of the Compost and Refuse Derived Fuel Plant is proceeding satisfactorily at Belortol, National Highway No.37 is likely to be commissioned in June 2023.¹⁰⁶

The Division Bench of the said court has directed that the respondent authorities protect the area of Deepor Beel and conform to the statements made in the affidavits for the protection of the said wetland and that the respondent State ensure that the solid waste management plant under construction is fully operational by July 1st, 2023.¹⁰⁷

4.2. PIL in Chandrapur Dumping Site

A petition was filed in connection with the relocation of a waste disposal facility in Chandrapur to the site of a disused thermal power station. The relocation is the result of a

¹⁰³ The Guwahati Metropolitan Development Authority Act 1985, No. 20, Acts of Parliament, 1985 (India).

¹⁰⁴ *Master Plan Guwahati 2025*, GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY, GOVERNMENT OF ASSAM, (Jan. 21, 05:15 PM), <https://gmda.assam.gov.in/portlets/master-plan-guwahati-2025-0>.

¹⁰⁵ BHARGAV BORTHAKUR, *Role of Rag Pickers on Solid Waste Management in Guwahati City*, 2 ICON SWM (2011).

¹⁰⁶ *Start waste mgmt plant & save Deepor Beel, HC tells govt*, THE TIMES OF INDIA, Dec. 28, 2022, at A1.

¹⁰⁷ *Protect Deepor Beel: Gauhati High Court*, THE SENTINEL, Dec. 23, 2022, at A5.

government mandate to shut down the old dumping site in Boragaon, which is adjacent to the Deepor Beel Wetland Wildlife Sanctuary. Finally, the Gauhati High Court responded, issuing a notice to the Assam government inquiring about its proposal. In response to Mr. Pradeep Barua's public interest litigation contesting the Gauhati Municipal Corporation's decision, the court also ordered the city to stop depositing waste at the site for two weeks.¹⁰⁸

V. CONCLUSION

The paper finally concludes that to maintain a clean and environmentally friendly atmosphere in Guwahati, the government should broaden the scope of the households whose waste can be collected beyond what is already permitted. Our environment is deteriorating rapidly as a result of our rapidly growing population and industrialization. The issue of solid waste management is a major cause for concern for our environment as the boundaries of urbanization in Guwahati spread to more remote regions.

The goal of effective waste management is to lessen the negative impact of waste on human health and the environment through its collection, transportation, processing (waste treatments), recycling, and disposal. In the end, we have concluded that waste is a problem and that it will become a significant one if we do not appropriately manage garbage through waste management. Because there is no effective waste management, the incidence of diseases is steadily growing among human beings. Therefore, effective waste management is essential for the general public, society, and the state.

¹⁰⁸ *People Protest as Guwahati, a Planned Smart City, Dumps Its Garbage at Sensitive Area*, THE WIRE, Jul. 22, 2021, at A2.

GREEN GDP ASSESSMENT IN INDIA- A COMPREHENSIVE STRATEGY TO BALANCE ECONOMIC GROWTH & SUSTAINABILITY?

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I. INTRODUCTION

India has demonstrated a tremendous commitment to the fight against climate change, as evident in its policies and reflected in its ranking in the Climate Change Performance Index (CCPI) 2023, which is 8th, up from 10th in 2022.¹⁰⁹ But the struggle does not end here. The two essential elements of human life, namely development and environment, have been in conflict for decades. The argument is that since both of these factors ultimately contribute towards human development, why not combine them? The meter to measure economic development is the Gross Domestic Product (GDP), whose components are personal consumption, business investment, government spending, and net exports. Green GDP is a concept that uses a comprehensive approach to measure development while taking into consideration the impact on the environment.

The concept of Green GDP came into existence with the rising need to re-evaluate the components of GDP. After detailed deliberations over a few years ‘The Handbook of National Accounting: Integrated Environmental and Economic Accounting’ was issued in 1993 by the UN. For the first time, the cost of environmental resource depletion and climate change were combined with the economic indicators to reach a holistic measurement of development. It suggested the creation of an “ecologically calibrated domestic product,” or “Green GDP,”¹¹⁰

The RBI Bulletin released in 2022 suggests that India has shown a great performance in achieving a balance between development and ecology due to its policies for carbon emission, the opportunity cost of waste generated and adjusted savings of natural resources and environment,¹¹¹ which resulted in an increase in the country’s Green GDP by 91% in a decade

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¹⁰⁹ *India jumps 2 spots higher, and now ranks 8th as per Climate Change Performance Index (CCPI, 2023)*, MINISTRY OF POWER (Jan 18, 2023, 06:46 PM),

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1878023#:~:text=India%20jumps%20%20spots%20higher%2C%20and%20is%20now%20ranked%208,Network%20International%20based%20in%20Germany>.

¹¹⁰ *Green GDP: India’s need of the hour*, MODERN DIPLOMACY, Aakarshan Singh (Jan 18, 2023, 10:01 AM) <https://modern diplomacy.eu/2022/04/03/green-gdp-indias-need-of-the-hour/>

¹¹¹ *Estimation of Green GDP for India*, Anupam Prakash, Kaustav K. Sarkar and Amit Kumar, RBI BULLETIN (Jan 18, 2023, 06:09 PM) https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=21333

between 2009-2019. The responsibility of accounting for environmentally adjusted national income in India is on the body established in 2003 i.e., Green Indian States Trust (GIST) under its project Green Accounting for Indian States & Union Territories Project (GAISP).¹¹²

The aim of this article is to analyse the trend and growth of Green GDP in India. Also, it seeks to examine both, the adopted measures and those that must be made in the future from the dual perspective of the economy and the environment.

II. INDIA'S APPROACH TOWARDS GREEN GDP

India, while calculating its Green GDP, takes into account not only the sustainable development indicators and resource consumption indicators but also considers the expenditure incurred by the government on the protection of the environment. The components are as follows-

- **SUSTAINABLE DEVELOPMENT INDICATORS**
 - Carbon dioxide damage
 - Particulate emission damage
- **RESOURCE CONSUMPTION INDICATORS**
 - Opportunity Cost of energy depletion
 - Mineral depletion
 - Net forest depletion

These factors are taken as a per cent of Gross National Income (GNI)

Formula to calculate green GDP in India

Green GDP = GDP – (Carbon dioxide damage + particulate emission damage)– (Opportunity cost of energy depletion + mineral depletion + net forest depletion) + Expenditure on environmental protection.¹¹³

While calculating the Green GDP published in the RBI Bulletin, the authors divided the period into G1, G2 and G3, where G1 signifies the data taking into account only environmental damage indicators between 1971- 2019 while G2 also takes into account particulate emissions damage calculated for 1990-2019. G3 is the most comprehensive one among them as it also considers the Centre's expenditure on the environment, which has been calculated for 2006-2019. The data suggests that India has experienced a positive movement in the Green GDP,

¹¹² *Id*

¹¹³ *Supra* note at 111.

especially since 2012 when the growth of Green GDP surpassed the growth of conventional GDP in the 2000s, which are 6.34%-6.71% and 6.27%- 6.61% respectively.¹¹⁴ But the data cannot be completely relied on as these were collected into bits and pieces from the reports released by different international organisations.

This indicates the need for an environmental impact assessment mechanism in India. The Hon'ble Supreme Court, in the very recent case of *Residents Welfare Association & Anr. v. The Union Territory of Chandigarh & Ors.*,¹¹⁵ directed a request towards the legislature, the executive and the policymakers to lay down necessary provisions for the Environment Impact Assessment studies before allotting a property for development.¹¹⁶ The court laid emphasis on Bengaluru which has seen a deteriorating effect of this assessment gap.

III. THE LIMITATIONS OF GREEN GDP EVALUATION AT PRESENT

Green GDP is an indicator which is hard to calculate as it is difficult to quantify ecological damage and natural resource depletion and these are often based on mere speculation or approximates. The indicator lacks global consensus, with every country adopting its own method of Green GDP calculation.¹¹⁷ The criticisms of GDP evaluation can also be applicable to Green GDP. In the Stiglitz-Sen-Fitoussi report (2009), the authors reject GDP as a measure of economic welfare and classify it as a mere measure of market production. Since Green GDP is an 'adjusted GDP' it cannot be regarded as an indicator of sustainability as it does not "characterize sustainability per se".¹¹⁸ Like traditional GDP, Green GDP also does not take into consideration social indicators like health and education, which are equally important for a holistic calculation of a country's economic development.

The article published on Oct 17, 2022, in the RBI Bulletin,¹¹⁹ recognised the need to set up a dedicated institution within the Environment Ministry to release Green GDP estimates

¹¹⁴India's GDP growth makes the switch to eco-friendly path, Nandita Venkatesan, LIVE MINT, Jan 28 12:27 AM, <https://www.livemint.com/economy/indias-gdp-growth-makes-the-switch-to-eco-friendly-path-11666544161738.html>

¹¹⁵ 2023 SCC OnLine SC 21

¹¹⁶Make Environmental Impact Assessment Mandatory For Urban Development, Recommends Supreme Court; Cites Condition Of Bengaluru As Warning, Awstika Das, LIVE LAW, Jan 28, 12:41 AM, <https://www.livelaw.in/top-stories/make-environmental-impact-assessment-mandatory-for-urban-development-recommends-supreme-court-cites-condition-of-bengaluru-as-warning-218641>

¹¹⁷, *Green GDP: an analysis for developing and developed countries*, Saša Stjepanović, Daniel Tomic & Marinko Skare, 22 E+M EKONOMIE A MANAGEMENT 4 (2019).

¹¹⁸ *Beyond GDP: Classifying Alternative Measures for Progress*, Brent Bleys, 109 SOCIAL INDICATORS RESEARCH 355 (2012).

¹¹⁹ *Supra* note at 111.

periodically on a regular basis because of the paucity of data available at present and also stressed on the need to establish a user-friendly data dissemination platform based on those created by the OECD and the Eurostat. The Green GDP, in its present methodology, does not consider the impact of industrial pollution on human health and it is indeed very hard to measure or quantify the same. Moreover, it is equally difficult to precisely take into account the extent of damage caused by environmental pollution.

IV. ENHANCING GREEN GDP- HEADING TOWARDS A SUSTAINABLE AND GREEN ECONOMY

Although the recent Green GDP evaluation of the RBI is a welcome move, the measure has its own fair share of limitations as summarised above. Due to its ambiguity and methodological limitations, Green GDP cannot replace the traditional GDP and cannot act as a proxy for other indicators of sustainability.

Besides improving upon the present indices of sustainable economic development, the Government needs to ensure that environmental damage itself is reduced at the initial stage. Corporate responsibility and accountability are absolutely important to ensure that during the production of their goods and services, minimum damage is caused to the environment. For this, The Supreme Court of India in cases like *Vellore Citizen's Welfare Forum v. Union of India*¹²⁰ has observed sustainable development as a fundamental principle of environmental legislation in India which would imply that the polluter shall be liable to pay for harm cost and restoration of the Environment. The Court has recognised the need for corporates to carry out developmental activities but has also made them liable for the protection and restoration of any damage caused to the environment. The Court observed, "while economic development should not be allowed to take place at the cost of ecology or by causing widespread environmental destruction and violation, at the same time the necessity to preserve ecology and environment should not hamper economic and other developments."¹²¹

The Government must ensure that the Rule of Law itself becomes the driving force behind ecological conservation.¹²² For this, the industrial and corporate magnates, which cause significant ecological damage, must be required to carry out mandatory environmental impact

¹²⁰ (1996) 5 SCC 647

¹²¹ Indian Council for Enviro-Legal Action v. Union of India, (1996) 5 SCC 281.

¹²² *Legal Transition to the Green Economy*, Markus W. Gehring, 12 MCGILL INT'L J. SUST. DEV. L. & POL'Y 135 (2016).

assessments. Under the Companies Act, 2013,¹²³ large companies have to contribute a portion of their profits in Corporate Social responsibility (CSR), however, these companies carry out their own natural capital assessment as part of their CSR functions and there is no central environmental indicator uniformly applicable to all the companies.¹²⁴ Hence, there is a definite risk of corruption and private interests conflicting with these environmental impact assessments

The adoption of Green GDP assessment at the state level would also be a helpful step towards a green economy and would lead to the introduction of regional policies which take into consideration the impact of developmental activities on the environment at the grassroots and would aid in the creation of policies for ecological conservation and compensation to the affected natives.

The Government may consider incorporating environmental taxation under which a green tax shall be charged against an industry for its emissions. This would cause the marginal cost of production to increase and hence would force the industry to reduce its emission levels by adopting alternate environment-friendly technology.¹²⁵

V. CONCLUSION

India must be commended for being one of the few countries that have incorporated Green GDP evaluation in its policy-making. Green GDP in India is calculated by considering both quantitative and qualitative features, i.e., it also considers the opportunity costs of energy depletion. According to Sir John Richard Hicks, income must be calculated as the maximum account of goods and services that can be consumed without depleting the capital stocks. Green GDP seems to be in line with Hicks' theory as it takes into consideration the capital stock of natural resources of a nation and as such serves as an important indicator of real economic growth.¹²⁶ The adoption of Green GDP as an indicator of economic growth indicates the rising awareness for an environmentally-oriented approach in policy-making and with the passage of time, it is expected that the lacuna in Green GDP calculations and data collection mechanisms

¹²³ The Companies Act, 2013, no. 18, Acts of Parliament, 2013(India).

¹²⁴ *Greening the GDP: Valuing natural capital in India*, Soumya Bhowmick ORF, <https://www.orfonline.org/research/greening-the-gdp-valuing-natural-capital-in-india-48938/> (last visited Jan 30, 2023).

¹²⁵ Taxation, Innovation and the Environment - OECD, <https://www.oecd.org/greengrowth/tools-evaluation/taxationinnovationandtheenvironment.htm> (last visited Jan 29, 2023).

¹²⁶ *Supra* note at 118.

would be improved upon and other comprehensive indices would be introduced by the Government for effective environmental assessment of developmental activities.

SOLID WASTE MANAGEMENT SYSTEM: AN ANALYTICAL STUDY CONCERNING MORAN TOWN IN THE DIBRUGARH DISTRICT OF ASSAM

*Priyanka Saikia**

I. INTRODUCTION

Waste is a serious issue in emerging countries such as Indian cities and countries. It leads to serious consequences to the environment as well as to public health. It is very critical to find a solution for the problem as people are much neglected to this issue. The garbage created by the breakdown of organic, chemical, or industrial waste remains are referred to as waste. These wastes are generated as a result of food disinfection processes, whether chemical or dry waste disposal.¹²⁷

The effects of garbage on the environment and the harm it can cause to individuals are only two of the numerous critical problems covered. Newspapers, bottles, plastic bags, polythene, packing materials, and rubbish are examples of solid waste things that become unusable and become waste after a brief period of usage. After use, solid wastes are disposed of. The pollution created by these solid wastes, which are expanding at a rapid rate due to rapid urbanization and industrial expansion. The disposal of solid waste is a primary issue.¹²⁸

Solid waste management entails collecting waste substances and disposing of them in appropriate dumpsites, where they are incinerated. Rapidly increasing quantities of solid waste are serious indicators of environmental problems shortly. Domestic waste collection and disposal are not properly organized in rural and urban areas of India. To address the issues, technologies and devices have been developed to recycle the majority of solid waste products.¹²⁹

II. STUDY OF THE AREA

To study the problem of solid waste management, the researcher in this article has focused on dealing with the waste management system in a small town called Moran which is located in Dibrugarh district. Dibrugarh is recognized as the “Tea Capital of India”, and it is well

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¹²⁷J. Amin, *Waste Management and Treatment*, 33 ASSIUT JOURNAL OF ENVIRONMENTAL STUDIES 125, 131-132 (2009).

¹²⁸Q. Abdul Hauq, *The Problem of Solid Waste and its Recycling*, 9 JOURNAL OF MANAGEMENT AND DEVELOPMENT FOR RESEARCH AND STUDIES.435, 440-442 (2020).

¹²⁹ R.A. SHARMA, ENVIRONMENTAL EDUCATION 26 (Surya publishers, 2012).

connected to Guwahati, which is also a major industrial centre. Dibrugarh is 439 kilometres (273 miles) from Guwahati. Dibrugarh district contains several minor towns and villages.

Moran Town is a census town in the state of Assam within the district of Dibrugarh. It has a big oil field as well as a major tea-producing region. The researcher chose this location because it is her hometown, so it becomes easy for her to go through this waste management issue and to suggest some of the remedies to solve such type of environmental problem. She hopes to bring such a problem to the attention of the public.

III. OBJECTIVES

The main objective of this research is to investigate the management of solid waste in the small-town Moran, which may cause environmental pollution and harm to public health. It needs to be made clear how important it is to get rid of garbage properly and not let it pile up in residential areas, as this may cause different types of pollution as well as affect the health of the people by being victims of various diseases. To investigate how far the Dibrugarh or the Moran Municipal Board has succeeded in collecting and handling solid waste products.

IV. METHODOLOGY

In this research study, two sorts of data have been acquired. The first is Primary Data, and the second is Secondary Data. Primary data was gathered from Moran Town residents, and secondary data was gathered from newspapers, journals, books, and the internet, among other sources. The information was gathered through the use of a structured questionnaire and an informal talk.

V. MEANING OF SOLID WASTE AND ITS TYPES

Solid wastes are non-liquid waste materials that come from home, businesses, farms, factories, and other industries. Solid waste contains different types of rubbish, such as junk, garbage, sludge from a waste treatment plant or air pollution control facility, and so on.¹³⁰

Municipalities generate several types of waste, such as trash from homes, markets, streets, and commercial buildings. There are also some other types of waste, but they are not as severe in character.¹³¹

¹³⁰ J. Amin, *Supra note* 127, at 132.

¹³¹ Ajit Debnath, Solid Waste Management in Nagaon Town of Assam- An Application of Contingent Valuation Method, 8 INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY AND ENGINEERING, (2020)

Market waste is garbage collected from the market. It comprises a high proportion of rotten vegetables, animal debris, plastic, and thermal, among other things. Garbage picked up by street cleaning services or through scavenging includes leaves, paper, animal poop, different kinds of trash, and a lot of annoying things like plastics, polythene, and so on.¹³²

Garbage is generated by non-market commercial establishments such as hotels, restaurants, and grocery stores. Special consideration must be given to household hazardous waste since it has the potential to grow into a serious problem. Paints, cleaners, lubricants, batteries, and insecticides are examples of common home products.¹³³

VI. SOLID WASTE MANAGEMENT SYSTEM IN THE TOWNSHIP OF MORAN

In the process of waste management, waste is collected from many sources and disposed of during the process. This procedure includes garbage collection, transportation, treatment, analysis, and disposal.¹³⁴

There are 8,434 people living in Moran Town, according to the 2011 Census in India. There are 4,363 males and 4,071 females. Moran Town has 933 Female Sex Ratio which is lower than the state average of 958.¹³⁵

The Dibrugarh Municipal Board (DMB) is in charge of solid waste management inside the municipal bounds. Households, business establishments, institutions, marketplaces, street cleaning, and construction/demolition activities are major producers of municipal solid trash in Dibrugarh.¹³⁶

The Moran Municipality Board was founded in Ushapur, where complaints about waste management are addressed and steps are taken to provide a clean and healthy environment. Except on Sunday, a Swacha Bharat Abhiyan garbage Vehicle travels throughout Moran Town to collect waste. However, stores and other market areas are required to pay for the service. But they don't employ their own staff to clean up the areas, for which the problem is still present Union Minister Rameswar Teli launched Assam's first solid waste management project in the Lekai neighborhood of Thakurthan. It's on the outskirts of Dibrugarh. Residents had been

¹³² Dr.Rafique Ahmed,Solid Waste Management in Assam, THE ASSAM TRIBUNE, (2021)

¹³³ Moharana Choudhury,Joystu Dutta, Municipal Solid Waste Management in South Assam: Current trend, Scope and challenges for growing Mini City Silchar, Municipal Solid Waste Management in South Assam:Current trend, Scope and challenges for growing Mini City Silchar, Assam, India, 2 PACIFIC INTERNATIONAL JOURNAL ,18, 2616-4825, (2018)

¹³⁴ BYJUS, “*Solid waste management*” Jan 22nd,2023,3PM, <https://byjus.com/biology/solid-waste-management>

¹³⁵Population Census, “*Moran Town Population Cencus 2011- 2023*, (21st Jan 2023 at 4PM), <https://www.census2011.com>

¹³⁶Government of Assam,“*Assam Urban Infrastructure Investment Program*”, (Jan 19th ,2023,9:45 PM), <http://auip.nic.in/swm.html>

experiencing numerous issues for a long time due to a lack of appropriate. Previously, garbage and waste products were thrown in the Maijan neighbourhood of Dibrugarh near the Brahmaputra River, polluting the entire area. This Solid Trash Management Project would also handle solid waste from adjacent areas like Lahowal, Chabua, and Moran, in addition to the Dibrugarh area. The project was constructed as part of the Assam Urban Infrastructure Investment Programme.¹³⁷

The project for managing solid waste can turn 100 metric tons of trash per day (TPD) into compost. The project began at Lekai in 2017 with help from Assam Urban Infrastructure Investment Programme. Up until now, Dibrugarh dumped trash in the wrong way at the Maijan Ghat next to the Brahmaputra river.¹³⁸

VII. ANALYSIS OF THE DATA

The purpose of this research is to collect data on solid waste management in the Moran Town area of the Dibrugarh district. Data from the Moran area are gathered through fieldwork. A questionnaire was made in order to collect information from a sample of 20 families and 30 individuals in Moran Town, Dibrugarh district. The questionnaires contain a total of 15 questions about the problem.

Newspapers, broken glass, polythene bags, plastics, cartons, and residential garbage are examples of solid trash in Moran Town. Approximately 90% of solid trash is generated in the home. According to the results of this survey, the residents of Moran dispose of these waste products by dumping them in appropriate dumpsites and burning them. But some of the people have given their opinion that many people throw their household garbage at the side of the road where there is no resident and it leads to a dirty and polluting environment.

Furthermore, it also can't be neglected that Municipal Corporation used to collect these solid wastes on a regular basis. But many garbage dumping areas were untouched by the Municipality board to provide service to clean up those area. Some people have expressed positive feelings about the municipal facility, while others have expressed negative feelings. According to several residents in the neighbourhood, these solid waste materials are harmful to the ecosystem. It pollutes the air and water, and it causes a variety of ailments such as skin irritation, fever, and so on. When these waste items are deposited along the roadway, they cause flooding, drainage problems etc.

¹³⁷ *Id.*

¹³⁸“Assam First Solid Waste Management Project Inaugurated in Dibrugarh”, THE SENTINEL. 28th August 2021.

Some Moran Town residents have an open field near their house that appears to be a rubbish storage facility, causing problems for other neighbouring families and for which no proper step has been taken by the Moran municipality board by cleaning it up daily or weekly basis or to provide awareness to such problems. The researcher has seen numerous such areas in Moran town, including Jaya Nagar, Rani Path, Kushal Nagar, etc.

To prevent solid waste pollution, people must dispose of their household garbage properly. The majority of them simply drop this garbage down the drains, while only a handful of them deposit them in the dustbins. It is known from the inhabitants of those places that accept municipality cooperation, no other co-coordinating organization, agency, or NGO is connected with solid waste management. The municipality had yet to develop an awareness program regarding reducing, reusing, re-fusing, and re-cycling these solid waste items.

VIII. CONCLUSION, FINDINGS AND SUGGESTIONS

In India, solid waste management is a massive problem, so it is high time for relevant government entities to make tangible efforts to alleviate such difficulties in close collaboration with the general public, rather than ignoring it.

Based on the data gathered from the Moran Town in regard to the system of solid waste management, it has been discovered that the main solid waste found in this area consists of polythene bags, cartons, plastics, and 90% of the solid waste or garbage covers from household or domestic waste. The people of Moran Town dispose of these waste materials by dumping in suitable dumpsites and by burning them, but some of the people throw that at the side of the house wall, which creates a problem for the neighbouring people and during the rainy season water gets into people's houses.

However, the drainage facility has improved in recent years. Many local roads and drainage systems have been built in order to overcome such a problem. Many people in the examined areas are unaware of environmental pollution and its effects on the environment.

So, in order to tackle such a problem, educational institutions must provide environmental education in depth, and campaigns should be created to educate the public about the issue which creates a dangerous health issue to the people which leads to different types of diseases. Some NGOs, agencies, or coordinating bodies must be established in each community to supervise and control solid waste pollution. Weekly school students should be taken out to clean up their own town, so that they will be aware of such problem. The municipality collaboration must supply the highest number of dustbins, particularly in front of all stores and market locations.

DECODING THE IMPACT: A CRITICAL ANALYSIS OF THE PROPOSED AMENDMENTS TO ENVIRONMENT (PROTECTION) ACT, 1986

*Shreya**

I. INTRODUCTION

On July 1st this year, the Ministry of Environment, Forests and Climate Change proposed certain amendments to the Environment (Protection) Act, 1986 and invited comments from the public on the same on or before 21st July 2022.¹³⁹ The duty is cast upon the government to safeguard environment in furtherance of Article 48A¹⁴⁰ which stipulates protection and improvement of the environment. Article 51A(g)¹⁴¹ casts a duty upon every citizen to safeguard the natural environment. Moreover, India being a signatory to various international agreements like Earth Summit, UNFCCC, UDHR, Paris Convention has to act in a manner giving effect to international agreements by virtue of Article 253.¹⁴²

1.1. Overview of The Proposed Amendments

The amendment seeks to bring substantive changes to the Environment Protection Act 1986. Firstly, the nature of the Act is changed from criminal to civil as in cases of non-compliance or contravention of the provisions of the Act, the punishment of imprisonment has been replaced by enhanced penalties and the duty is cast upon the Adjudicating Officer to decide the quantum of penalties. Secondly, the amendment seeks the creation of a fund “Environmental Protection Fund” under Section 17A wherein the Adjudicating Officer after adjudicating the damage to the environment, will remit the amount.

The amendment decriminalizes violations of provisions of the Act so as to reduce the fear of imprisonment among people for simple violations. What is noticeable is the fact that the proposed amendments still need to completely do away with the provision for imprisonment

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¹³⁹Proposal for amendment in the Environment (Protection) Act, 1986, PRS India (2022), https://prsindia.org/files/parliamentary-announcement/2022-07-21/Press%20Release%20_EPA-Bill.pdf (last visited Jan 22, 2023).

¹⁴⁰INDIA CONST. art. 48A

¹⁴¹INDIA CONST. art. 51(a)(g)

¹⁴²INDIA CONST. art. 253

as it provides for it in Section 15F whereby the person failing to pay the penalty, shall be liable for imprisonment up to 3 years or a fine or both.

In the existing framework, the Act stipulates a punishment of imprisonment to the extent of five years in case of contravention of the provisions of the Act, in addition to the fine which can be imposed extending up to one lakh rupees or both. However, the proposed amendments aim to remove the provision of imprisonment and replace it with higher penalties wherein in case of non-compliance, the penalty imposed shall not be less than five lakh rupees and may extend to five crore rupees. The proceeds imposed from the enhanced penalty will get added to the 'Environmental Protection Fund' by virtue of the insertion of Section 15E.

1.2. Repercussions of The Amendment

The primary problem with the proposed amendments is the decriminalization of offences as there will be no fear of imprisonment, which will eventually give rise to the 'Pollute and Pay' attitude amongst the people and big companies. For example, Earlier, there was fear of fines and imprisonment, in case of wilfully obstructing an officer's entry or investigation which now is replaced by just the monetary penalties, hence it would be easy for the big companies to get away from any liabilities arising out of non-compliance and for creating an obstruction in the investigation by simply paying a certain amount of money at a later stage.

This move to decriminalize the provisions has been justified on the ground that the cases filed against EPA violations is just around 86 in 2018 according to the National Crime Records Bureau, which is very less.¹⁴³ However, these statistics don't depict the true state of nature as underreporting of environment-related offences is one of the significant problems. In fact, if we see the recent trends, there is a continuous increase in the cases filed under the aforesaid Act which is 252 as per the latest NCRB 2021 data.¹⁴⁴ Moreover, the World Health Organization's data on 'World's most polluted cities' released in 2021 shows that 12 out of 15 most polluted cities are in India which shows the gruesome state of affairs.¹⁴⁵

¹⁴³Crime in India 2020, Vol. 1, (2021), <https://ncrb.gov.in/sites/default/files/CII%202020%20Volume%201.pdf> (last visited Jan 23, 2023).

¹⁴⁴Crime in India 2021, Vol 3, https://ncrb.gov.in/sites/default/files/CII-2021/CII_2021Volume%203.pdf (last visited Jan 23, 2023).

¹⁴⁵Deena Robinson, 15 most polluted cities in the world Earth.Org (2022), <https://earth.org/most-polluted-cities-in-the-world/> (last visited Jan 27, 2023).

II. VIOLATION OF PRINCIPLES OF SUSTAINABLE DEVELOPMENT

Article 21 of the Indian Constitution enshrines ‘Right to Life’ guaranteed to every citizen and its judicial interpretation has widened the ambit of the right which now covers Right to Healthy and pollution-free environment within its scope.¹⁴⁶ Ecology and development are no more seen as antithetical to each other. ‘Sustainable development’ as a concept found its mention for the first time in the Stockholm Declaration in 1972 which provides an amicable path while balancing development and environmental well-being.¹⁴⁷ The principles of Sustainable development have been the guiding force in shaping India’s environmental policies, with the Indian Judiciary adopting the sustainable path while integrating development and environment.

The precautionary principle is an integral facet of sustainable development. This includes a systematic risk assessment and anticipating the ‘risk’ involved while framing environmental policies and taking steps to mitigate the causes of environmental degradation. It takes into account the uncertainty and potential harm involved. This principle has been recognized internationally in the 11th Principle of the UN General Assembly Resolution on World Charter for Nature 1982, the Rio Declaration 1992 and in India, its applicability has been upheld in a slew of judicial decisions in *Vellore Citizen’s Welfare Forum v UOI*,¹⁴⁸ *M.C. Mehta v UOI*¹⁴⁹ and *Andhra Pradesh Pollution Control Board v Prof. M.V Nayudu*.¹⁵⁰

As has been affirmed in the case of *State of H.P v Ganesh Wood Products* where the Supreme court stressed the importance of sustainable development and intergenerational equity principle and that the present generation has no right to deplete the existing resources.¹⁵¹ In *Hospitality Assn. of Mudumalai v. In Defence of Environment & Animals*,¹⁵² it has been reaffirmed that the precautionary approach is a part of the law of the land which stems from Articles 21, 47, 48A and 51-A(g). The imprisonment provision in the existing framework of EPA Act was a precautionary approach to deter big companies as well as persons from carrying out activities

¹⁴⁶*Subhash Kumar vs State of Bihar and Ors*, 1991 AIR 420

¹⁴⁷Pamela Chesak, *The Legacies of the Stockholm Conference* International Institute for Sustainable Development (2021), <https://www.iisd.org/articles/deep-dive/stockholm-conference-legacy> (last visited Jan 27, 2023).

¹⁴⁸*Vellore Citizens Welfare Forum vs Union of India & Ors*, 1996 5 SCR 241

¹⁴⁹*M.C. Mehta vs. Union of India*, (1987) 4 SCC 463

¹⁵⁰*Andhra Pradesh Pollution Control Board v. Prof. M.V Nayudu*, 1999(2) SCC 718

¹⁵¹*State of Himachal Pradesh and Ors v. Ganesh Wood Products and Ors*, 1996 AIR 149

¹⁵²*Hospitality Assn. of Mudumalai v. In Defence of Environment & Animals*, 2020 SCC 10 589

which can have a negative effect on the environment. The whole idea to make sustainable choices is to be sensitive to the needs of future generations.

Lately, a shift is being seen from the precautionary principle to the polluter pay principle. “The Polluter Pays Principle” has been held to be viable in *Indian Council for Enviro-Legal Action v. UOI*,¹⁵³ where the court mentioned that when the task is carried out which is inherently dangerous, the person carrying the activity must ‘make good the loss caused to other person irrespective of the fact whether he took reasonable care while carrying the activity.’ This makes the company absolutely liable not just to compensate the victims but also to undo the environmental degradation caused in the process with the intention to deter the polluter from causing further damage in the future. In the case of *Sterlite Industries Ltd vs UOI*,¹⁵⁴ the application of the polluter pay principle failed to act as a long-time deterrence for the polluter.¹⁵⁵

The proposed amendments echo this view of ‘Pollute and Pay’ as it stipulates a provision wherein the company or persons are supposed to pay damages equivalent to the harm caused to the environment. However, it is pertinent to note the damages caused to the environment can be irreversible in nature, thus the ‘pollute and pay’ attitude of the companies will prove to be a huge setback for all the environmental measures put into place until now. The compensation may be received for the prima facie harm caused to the environment but there is always a multiplier effect as a small disturbance can lead to a complete imbalance in the ecology. Such impacts may not be visible instantly but only comes into light in a long-term period.

III. VIOLATION OF ENVIRONMENTAL JUSTICE AND PUBLIC TRUST

Environmental Justice emphasizes about the disparate and disproportionate impact of environmental degradation upon low-income groups, marginalized communities and those sections participating as an equal stakeholder in the environmental regulation process. The attainment of the goals of environmental justice movements requires the incorporation of sustainable development principles. Both of them share a symbiotic relationship; with

¹⁵³*Indian Council for Enviro-Legal Action v UOI*, 1996 AIR 1446

¹⁵⁴*Sterlite Industries Ltd vs UOI*, (2013) 4 SCC 575

¹⁵⁵Debadityo Sinha et al., *COURTING THE ENVIRONMENT* (2021), <https://vidhilegalpolicy.in/wp-content/uploads/2021/04/Courting-the-Environment-Full-Report.pdf> (last visited Jan 27, 2021).

Environmental Justice aiming at providing a remedy to the communities suffering damage from the disparate impacts of ecological imbalance and Sustainable development aiming to balance the present needs with ecological well-being ensuring distributive justice.

The State acts as a trustee of all natural resources and under 48A, it becomes the primary duty of the State to safeguard the environment. There have been instances where the court faces a dilemma in deciding cases concerning two competing public interests. The solution to this is resources held in the public trust must be used with consideration for intergenerational equality and in a way that is consistent with environmental justice. There are many forest and tribal communities in India whose cultural identities and livelihoods are intact to the subsistence of nature. They would become the worst victim for any harm caused to the environment owing to the laxity in punishment provisions.

The court in *H.P Bus-Stand Management & Development Authority v Central Empowered Committee*,¹⁵⁶ has conferred the duty upon the state to come up with procedural and institutional mechanisms so as to keep the regulation in consonance with the ‘environmental rule of law.’ It is pertinent to note that the higher penalties in the proposed amendment favour the rich and privileged class. A person belonging to a marginalized class, if cluelessly commits an offence under EPA would be charged with high penalties, which he would never be able to pay off. Whereas, a rich person who would ‘intentionally’ cause harm to the environment knowing well that the return of profit that he will get by non-complying with the provisions of EPA would be more than the ‘penalty’ he would be charged therein as a punishment. This directly harms the public ‘trust’ in law enforcement agencies and the implications of the aforesaid provisions are against the principles of Environmental Justice.

The creation of ‘Environmental Relief Fund’ would be a futile exercise in the light of the fact that the Environment Relief Fund has proved to be ineffective as there is non-utilization of funds of more than 800 crores and to date, there is no record of any compensation awarded by NGT reaching the victims.¹⁵⁷ Moreover, it has also been noticed that the amount collected from the polluter is often utilized in developmental activities, improving socio-economic conditions

¹⁵⁶*H.P Bus-Stand Management & Development Authority v Central Empowered Committee*, AIR 2021 SC 657

¹⁵⁷Aathira Perinchery, Experts divided as government moves to decriminalise environmental offences *The Wire* (2022), <https://thewire.in/environment/environmental-offences-decriminalise-centre-experts-divided> (last visited Jan 27, 2023).

or improving ecology instead of directly compensating the victims of environmental degradation.¹⁵⁸

IV. CONCLUSION

India has a huge backlog of cases with more than 90% of cases pending trial in five of seven major environmental laws.¹⁵⁹ Thus, the fear of imprisonment among the people would have proved to be effective in the long run in acting as a deterrent against environmental crimes. According to the UN Environment report, there is a rise in environmental laws since 1972, however, it is the implementation gap that exists which has failed to curb the problem of climate change.¹⁶⁰ There is an urgent need to prevent environmental crime which requires the implementation of strict punishment for adherence to the provisions of the Act. The abolition of the punishment of imprisonment would have a detrimental impact on the environment as the ones who are rich enough to pay the price would be roaming free even after causing harm to nature. Therefore, the proposed amendments must be rolled back at the earliest, as the suggested amendments are in contravention of the principles of Sustainable development, and ideals of Environmental justice and would prove to be ineffective in acting as a long-time deterrent for the polluters.

¹⁵⁸Lovleen Bhullar, *The Polluter Pays Principle Scope and Limits of Judicial Decisions* Chapter 4, https://orientblackswan.com/opaccess_pdfs/html/9789352875795/chapter4/chapter4.html (last visited Jan 28, 2023).

¹⁵⁹Just fine: The Hindu editorial on amending environmental laws, *The Hindu* (2022), <https://www.thehindu.com/opinion/editorial/just-fine-the-hindu-editorial-on-amending-environmental-laws/article65612132.ece> (last visited Jan 28, 2023).

¹⁶⁰UN Environment, *Environmental rule of law: First global report* UNEP (2019), <https://www.unep.org/resources/assessment/environmental-rule-law-first-global-report> (last visited Jan 28, 2023).

OPTIMAL POLLUTION: THE NEW POLICY FOR AN INDUSTRIALIZED NORTHEAST

Rashi Kumari & Sarthak Kumar***

I. INTRODUCTION

People today are taught from a young age to be environmentally aware. This has created a new generation of academics and youth who believe in a zero-carbon policy.¹⁶¹ This, however, is an ideal but improbable goal that may be detrimental to the overall growth of mankind. Therefore, it is suggested through this article that instead of aiming for a zero-carbon goal, we should adopt optimal pollution as the new ideal.

Optimal Pollution is the point where the money spent on abating pollution is equal to the actual damages caused by the pollution, thereby making the net damage cost to the environment zero.¹⁶² This article seeks to explore the various avenues that will promote industrial growth paired with a healthy northeast India and suggest relevant policy changes for the same.

II. WHAT IS OPTIMAL POLLUTION?

As introduced above, optimal pollution is an inclusive concept that takes into account the environmental and economic aspects of pollution. Producing cleaner can be extremely expensive.¹⁶³ The same cannot be upheld as an excuse to endanger the environment. However, pollution control norms can deter industrialization if made too stringent,¹⁶⁴ as elaborated ahead. Considering economic growth i.e. the end goal of any government, industrialization is as important as a healthy environment. Such concerns necessitate finding an inclusive solution. Thus, optimal pollution comes into the picture.

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¹⁶¹UN News, <https://news.un.org/en/story/2020/12/1078612> (Jan. 30, 2023).

¹⁶² George Halkos, *Optimal Pollution Level: A theoretical identification*, 37, TFO, 1475, 1475-1483 (2006).

¹⁶³ Marc A. Rosen, *Encyclopedia of Energy*, SCIEDIRECT (Jan. 30, 2023, 3:57 PM) <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/pollution-cost>.

¹⁶⁴ Anthony J Barbera and Virginia D McConnell, *Effects of Pollution Control on Industrial Productivity*, TJIE, Vol 35. No. 2, December 1986., <https://www.jstor.org/stable/2098356>.

In the specific context of this article, an examination of the interface between ‘marginal abatement cost’ and ‘marginal damage’ of pollution is required.

Marginal Abatement Cost is the cost that is incurred by the firm while making itself emit less pollution. On the contrary, Marginal Abatement cost is the actual damage caused to the environment. If the MAC is too high then the firm is disincentivized as it cannot maximize its profit nor does the environment benefit any extra. Whereas, if the MDC is too high then the firm may profit while the environment and people living in the area suffer an irrecoverable damage cost. Therefore, the point where the $MAC=MDC$ is the point of optimal pollution. The applications of this principle with reference to the industrialization of the North Eastern region of India are described further on into the article.

III. HOW IS OPTIMAL POLLUTION RELEVANT IN NORTHEAST INDIA?

The question has two major aspects. Firstly, the Northeastern region of India is the cleanest and least polluted region of the Indian subcontinent.¹⁶⁵ This is partly because of its low hills, dense forests, and very low amount of industrialization.¹⁶⁶ However, the reasons for this low level of pollution is not good governance and business practices but rather a severe under funding and regulation of the industrial sectors.¹⁶⁷ The cost of protecting nature is so high that the development of the region is hampered.

The United Nations Industrial Development Organization mentions that Industrialization is key to the upliftment of any modern society.¹⁶⁸ The current Northeastern region of India is no exception to this. However, it is also a good point to note that industrialization in the northeastern region, if done carelessly, will lead to a rapid decline of the culture and environment belonging to the people of the region.¹⁶⁹ Therefore, in a pseudo conclusion to the

¹⁶⁵ National Pollution Control Day: 5 most and least polluted cities of India, THE TIMES OF INDIA, December 2, 2022.

¹⁶⁶Number of factories highest in Tamil Nadu followed by Maharashtra: Report, KnnIndia, December 3, 2019.

¹⁶⁷ NCERT, Human Geography, 85, (agrahayana 2021).

¹⁶⁸ *How Industrial Development matters to the well being of a population*, UNIDO, 1, 3-5 (2020), <https://www.unido.org/sites/default/files/files/2020-02/HOW%20INDUSTRIAL%20DEVELOPMENT%20MATTERS%20TO%20THE%20WELL-BEING%20OF%20THE%20POPULATION%20FIN.pdf>.

¹⁶⁹ TNI, <https://www.tni.org/en/article/conflict-and-development-in-northeast-india>, (last visited Jan. 30, 2023).

above question it is valid to say that the previously defined economic theory of optimal pollution is the answer going forward.

3.1. Industrialization in North-East India

Northeast India has always been a vital source of natural resources and green energy production. However, all these resources are taken out of the region due to a lack of secondary sector initiatives as mentioned above.¹⁷⁰ The region, therefore, needs to promote industrialization. However, the current environment laws such as the NGT Act,¹⁷¹ Air Act,¹⁷² EPA¹⁷³ etc. have failed to address a mutual solution for the development of industries and the protection of the environment.

A solution where the firms are allowed maximum profit and the damage cost on the environment is equal to said cost is a good way forward in the upliftment of the region. Subsequently, to promote employment, opportunities, and development, there is a dire need for new regulations which use optimal pollution policies as a guiding principle.

IV. ANALYSIS

This article introduced the concept of optimal pollution with the intention of suggesting a policy to suit the North East's unique geography. It explained the environmental and economic aspects of the same. Furthermore, the article introduced the significance of optimal pollution policies in the specific context of the Northeastern region of India.

The North-Eastern region is prone to multiple climate vulnerabilities such as severe landslides and floods, among other things. Such factors make setting up industries more difficult than that in other regions. However, as mentioned earlier, it is also the least polluted region in all of India. Thus, such as the NGT,¹⁷⁴ EPA¹⁷⁵ etc. should be amended after a specific cost-benefit analysis in the region. If the abatement cost would be lower in the Northeast, as explained above, profit maximization would be easier for firms compared to other regions. This would

¹⁷⁰ *Id.* at 9.

¹⁷¹ National Green Tribunal Act, 2010, No. 19, Act of Parliament, 2010 (India).

¹⁷² Air (Prevention and Control) Act, 1981, No. 14, Act of Parliament 1981 (India).

¹⁷³ Environment Protection Act, 1986, No. 29, Act of Parliament, 1986 (India).

¹⁷⁴ *Id.* at 12.

¹⁷⁵ *Id.* at 14.

make the region an attractive destination for new setups. It would resultantly give a much-needed boost to the North-eastern economy.

V. CONCLUSION

Every economy has its own trade-off between economic growth and pollution control.¹⁷⁶ World leaders like the US, UK, and India have adopted stringent 'zero carbon' goal-years. But instead of costing them economic growth, their environmental initiatives have actually made them globally-attractive destinations for climate-friendly business ventures. In fact, according to the 'Getting India to Net Zero' report, achieving net zero would increase India's annual GDP by up to 4.7% and create up to 15 million new jobs!¹⁷⁷ The North Eastern region of India should aspire to have both ends of the spectrum too.

The North Eastern region makes 8% of the Indian land but contributes a mere 2.5% to its GDP.¹⁷⁸ It is time that things took a turn for the better. On a concluding note, this article strongly advocates for the adoption of 'optimal pollution' laws in Northeast India.

¹⁷⁶ Liyuan Liu, Jing Zhu, Yibin Zhang, Xiding Chen, *An Optimal Pollution Control Model for Environmental Protection Cooperation between Developing and Developed Countries*, NIH (Jan. 20, 2023, 9:18 PM) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7312773/>.

¹⁷⁷ *Net Zero Emissions Target*, DRISHTI IAS (Jan. 30, 2023, 9:19 PM) [https://www.drishtiiias.com/daily-updates/daily-news-analysis/net-zero-emissions-target#:~:text=To%20achieve%20about%2050%25%20cumulative,Green%20Climate%20Fund%20\(GCF\)](https://www.drishtiiias.com/daily-updates/daily-news-analysis/net-zero-emissions-target#:~:text=To%20achieve%20about%2050%25%20cumulative,Green%20Climate%20Fund%20(GCF).).

¹⁷⁸ FICIFORTHEASTCOUNCIL, https://ficci.in/state/1011/Project_docs/ficci-north-east-council.pdf (last visited Jan. 30, 2023, 21:10 PM).

CLIMATE-CHANGE INDUCED MIGRATION: RELIEF AND REHABILITATION IN INDIA

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I. INTRODUCTION

Climate change induced migration is being deemed by numerous scholars as the looming global crisis of our times. It is estimated that around a billion people would be forced to vacate their homes and flee as a direct consequence of climate related disasters such as cyclones, floods and droughts. According to the Intergovernmental Panel on Climate Change, global warming would play a significant role in the permanent and temporary forced displacement of people.¹⁷⁹ Even a small but certain increase in global temperatures is expected to result in the exposure of a surplus 170 million individuals per year to coastal flooding.¹⁸⁰ Such events are mostly going to occur in the mega deltas of Asia especially in coastal India and Bangladesh. Residents of these regions are also the most vulnerable to droughts and food and water scarcity.

It was estimated that approximately 70,000 people living in the Indian portion of the Sundarbans would be forced to flee as a consequence of climate change.¹⁸¹ The Lohachara Island on the Hooghly river, which was once called home by 10,000 people has completely submerged under water.¹⁸² The gravity of this phenomenon is augmented in the absence of a universal international framework which would address or even define the concept of climate change induced migration. In direct consequence of this epistemological lacunae is an absence of and deficiency in local jurisdictional policies and legislation to combat climate change induced migration.

Even though the disastrous consequences of climate change are not insular to boundaries and borders, people and communities often resort to migration as a temporary resolution to such encounters. The location and geographical aspects of India make the nation extremely susceptible to large scale destruction resulting from natural calamities which hit the subcontinent. Even though there exists the recently developed Disaster Management Act,

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¹⁷⁹ Mostafa Mahmud Naser, Climate Change, Environmental Degradation, and Migration: A Complex Nexus, 36 WM. & MARY ENVTL. L. & POL'Y REV. 713 (2012).

¹⁸⁰ *Id.*

¹⁸¹ Asish Kumar Ghosh et al., *Adapting to Climate Change-induced Migration* 53(17) ECONOMIC AND POLITICAL WEEKLY (2018).

¹⁸² *Id.*

2005,¹⁸³ there is no specific legislation or legal framework to cater to the looming crisis of environmental migration.

II. CLIMATE MIGRATION AND NATURAL CALAMITIES

Environmental migration or climate-change induced migration is not solely motivated by environmental threats but is often augmented by other factors concerning socio-economic destitution.¹⁸⁴ The relationship between climate change and migration is complex. The lopsided effects of climate change on the poor are widely known. In this case, at the time of natural disasters people can also migrate within national boundaries or might have to leave their countries in order to seek homage in other nations.¹⁸⁵

India particularly, has witnessed large scale destruction in the previous decades as a direct result of natural calamities, which has forced people to desert their homes and villages due to the inhospitable living conditions engineered by climate change. It has been estimated that every year approximately 3,00,000 individuals migrate from drought-ridden Bolangir to Western Odisha.¹⁸⁶ Moreover, India has also seen an influx of refugees from bordering nations due to the same reason. The submergence of coastal portions of the Sundarbans has forced several Bangladeshi citizens to migrate to India. It is held that 120 million would be rendered homeless by 2100 in Bangladesh and India because of the sinking coastline, flooding and intensification of cyclonic activity.¹⁸⁷ Climate change further exacerbates these conditions and renders several without the means to earn a livelihood.

According to the Central Water Commission, 26 lakh residents of the state of Assam are affected on a yearly basis due to recurrent flooding which causes a loss of Rs. 128 crore per annum.¹⁸⁸ In cases of downward flooding, the government's response has mostly been the construction of dams. Alternate methods of flood mitigation or control are rarely considered as dam construction is underlined by the ethos of economic progress.

III. EXISTING LEGAL FRAMEWORK

¹⁸³ The Disaster Management Act, 2005, No. 53, Acts of Parliament, 2005 (India).

¹⁸⁴ Katrina Miriam Wyman, Responses to Climate Migration, 37 HARV. ENVTL. L. REV. 167 (2013).

¹⁸⁵ *Id.*

¹⁸⁶ Hans Nicolai Adam et al., *Uncertainty in Climate Science Extreme Weather Events in India* 53(31) ECONOMIC AND POLITICAL WEEKLY (2018).

¹⁸⁷ *Id.*

¹⁸⁸ *India's Relief and Rehabilitation Efforts Need to Be Revised for a More Inclusive Approach to Disaster Management*, EPW, Oct. 12, 2022, at 2, <https://www.epw.in/engage/article/indias-relief-and-rehabilitation-efforts-need-be>.

In the absence of a legislation to specifically target the woes of those being displaced due to climate change motivated calamities the Disaster Management Act of 2005¹⁸⁹ can be temporarily utilised to offer some relief by virtue of some provisions which allow the State, wide reaching powers. The term disaster in the Act has been defined to include natural calamities which could be a result of man-made causes or by negligence or accident result in large scale destruction and loss of life.¹⁹⁰ Disaster management as per Section 2(e) includes prompt response to a disaster, evacuation, rescue and relief as well as rehabilitation and reconstruction.¹⁹¹ Section 12 of the Act authorises the National Disaster Management Authority to recommend guidelines about the minimum standards of relief awarded to victims and does not limit the authority in this regard by offering it wide powers.¹⁹²

There exists an elaborate system for disaster management as the Disaster Management Authority has chapters at the national, state, district and sub-district levels. The responsibility of providing relief and assistance is on the State authority while the National authority supplements these efforts and prepares contingency action plans. Section 34(m) also enables the District authority to take all necessary steps in order to protect and provide relief to the community in the event of disaster.¹⁹³ Section 35 further prescribes that the Central government take all such steps as deemed necessary by it for the purposes of disaster management.¹⁹⁴ Section 35(2)(g) further provides it with powers to coordinate with the agencies of the United Nations and other international organisations to fulfil the objectives of the Act.¹⁹⁵

Section 38 lays down the responsibilities of the State Authority.¹⁹⁶ Section 38(2)(k)¹⁹⁷ places responsibility on the State authority to provide rehabilitation and reconstruction assistance to the victims. Section 38(2)(l) provides wide powers allowing it to take any action as expedient to effectively implement the provisions of this Act.¹⁹⁸ Section 61 also holds that while providing relief and assistance to victims of natural calamities the State cannot discriminate on the basis of sex, caste, community, descent or religion.¹⁹⁹

¹⁸⁹ The Disaster Management Act, 2005.

¹⁹⁰ The Disaster Management Act, 2005, § 2(d).

¹⁹¹ The Disaster Management Act, 2005, § 2(e).

¹⁹² The Disaster Management Act, 2005, § 12.

¹⁹³ The Disaster Management Act, 2005, § 34(m).

¹⁹⁴ The Disaster Management Act, 2005, § 35.

¹⁹⁵ The Disaster Management Act, 2005, § 35(2) g.

¹⁹⁶ The Disaster Management Act, 2005, § 38.

¹⁹⁷ The Disaster Management Act, 2005, § 38(2)(k).

¹⁹⁸ The Disaster Management Act, 2005, § 38(2)(l).

¹⁹⁹ The Disaster Management Act, 2005, § 61.

IV. INEPTNESS OF THE LAW

In spite of the existence of such an elaborate mechanism for redressal it has not translated into substantial tangible benefits or relief for victims of disasters. The argument that these climate change refugees who are being forced to relocate or flee from their homes in light of the dangers heightened natural phenomenon are distinct from migrants as unlike migrants they are not motivated by solely economic or social justifications.²⁰⁰ These disasters present a direct threat to their lives and the state's inability to effectively rehabilitate them is a direct violation of their right to life and liberty. Even though such losses to livelihood are not completely avoidable, adequate and timely response plans by the government can help mitigate the destruction to the lives these communities build for themselves. It has been documented that following the devastation caused by cyclone Aila in Kolkata, the government's failure and complacency in providing prompt relief and repairing impaired embankments led to large-scale flooding in the village in the Sundarbans which has further caused large scale salination of the land and rendered it uncultivable.²⁰¹ These developments prompted large scale migration from these islands on the Sundarban Delta towards the mainland.

Even though recently the issue of climate change refugees was discussed in the Lok Sabha and the government contended that the Indian system was adequately prepared to deal with such an issue,²⁰² no plan or guidelines have been presented yet. It is also worth noting that the Indian government does not map the influx or outflux of climate refugees neither between State borders, nor in the case of those entering from neighbouring countries.²⁰³ In the absence of a globally agreed upon definition of who can be categorised as a climate refugee it is extremely difficult for any state to map the movement of people who are forced to migrate due to these circumstances. As was explained above, there is also no legislation which attempts to deal with this subject matter which is why it is extremely difficult for aggrieved victims to gain redressal or relief. Neither is any jurisdiction willing to accept climate migrants.

V. INTERNATIONAL AND REGIONAL LACUNAE

²⁰⁰ Autumn Skye Bordner, *Climate Migration & Self-Determination*, 51 COLUM. HUM. RTS. L. REV. 183 (2019).

²⁰¹ Nazes Afroz, *Cyclone Amphan: Why the government cannot afford to repeat its mistakes in the Sundarbans*, THE CARAVAN, Oct. 30, 2022, at 2, <https://caravanmagazine.in/environment/cyclone-amphan-why-the-government-cannot-afford-to-repeat-its-mistakes-in-the-sundarbans>.

²⁰² Jacob Koshy, *India prepared for 'climate refugees', government tells Lok Sabha*, THE HINDU, Oct. 31, 2022, at 2, <https://www.thehindu.com/news/national/india-prepared-for-climate-refugees-government-tells-lok-sabha/article65278748.ece>.

²⁰³ Adam supra note 186.

In *Ioane Teitiota*,²⁰⁴ a native of Kiribati sought refuge in New Zealand on the grounds of climate change and global warming depleting his nation's geographic area. The New Zealand Court decided that the impacts of climate change on Kiribati were not enough for the appellant to be awarded refugee status as there was no element of persecution which is required under the 1951 Convention on refugees. In addition to finding a lack of serious harm or serious violation of human rights were the appellant to return to Kiribati, the court also expressed concern about expanding the scope of the Refugee Convention and opening the door to millions of people who face hardship due to climate change.²⁰⁵

The UNHRC has recently held that forcing a person to return to their native place will threaten their right to life under Article 6 of the International Covenant on Civil and Political Rights (ICCPR).²⁰⁶ In light of the scattered and underdeveloped jurisprudence in this matter, the provisions of the Disaster Management Act, 2005²⁰⁷ can be interpreted and amended to provide refuge to climate migrants in India. The Sections of the Act which have been listed enough are adequate to allow the State to come up with policies to target the growing pandemic of climate migration and give fruitful effect to the same, but this has not been the case. According to the People's Archive of Rural India, the village of Ghoromara in the Sundarbans has experienced a reduction in its land mass by almost half since the 1970s, forcing its residents to leave.²⁰⁸ The 2011 Census has recorded the population of the fully submerged village of Khasimara as zero, but the Indian government refuses to recognise these people as climate refugees as they have migrated internally. Post 1993, the government has also ceased resettlement operations for these villagers citing a lack of available land.²⁰⁹ Life for these migrants is extremely difficult marked by the lack of essential facilities such as food, shelter and education and also the looming despair of having lost their home and sense of community.

VI. SUGGESTIONS

The State's inability and unwillingness to provide relief and rehabilitation to such victims acts as a doubly-thrust stake into their hearts. A thorough policy framework to address the woes of

²⁰⁴ *Ioane Teitiota v. The Chief Executive of the Ministry of Business, Innovation and Employment* [2015] NZSC 107.

²⁰⁵ *Id.*

²⁰⁶ International Covenant on Civil and Political Rights art. 6, Dec. 16 1966, 999 UNTS 171.

²⁰⁷ The Disaster Management Act, 2005.

²⁰⁸ Urvashi Sarkar, *Our houses are vanishing. Nobody cares*, PARI (October 12, 2022, 10:04 AM) <https://ruralindiaonline.org/en/articles/our-houses-are-vanishing-nobody-cares/>.

²⁰⁹ Urvashi Sarkar, *Sundarbans: 'Not a blade of grass grew...'* PARI (October 12, 2022) <https://ruralindiaonline.org/en/articles/sundarbans-not-a-blade-of-grass-grew.../>.

climate refugees needs to be developed both in the context of the International Refugee Convention and Indian legislation. This would create a double obligation on the State to be responsible towards this special category of migrants. The category of environmental refugees must be developed in order to provide aid and relief to these vulnerable communities. Even though India has enacted the National Action Plan for Climate Change²¹⁰ and a large portion of the same is still being developed, it contains space for the inclusion of climate refugees and their vulnerabilities.

Section 38 of the Act²¹¹ places responsibility on the state governments to rehabilitate victims of natural disasters but is futile in application on cases of inter-state migration as elements of parochialism would inhibit other states to welcome and aid such projects. It is recommended that the powers and responsibilities of rehabilitating and resettling climate migrants be vested in the National Authority and there be enough teeth in the proposed provision to mandate states to accept victims from across state borders. Adequate funds for these projects should also be channelled by holding corporations and private businesses accountable for the damage their activities incur on the environment by developing a stipulation under their CSR mandates.²¹² The current developmental model must also be accessed and made to include a fair social policy to usher in responsive governance by limiting practices which seriously injure the environment in the name of development and economic growth and provide place to the interests of communities who rely on traditional agrarian and pastoral ways of living and are already marginalised.

VII. CONCLUSION

The suffering which has been caused by climate change and global warming has been uneven and targets the poor of the world in a starker, more painful manner. The current legislation and jurisprudence in this regard is starkly inadequate and requires serious and urgent upheaval. It is necessary that the definition of political refugees be widened in both the international and national scenario to provide recognition and respite to environmental refugees. Their nomenclature as refugees and not migrants is essential to highlight the forced nature of displacement they undergo and the severe threat to their right to life under several national and international obligations. Adequate policy framework needs to be constructed which must be

²¹⁰ Gitanjali Sreedhar, *Climate change and air pollution: Two sides of the same coin* THE LEAFLET (Oct. 31, 2022) <https://theleaflet.in/climate-change-and-air-pollution-two-sides-of-the-same-coin/>.

²¹¹ The Disaster Management Act, 2005, § 38.

²¹² Surbhi Arul, *India needs to recognise the rights of climate refugees* INDIA DEVELOPMENT REVIEW (Oct. 12, 2022) <https://idronline.org/article/climate-emergency/india-needs-to-recognise-the-rights-of-climate-refugees/>.

sensitive to the differing impact of climate change across socio-economic fault lines. Intangible long-term effects of loss of livelihood of such disasters is more pronounced on poorer communities and rehabilitation efforts must contain provisions which make space for them.

LAWS RELATED TO GRANITE QUARRIES AND THEIR ENVIRONMENTAL IMPLICATIONS

*Perla Bali Sai Charitha**

I. INTRODUCTION

Granite quarrying is something that is similar to mining. Granite these days is the most needed source for the construction of a building. Day by the day the need for granite is being increased and this industry has a rapid growth in recent times.

The procedure or the method that is followed for the extraction of granite is generally known as open-pit mining or blast mining. Minerals are extracted through various means. One of which is where a pit is made with manpower or using equipment. One of which is generally followed is blasting where they would blast, so that later the pieces would be collected and then they will be refined. In this whole process even though it has a great impact on the economy positively by generating employees and various other uses. Despite all other uses, it also has an impact on the environment and human life which would be discussed in the manuscript.

II. LAWS ON GRANITE QUARRYING AND ENVIRONMENTAL PRESERVATION

In India, we have laws that regulate granite quarrying and laws for the protection of the environment as well. All the laws that are made in the view to regulate the actions and if in case of any violation of such act, then the same will be penalized or punished according to the provisions of the laws. Here in this chapter, we would certainly discuss a few laws that are governing Granite quarrying and environmental preservation.

Firstly, before speaking about enactments. The constitution of India in its Concurrent list, i.e., List III²¹³ has given the power to make or enact laws that are related to the conservation of forests, protection of wildlife, pollution control, conservation of mines, etc. If any entry is in the concurrent list, then both the Central and State Governments have the power to enact the laws. Keeping this in view, there are laws enacted regarding the current issue in the discussion by both the Central and State Governments which will be discussed in this chapter.

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²¹³ INDIA CONST. art.246, List-III.

Before going through the rules, one point has to be specified, Whether the granite is considered as a mineral or not. This question was answered in the Lok Sabha question round. The answer given was, “*Granite is a minor mineral, as defined under section 3(e) of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).*”²¹⁴

2.1. Granite Conservation and Development Rules

This Act is all about the Prospecting and Quarrying of Granite. The Act has provided the provisions for working activities and the rules that are needed, for the permissions that are to be taken for lease, regarding the prospecting operations, mining plan, regarding the notices that are to be served and the returns (financial matters), Qualifications for the employers and the duties of the mining authorities and the workers, in case of any dispute arises it also specifies about the appellate authority and also regarding the penalties and also the scientific way of mining methods were specified.

When we specify the scientific ways, it includes the protection of the environment and the protection of the granite reserved, and the provisions related to the same. The Act also included a specific chapter on the same.

- *Chapter VI of the Rules,*

The Chapter²¹⁵ has 9 sections that discuss various aspects of the environment. It mentions that the license or the licensee holder while prospecting, mining, or processing granite, all reasonable procedures for environmental protection and pollution control must be taken. It was also mentioned that the topsoil that would be useful in future times. The restoration and the rehabilitation of the waste acquired while mining in the granites, have to be taken care of. The wastage should be stored in a separate space. Every leaseholder must restore, reclamation, and rehabilitate areas damaged by prospecting or mining operations in a staged manner, and must complete this work before the end of such operations and the abandonment of the granite quarry. There must be a regulation on air and water pollution and the necessary precautions have to be taken. The holder must take care to discharge the minimal toxic effluents into the atmosphere and it should be taken care of in such a way that no harm is caused to the environment that is surrounding the area. It must be within the permissible limits only. To

²¹⁴ PARLIAMENT OF INDIA: LOK SABHA, <https://www.mines.gov.in/writereaddata/UploadFile/lu4141.pdf> (last visited: 17 October 2021).

²¹⁵ Granite Conservation and Development Rules, 1999, Ch. VI, §29-97, 1999 (India).

minimize the effect of land degradation it was to be seen that the restoration of flora is taking place. All these are specified in the Rules from Section 29-37.

Additionally, section 52 also speaks about the applicability of Minor Mineral Concession Rules that are formed by the State Government in those particular states.

2.2. Minor Mineral Concession Rules

The State Governments Grant applications for the lease or license as per provisions provided through these rules. Few of these rules in some states also specify environmental conservation. While disposing of the application this factor was also taken into consideration.

2.3. Mines and Mineral Development and Regulation Act

This Act was enacted to regulate the mining sector in India. This Act in section 9B and Section 9C has provided for the formation of bodies at the district as well as central level. These specify that the government by notification can formulate a non-profit body and those bodies would work at the places or the regions that are affected by mining activities that took place there. The funds under this would be used to protect such areas.

Section 4A of the same Act has provided the grounds for termination of the license which mentioned the preservation of the environment and public safety, regulation of mines, prevention of pollution, and conservation of mineral resources as the grounds.

Section 18 was also pressurizing on the prevention of pollution and environmental protection and in these aspects, under section 20A the central government also has powers to pass the directions.²¹⁶

2.4. Air (Prevention and Control of Pollution) Act 1981, and Environment Protection Act, 1986.

The mining places or the authorities are also authorized to follow this enactment and that must be within the limits as specified in the enactment. If in case of any violation, the authorities concerned would be penalized or punished as provided under the enactment

²¹⁶ Mines and Mineral Development and Regulation Act, 1957, § 9B, 9C, 4A, 18, 20A, No. 67, Acts of Parliament, 1957 (India).

In addition to the above, the Constitution of India also mandates the preservation of the environment. Article 48-A was added to the constitution to provide stronger provisions for environmental preservation and protection.²¹⁷

Article 253²¹⁸ of the Constitution enables our nation's Parliament to enact legislation that will apply to the entire or a portion of the country's territory to carry out an agreement or convention reached with another country or country. So if any convention or treaty was signed among the countries, the Indian Parliament has the power to make a law accordingly. So the International environmental aspects will also be discussed.

III. CASE STUDIES

*3.1. A Case Study of Vellarada Panchayat of the Thiruvananthapuram District, Kerala*²¹⁹

This case study was taken place at Vellarada village panchayat in the state of Kerala. This area has granite reserves located. So granite quarrying is being taken place in this area. The study was conducted in an area where the opinion of various residents and workers are taken into consideration in the study. It mainly focuses on the impact of granite quarries on the environment. The result as observed by researchers in the study is that the quarrying has affected many people. Most of the people residing in that area are against granite quarrying.

It was discovered that, while these activities are important from an economic standpoint, they harm the environment. Quarrying, by its very nature, inexorably degrades the ecological and aesthetic qualities of the land in Vellarada Panchayat. The main problems that are being faced by the people residing there as observed by the researcher are pollution of air, water, and noise, shortage of water and mixing of effluents in water, soil erosion, landslides, land degradation, various health problems, etc. It was observed that the major problems are faced by the people who are residing near to that granite quarrying than the people living/residing far away. Not only the residents but also the workers are suffering from various diseases such as asthma, respiratory problems, skin allergies, tuberculosis, hearing problems, eye problems, chronic bronchitis. Despite all these few are supporting these quarrying activities because they are working in the quarry or else their families or friends working there. It was also observed that

²¹⁷ INDIA CONST., art. No., 48-A.

²¹⁸ INDIA CONST., art. No., 253.

²¹⁹ Chandran, Sarath, Sasikala, *Impact Of Granite Quarry on Human Life and Environment A Case Study of Vellarada Panchayat of Thiruvananthapuram District, Kerala*, RESEARCH GATE, (last accessed: 04-03-2022).

due to the problems faced by the people, the owners of the quarries are ready to help the people residing near the quarry as they were the majorly affected.

3.2. Granite Quarry Activities in Chittoor District of Andhra Pradesh, India²²⁰

This case study was on the granite quarry area in Chittoor district, Andhra Pradesh. This study was made in the form of a questionnaire and interview basis, where the questions are posed to the workers and the residents of that area. The data is collected and later the same was analyzed. This study was mainly concentrated on the Occupational and Environmental Impacts of granite quarry activities in that area.

The researchers of the study observed that there is a lot of noise pollution created at the time of quarrying or blasting and the activities of quarrying are conducted. This also affects the efficiency of work done by the employees that would also result in a decline in production. Because of the blasting activities taking place, it not only affects the environment and the humans but also the buildings located in that area. When the blasting has taken place there are buildings which got cracks, few stones are dropped on the buildings and the farms which lead to damage of property as well. Not only this, but the blasting has also injured the workmen because of the deficiency in the precautions that are needed to be taken. Quarry employees are exposed to high amounts of dust particles, accidents, high levels of noise, and other contaminants regularly, posing a serious health risk. Respiratory and skin disorders are more common in the area. The findings of the study indicated that the majority of the workers had hearing loss, skin problems, and respiratory problems. The frequency of occupational health risks and a high death rate were found among the diverse workers. This might be the result of carelessness. It was observed that the majority of workers are not properly protected while at work.

In addition, the study also provided a few suggestions to be taken to minimize these impacts of granite quarrying.

IV. IMPACT ON ENVIRONMENT AND HUMANS AND SUGGESTIONS

²²⁰ MVB, Reddy and Yasobant, Sandul and Boondesh, Nantawit, *Occupational and Environmental Impacts of Granite Quarry Activities in Chittoor District of Andhra Pradesh, India* (August 8, 2017). SSRN: <https://ssrn.com/abstract=3015128> or <http://dx.doi.org/10.2139/ssrn.3015128>

As observed through the case studies above, granite quarrying has a wide impact on the environment may it be air, water, soil as well as noise pollution.²²¹ That again leads to the destruction of property and causes health problems to the workers or residents. A few of the diseases that are discussed are hearing problems, skin problems, breathing problems, and others. It was causing the declination of the groundwater as well. The quarrying in areas also further leads to earthquakes in those areas. In addition to that, some problems are being increased due to the lack of precautions or not taking proper precautions. There are instances where workers have lost their lives at the workplace and are also injured. In addition to that generally blasts occur in granite areas. When the blasts occur, proper communication was not given to the people and no signboard specifying the thing leading the people to go near those areas that are keeping their lives in danger. Another most important thing is that due to illegal mining, these impacts or the problems are increasing. This is the main threat that reserves are being reduced to future generations as well.

4.1. Suggestions

The license holder must take responsibility and must regulate the emissions which are causing environmental damage. The laws which are discussed above must be abiding by the quarry's license/leaseholder. They must be educated on the laws related to environmental protection. The quarrying dust and the wastage have to be seen that is restored and reused than making it as a dump. This must also be seen that the wastage is disposed of correctly.

The Quarry unit must be accompanied by the safety unit where they are to be provided with the protective tools that are to be worn by the workers during working hours. The workers are also to be educated regarding the equipment and its usage. Regular checkups of the workers' health conditions have to be maintained. So that if at all, any health problem arises, it would be found at the beginning stage. So, one can take more care.

V. CASE LAWS

In the case of Romy Thomas v. Directorate of Environment and Climate Change Assessment Authority,²²² The individuals apprehending the 2 Respondent's operation of a granite quarry have filed this writ petition. The petitioners claim that the 2 Respondent operates a quarry

²²¹ Oguntoke Olusegun, et.al, *Impact of Granite Quarrying on the Health of Workers and Nearby Residents in Abeokuta Ogun State, Nigeria*, Ethiopian Journal of Environmental Studies and Management, Vol.2 No.1. 2009.

²²² Romy Thomas v. Directorate of Environment and Climate Change Assessment Authority, 2014 SCC OnLine Ker 19217.

without acquiring the requisite environmental permits. The learned counsel for the 2 Respondent, on the other hand, contends that, according to this court's ruling in W.P. (C) No. 9230 of 2014, the 2 Respondent must get permission from the Kerala Environmental Impact Assessment Authority within two months after receiving a copy of this judgment. As a result, this writ petition is denied.

Therefore, it was clear that permission from the concerned authority must be taken concerning the environmental impact assessment for running a granite quarry.

In the case of Hamsa Minerals and Exports, Ongole, Prakasam District v. Government of Andhra Pradesh and others;²²³ the petitioners are the owners of Black Galaxy Granite mining leases in Chimakurthy Village and Mandal, Prakasam District. They've been working in the mines for a long time. According to reports, the Vigilance and Enforcement Department conducted an investigation and discovered that the petitioners had failed to meet statutory requirements, including obtaining Environmental Clearance from the State Level Environment Impact Assessment Authority (SLEIAA), consent for establishment (CFE), and consent for operation (CFO) from the Andhra Pradesh Pollution Control Board (APPCB) and also various other claims put forth.

Respondent No. 2 has taken a careless and haphazard approach to order a halt to mining activities without particularly addressing the petitioner's response to the notice's numerous points. The petitioner claimed that the Mine employs over 1800 people and that it must fulfil selling orders worth roughly Rs. 50.00 crores. Stopping mining activities as a result of respondent No. 2's challenged order would have significant implications.

The court has observed that stopping mining operations will bring all mining activities to a halt, causing the lessees' operations to go haywire and jeopardizing the interests of thousands of workers and employees who live on these enterprises.

The writ petitions are disposed of in the following terms, based on the facts and circumstances of the case, to balance the interests of the State and the lessees:

1. "the petitioners shall comply with all the deficiencies as pointed out in the show-cause notices issued by respondent No. 2, if they have not already done, within the time

²²³ Hamsa Minerals and Exports, Ongole, Prakasam District Versus Government of Andhra Pradesh and others; 2013 SCC OnLine AP 903: (2014) 4 ALD 312: (2014) 6 ALT 572.

permitted by respondent No. 2 in the impugned orders (i.e., three months from the date of passing of the said order);

2. by the expiry of the three months, the petitioners shall file compliance reports before respondent No. 2 enclosing all the relevant documents in support thereof;
3. respondent No. 2 shall thereupon cause an inspection held and issue notices to the petitioners wherever the deficiencies were not complied with and after considering the explanations, if any, that may be filed by the petitioners, he shall be free to pass orders; and
4. till the process referred to above (i.e., 1 to 3 supra) is completed, the petitioners shall be permitted to carry on the mining operations as per the lease deeds held by them.”

VI. CONCLUSION

The manuscript has successfully answered the research questions with the help of various case studies referred to and other sources. Every coin has two faces. Despite all the negatives still, there is a positive corner on the granite quarrying. It is one of the fast growing industries and it was also generating employment. If few precautions are taken by the people, workmen, as well as employers at the granite quarries, the destruction of the negative impacts can be deducted. In addition to that, it is to be seen that the laws which are related to this industry must be followed.

BURNING OF CROP RESIDUE: A HUGE THREAT TO ENVIRONMENT AND HEALTH

Anamika Singh & Harsh Raj Singh***

I. INTRODUCTION:

The burning of the crop residue has started in recent years due to mechanization of the crop and increase of the labour charges. To minimize the cost of the agriculture, the farmers have been resorting to mechanization and burning of the crop's residue. Earlier Indian farmers, especially those farmers belonging to above states used to grow only two crops but in order to increase profits and to feed the huge population of India, they have been constrained to grow more crops, therefore, many of them have started growing three crops to improve their economic status and to meet the demand. Consequent upon the above circumstances, peasants of above states have time constraint, in between the two crops, to find a suitable option to manage the stubble of their field other than burning. We cannot say that farmers are unaware of the hazards of stubble burning but there are time constraints and economic constraints they face. Prior to mechanization of crop harvesting, most of the parts of the crops were removed by laborers at the time of reaping of the crops but harvesters remove only the cereal part of the wheat and paddy. Another reason behind burning of the parali is that it eliminates the threat of termites and mice. The shorter winter season is another reason, it is fact that contrary to earlier days the period of winter season has been diminishing fast day after another, consequently, the farmers have a very short interval to sow rabbi crop, and therefore, also they are compelled to burn the parali/stubble of the paddy crop to sow the ensuing rabbi crop. It is a fact that the parali can be removed easily by huge machines and same may be dumped at a suitable place and may be used for making organic manure which would help produce quality crops apart from enhancing the yield of the crops. In my view, there is lack of vision and will power in farmers as well as state governments and the Central government, for; both of them maintain ignorance and apathy to the ensuing huge threat to health and environment.

II. CONCERN FOR THE SOCIETY AND STEPS TAKEN

The environmental risk can be understood by the following figures: – each year, burning of crop residue has been releasing 149.24 tons of carbon dioxide, 0.9 tons of carbon monoxide,

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0.25 tons of oxide of sulfur, 1.28 tons of particulate matter.²²⁴ These are directly increasing the environmental pollution and are responsible for melting of snow in Himalayan glaciers. The residents of the states named above as well as the residents of New Delhi and NCR are prone to several diseases of lung, eye and throat. The fertility of the soil has adversely been affected. The necessary creatures of the soil have been eliminated fast, which are necessary for fertility and it has also raised the temperature of the soil.

III. SUITABLE ALTERNATIVES/OPTIONS TO PARALI BURNING

Farmers of Punjab, Haryana and Uttar Pradesh who work hard to produce food for our countrymen, engage in highly unhealthy practice of stubble burning. After reaping the crop of paddy, they are in haste to use the land for sowing rabi crops and apart from this shortcut, they adopt economical shortcut i.e. they burn the parali in the field itself to manage their rabi crop. However, this may be cheaper and faster; the stubble burning is highly incredible and unsustainable for the environment, for, it fills the air with soot. Disperses nutrients out of the soil and leads to several other complications. In the above background, it is necessary to find out suitable alternatives and solution to deal with the issue of stubble burning.²²⁵

IV. NEGATIVE IMPACTS AND THEIR SUITABLE SOLUTIONS

1. *It is one of the biggest contributors to atmospheric pollution* – Stubble burning is a significant contributor to atmospheric pollution causing agents. It comes next to industrial and vehicular emissions, leading to atmospheric pollution. In Asian countries, around 60 % of total biomass emissions come from stubble burning; at the same time globally, it contributes about 25 % of the total biomass burning (including forest fires). The dangerous haze, surrounding the national capital and NCR, has directly been linked with stubble burning during winter season.

2. *Human Health hazard* – Several diseases have germinated due to pollution caused by stubble burning, resulting in air pollution – Ex. Skin and eye irritation, severe neurological, cardiovascular and respiratory diseases. It also decreased the mortality rates. For example, the life expectancy of inhabitants of Delhi has decreased approximately by 6.5 years.

3. *Injurious to soil health and fertility* – Parali burning removes the necessary ingredients of the soil such as Nitrogen, phosphorous and potassium. It kills necessary microorganisms, such

²²⁴ Ramesh Singh Yadav, Stubble burning: a problem for the environment agriculture and humans, DOWNTOEARTH (June4,2019), <https://www.downtoearth.org.in/blog/agriculture/stubble-burning-a-problem-for-the-environment-agriculture-and-humans-64912>

²²⁵ Nurture Farm, From Waste To Wealth, THBL, September, 09, 202

as worm etc. Temperature of soil also increases to a level which is contrary to germination and growth of the soil. Owing to pollution by parali burning, acid rain takes place which enhances the germination of pests and diseases.

4. *Injurious to the national economy* – Owing to an increase in air, soil and plants pollution, the number of intakes of foreign and national tourism has been decreasing and the same has been costing the national economy of our country. Tourism is an important source of the Indian economy. It provides foreign currency and it also generates employment in a large number in different parts of our country. As per a report published in Hindu Newspaper, there has been a 25 to 30 % decrease in the National capital itself. The report also says that 14 out of 20 the most polluted cities are from India, which is a matter of great concern. If we do not pay heed to the problem, we are going to face tremendous economic problems due to the decrease in tourism and especially the foreign tourists.²²⁶

V. ALTERNATIVES TO STUBBLE BURNING

a. The Indian Agricultural Research Institute, PUSA, has devised a radical solution to stubble burning in the form of bio-enzyme.²²⁷ When this enzyme is sprayed on the stubble, it decomposes within a period of 20-25 days, turning into manure which enhances the soil quality and fertility both. It also increases the organic carbon and soil health and it reduces the use of fertilizer for the next crop. It prevents acid rain, decreases the temperature of the soil. It prevents emission of greenhouse gases. As a result, the quality of fresh air increases. It increases the soil nutrients if such a method to decompose the stubble is adopted for a long period by the farmers. It also reduces the cost of the farming and nutrients capacity of the cereals and grains.

b. Public private partner participation – Such participation will help boost the agricultural sectors. The farmers have a little capital to use technology in agricultural sectors, therefore, public private participation will certainly boost the agricultural yields and farmers will not be compelled to resort to adopt measures like parali burning.

²²⁶ WHO, India had 14 out of world's 20 most polluted cities in terms of PM2.5 levels in 2016, (May, 02, 2018), <https://www.thehindu.com/sci-tech/energy-and-environment/14-out-of-worlds-20-most-polluted-cities-in-india-who/article23745178.ece>

²²⁷ India Today Web Desk, Delhi govt finds solution to stubble burning problem, new bio-decomposer will dissolve stubble, (November, 13, 2020) <https://www.indiatoday.in/cities/delhi/story/kejriwal-delhi-govt-finds-solution-to-stubble-burning>

c. Use of technology – The parali burning is the negative outcome of agricultural revolution and the same can be eliminated by the use of technology and research-based agriculture.

d. Changing crop-based agriculture – Changing crop-based farming not only maintains the fertility of the land rather it increases the fertility and helps retain necessary ingredients of the soil, like nitrogen, magnesium etc.

e. Alternative use of stubble should be chalked out and found – Recently, many entrepreneurs, activists and start-ups have designed and devised alternative use of parali, like – use and throw glass, cups, plates and other utensils, made of parali, to be used for mass gathering and occasions. Moreover, other alternatives are available but the same are expensive which can hardly be borne by the farmers. These crop residues can be used for manure, manufacturing of plates, cups and other useful packing articles. It can also be used for feeding cattle and these crop residues are in a huge demand in the state of Bihar and eastern Uttar Pradesh.

f. Other uses – Instead of burning the stubble, it can be used for cattle feeding, manure manufacturing and manufacturing of mud houses which are very propitious for summer season. It works like natural air conditioners.

Since, the environment concern is directly linked with the future generations, therefore, fatality of the concern and its remedies should be taught to our students at the primary as well as even up to High School. In my view the students would work as motivators for their guardians and thereby the situation is supposed to improve. Apart from this, there should be mass awareness regarding the threat to society owing to parali burning and its consequences upon the health of the persons living in the society as well as upon the future generations.

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VI. RELEVANT DECISIONS OF THE HON'BLE COURTS

On Dec. 10, 2015, the National Green Tribunal banned crop residue burning in the states of U.P., Rajasthan, Haryana, and Punjab. Burning Crop residue is a crime under Section 188 of I.P.C.,²²⁸ and Air Pollution Control Act, 1981.²²⁹ However, implementation of these laws hardly

²²⁸ Indian Penal Code, sec.188

²²⁹ Air Pollution Act, 1981

comes on the ground. The Honourable Supreme Court as well as the High Court of Punjab have warned against the burning of the crop residues. In the case of *M.C. Mehta v. Union of India*.²³⁰ the Honourable Supreme Court has held that measures to prevent air-pollution in Delhi and NCR – Authorities concerned must discharge their duties by working in tandem in view of doctrine of public trust and take drastic steps to curb pollution in Delhi. The Honourable court further observed that in Punjab, Haryana and U.P., stubble burning has still been taking place – Chief Secretaries of states concerned and NTC of Delhi were directed to file an affidavit and to remain present in court on next hearing. The Court also said that stubble burning by farmers in these states is the main reason for accountability and Tortious liability, compensation, construction and demolition, open dumping of waste/garbage, burning and traffic congestion in NTC of Delhi are the other reasons of pollution. The Honourable court issued necessary directions to curb the use of these pollutants. The Honourable Court observed that NTC Delhi, state governments concerned and civic bodies failed to discharge their liabilities as per directive principles of the S.C. which resulted in violation of right to life of sizable population. The Honourable Court further directed the authorities right from the Chief Secretaries to Tehsildars and also to local bodies representatives, Pradhan/Sarpanch and IG/SP and other police machinery to ensure that not a single incident of stubble burning takes place henceforth as no farmer has right to burn stubble by putting life of people in jeopardy. The Hon'ble court also held that state governments are obliged to pay compensation for tortious liabilities. The Honourable Court gave other directions and orders to negate the stubble burning. It also suggested other measures, like constitution of high-level Committee decision and comprehensive plan for preventing stubble burning. The court directed the governments to make machines available to marginal farmers to avoid stubble burning, identifying hotspots and management thereof, completion of smog tower to avoid stubble burning.

The Honourable Delhi High Court in its own motion, in other cases, observed that the stubble burning problem has aggravated in March and October after harvesting of Rabi and kharif crops.²³¹ The Hon'ble Court was concerned about deteriorating air quality; the Honourable Court took suo moto cognizance of the problem and issued necessary directions to check it. The directions include, strict enforcement of ban on burning of stubble, including prosecution of violators, enforcement be monitored through satellite imaging, obtaining of weekly reports,

²³⁰ *M.C. Mehta vs. Union of India* (2020) 7 SCC 581

²³¹ Saba, Delhi High Court takes suo motu action in relation to growing air pollution in NCR region, (August, 04, 2017), <https://www.scconline.com/blog/post/2017/08/04/delhi-high-court-takes-suo-motu-action-in-relation-to-growing-air-pollution-in-ncr-region/>.

strict enforcement of graded Response Action plan, sharing of information regarding good result achieved at some places and replicating them at other places. Spreading awareness among the residents of vulnerable areas about preventive measures to be taken and providing them necessary facilities, involvement of corporate sectors in reducing the problem. The court advised several other measures to curb/eliminate the problem. Delhi Govt. has ordered against burning of Parali whereas Punjab High Court imposed Rs. 73 lacs on farmers against burning of stubble in farm. Burning of parali has been making soil and air poisonous.²³²

VII. CONCLUSION

The burning of crop residue should be made a severe crime by the central government as well as the state government and it should be implemented in the spirit of laws.

- Mass awareness should be started by schools, colleges and by social organizations.
- The media should come ahead to play an important role in awakening the masses. The masses should be inculcated that if burning of the crop residue is not stopped it will be a great threat to our society and for our future generations and should immediately be stopped.
- This threat of parali burning and environmental pollution should be added in primary school syllabus so that the coming generation should learn the threat to inculcate the same in their minds.
- Mass awareness through different social as well as cultural programs the people should be made aware of the menace of the air-pollution and environmental pollution otherwise we shall get diseased and ultimately the Earth shall turn into a hell or our civilization may collapse forever.

²³²*Supra* note 224.

THE ‘FASHIONABLE’ TRUTH: NEED FOR FASHION SUSTAINABILITY ACT

*Khushi Lunawat**

I. INTRODUCTION

“Fast fashion is not free. Someone somewhere is paying for it”

-Lucy Siegle

Fast Fashion is a term that is used for companies producing excessive clothes, in order to satisfy the current fashion trends of the society. Fashion, as we all know, is a time-changing concept, the clothes bought in order to satisfy a particular time’s needs, are not worn again because they become “out fashion” but can be reused, when it comes again “in fashion”. However, the harsh truth is that the resources used for making these clothes, which are used for an unreasonably short period of time, cannot be brought back. According to the UN News, it was found out that, one pair of jeans is worth of 2,000 gallons of water and the fashion industry uses water that can be used for the survival of around 5 million people every year. Moreover, clothing industry contributed 8% of global greenhouse gas emissions.²³³

This trend of Fast Fashion is not only harming the Environment but also infringes the Human rights of the Garment workers in the Fashion Industry. The industries in order to produce more of garments in a span of a short period, makes garment workers to work in very inhumane conditions for long working hours.²³⁴

There is no country that follows a sustainable practice when it comes to Fast Fashion. Despite its attractiveness, more laws and regulations are required to stop this trend. The unseemly environmental damages are unimaginably higher than the ‘*faux pas*’ of repeating an outfit.

II. FAST FASHION AND THE ENVIRONMENT

The world will always be thankful for the introduction of Globalisation which has fuelled the rapid growth of worth more than \$30 billion fashion industry. However, at the same time, it has proven to be a barrier when it comes to the sustainable growth of the planet. The industry which has its supply chains spread across the world has no or very minimal regulations.

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²³³ *UN launches drive to highlight environmental cost of staying fashionable | UN news* (January 1, 2023, *United Nations*, UNITED NATIONS, <https://news.un.org/en/story/2019/03/1035161>).

²³⁴ Niinimäki, K. *et al.* (December 3, 2022) *The environmental price of Fast Fashion*, *Nature News*. NATURE PUBLISHING GROUP, <https://www.nature.com/articles/s43017-020-0039-9>.

The Environmental damages done by fast fashion is enormous. A person while buying a piece of clothing is not only paying for that cloth but also imposing liability on the future generation to pay for the environmental damages made indirectly by him. The Apparel and footwear industry occupies nearly 9% of the world's greenhouse gas (GHG), which is more than the amount of GHG produced by France, Germany, and the UK combined. It is also believed that if the situation is left unquestioned then it may be responsible for more than 25% of the world's global carbon budget by the year 2050.²³⁵

According to an estimate, the Fashion Industry produces 100 billion garments a year for around 7 billion people.²³⁶ The concerning fact is not the excessive amount of production but the fact that almost 87% of the same ends up in a landfill or an incinerator. Moreover, the heinous effects of synthetic fabric, which covers 35% of all microplastics that are now in our own food chain, is responsible for contributing 20% of all industrial wastewater by its toxic chemicals, dyes, and heavy metals.

According to the UN Environment Programme, the second-largest consumer of water worldwide is the fashion sector.²³⁷ The analysis indicated that from the production of cotton to the retail distribution of the finished product, it requires 3,781 litres of water, or the amount a person drinks over the course of three years, to manufacture a pair of jeans.

The Fast-Fashion industries in India have not left any tables unturned when it comes to environmental damage. India has always worshipped nature, be it rivers, lands, mountains, etc. However, this ever-growing trend of Fast Fashion says otherwise. The people residing in India are responsible for disposing of more than 1 million tons of textiles every year, with most of it coming from the household sources. Moreover, textile waste has made it the third largest source of municipal waste in India.

In accordance with research co-produced by the Indian Chamber of Commerce (ICC), India's domestic textile and apparel industry contributed roughly 2% of the country's GDP and accounted for 14% of industrial production in 2018.²³⁸

III. FAST FASHION VIS-À-VIS HUMAN RIGHTS OF THE LABOURERS

²³⁵ Aveda Eco Fashion Week (no date) *UN Helps Fashion Industry Shift to Low Carbon*, (January 11, 2023), *Unfccc.int*. <https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon>

²³⁶ *5 ways the circular economy will transform your fashion habits* (December 5, 2022) WORLD ECONOMIC FORUM, <https://www.weforum.org/agenda/2022/01/5-ways-the-circular-economy-will-transform-your-fashion-habits/>.

²³⁷ *Cleaning up couture: What's in your jeans?* (December 11, 2022) UNEP, <https://www.unep.org/news-and-stories/story/cleaning-couture-whats-your-jeans>.

²³⁸ *Apparel consumption trends in India* (December 15, 2022), ICC, <https://wazir.in/pdf/Apparel%20Consumption%20Trends%20In%20India.pdf>.

The heart-wrenching story of the collapse of the Rana Plaza factory in Bangladesh has brought this issue to light, as it resulted in the death of approximately 1100 workers and caused injury to 2500 workers. The workers in poor nations are actively exploited by the Fast Fashion industries.

The textile business, particularly in other countries, is characterised by low pay, hazardous working conditions, and long hours. In order to take advantage of the low cost of labour and the absence of laws, large corporations in rich nations outsource production to smaller developing nations. These fast fashion industries try to run their industries in low-income countries such as India, Bangladesh, Pakistan, and Vietnam. According to an Oxfam Report, only 0% of Bangladeshi and 1% of Vietnamese garment workers were able to earn a living wage. One of the garment workers in Bangladesh has to take a loan of as minimal amount as 200 Bangladeshi takas for meeting their daily needs of belongings, medicines, etc.²³⁹

The *status quo* in India when it comes to this issue does not match up to the level of effectiveness required in dealing with problems. The textile industry in India is regulated by the Code on Social Security 2020, Industrial Relations Code 2020, Code on Occupational Safety, Health and Working Conditions 2020, and on Wage 2019, Maternity Benefit Act, 1961. However, India does not have any law when it comes to Fashion Sustainability and protection of labourers engaged in Fast Fashion industries.

The Fast fashion industry follows the concept of '*Offshore Outsourcing*' which means the process of outsourcing their production to a contractor by the Fast Fashion brands. There is therefore no direct link in the supply chain between the clothing company and the garment employees. Because of this, it is challenging to find clean, transparent supply chains, and fashion labels frequently claim they are ignorant of such subcontracting networks. Despite their widespread presence on the global circuit.²⁴⁰

Moreover, the benefits from the protective labour statutes like the Maternity benefit Act are hardly available to the woman labourers in the fast fashion industries. The sphere of fast fashion industries has also shown various cases of gruesome child labour, which often gets unseen by the broad laws to regulate textile industries.

²³⁹ *What she makes* (January 16, 2023), *Oxfam Australia*, <https://www.oxfam.org.au/what-she-makes/>.

²⁴⁰ Samera Sonkar, (January 16, 2023), *Fast Fashion Industry and the gross violation of labour laws, Bar and Bench - Indian Legal news*, <https://www.barandbench.com/apprentice-lawyer/fast-fashion-industry-gross-violation-labour-laws>.

IV. NEED FOR FASHION SUSTAINABILITY LEGISLATION IN INDIA

4.1. Shortcomings of the existing legislations

The legal system of India has performed exemplary when it comes to addressing legal needs of the people. Indian legislations support sustainability in both letter and spirit. A soil health and management programme was introduced by the Indian government in 2017 to support sustainable agriculture, which in turn supports the production of organic fibres.²⁴¹ Additionally, criminal penalties and damages are imposed for infractions of the environmental laws.²⁴² For the protection of geographical indications, traditional knowledge, and handloom goods and methods, we have special legislation.²⁴³ Humane working conditions and minimum salaries are guaranteed by employment and labour laws, which also pertain to sustainable fashion. Indian law offers maternity benefits and protection against sexual harassment at work to advance gender equality.²⁴⁴ Additionally, imports of exotic skins and furs for apparel and accessories are prohibited by regulations protecting animals.²⁴⁵

The laws in India vary from the smallest of issues such as the Glanders and Farcy Act, 1899 to the extremely detailed laws on which the foundation of the Indian legal system relies, i.e., the Indian Penal Code, 1860. However, it is utterly shocking when one comes to know that there is no law that deals with the most worrisome issue in today's world.

One may argue that the laws such as the Air (Prevention and Control of Pollution Act), 1981, Water (Prevention and Control of Pollution Act), 1971, and Environment Protection Act, 1986, indirectly serve this purpose. However, these acts provide a very broad view of water and air pollution, which makes this issue a very negligible part of it. Hence, this also sets up a fundamental ground for a Fashion Sustainability Act to be there.

The New York government will be the first one in the US to introduce a law to categorically define the sustainability requirements of the large fashion companies. This statute, if passed,

²⁴¹ National Mission for sustainable Agriculture, 2010, Policies of the Government, 2010 (India).

²⁴² §21, 22, 22A, 23, 22(3), 31A, 37, 37(2) Air (Prevention and Control of Pollution) Act, 1981, No. 14, Acts of Parliament, 1981; §190(2), Motor Vehicles Act, 1988, No. 59, Acts of Parliament, 1988. ; Motor Vehicles (Amendment) Act, 2019; §15, Environmental Protection Act, 1986, No. 29, Acts of Parliament, 1986; §290, Indian Penal Code, 1860, No. 45, Acts of Parliament, 1860; §133, Code of Criminal Procedure, 1973, No. 2, Acts of Parliament, 1973.

²⁴³ Geographical Indications of Goods (Registration and Protection) Act, 1999, No. 48, Acts of Parliament, 1999 (India).

²⁴⁴ The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, No. 14, Acts of Parliament, 2013 (India).

²⁴⁵ Perappadan, B.S. (January 16, 2023), *Ban on import of exotic skins*, THE HINDU. <https://www.thehindu.com/news/cities/Delhi/Ban-on-import-of-exotic-skins/article16995233.ece>.

will be applicable to the retailers and manufacturers that *do business in New York* and *have global revenues in excess of 100 million USD*. The proposed Act, on enactment, may result in penalties from the NY Attorney General (AG). This includes Injunctions, monetary compensation, and/or the civil performance of a statutory duty. The present proposal would give businesses three months to address problems found by the AG. A fine of up to 2% of yearly revenues would be assessed if the situation wasn't fixed. Additionally, the AG would list businesses that had been found to be in violation of the Act in an annual report.²⁴⁶

The present version of the bill also gives any citizen the power to bring a private lawsuit against anyone in response to the violation of the Act or instructions from the AG that are connected. Additionally, it would enable any person to order the AG to look into whether a firm is in conformity with the Act.

The legislators of some other countries have also played an important role towards this issue. For example, The International Accord for Health and Safety in the Textile and Garment Industry in Bangladesh, The SWEAT Bill, The Australian Modern Slavery Law, UK Greens Claims Code, etc.

4.2. Constitutional mandate of Sustainability

The Constitution of India under Article 21 impliedly gives every person a right to healthy environment²⁴⁷. However, there are some conflicts between the aforementioned right and the Right to practice any profession or to carry on any occupation, trade or business to all citizens²⁴⁸. In *Karnataka Industrial Areas Development Board v. C. Kenchappa and Ors.*²⁴⁹ The court made a sincere effort to establish a favourable balance between industrial development and ecological preservation in accordance with the notion of “Sustainable Development”.

V. A WAY FORWARD: BRINGING SUSTAINABILITY INTO FASHION

The entire world has now realised the horrifying results of this movement and is starting to take actions towards the same. The UN in a recent resolution²⁵⁰ has declared the right to a clean, healthy, and sustainable environment as a human right.

²⁴⁶ NY State Senate Bill S7428A

²⁴⁷ *Municipal Corporation, Ratlam v. Vardhichand* (1980) AIR 1622.

²⁴⁸ Art. 19(1)(g), The Constitution of India, 1950.

²⁴⁹ AIR 2006 SC 2038

²⁵⁰ *The human right to a clean, healthy and sustainable environment* (January 26, 2023), UNITED NATIONS, <https://digitallibrary.un.org/record/3982508?ln=en#record-files-collapse-header>.

A nation can never implement a change through the actions of the government alone. It is as important for the citizens to bring changes in their daily lifestyles, as it is important for the government to bring laws to regulate the same. People have to understand that sustainability will in turn provide profit by reducing the negative impact that will be suffered by the future generations.

There can be many ways in which people can adopt a sustainable approach to fashion, for e.g.: switching from the clothes made from chemical dyes to the ones made by block printing method, a practice followed in the states like Rajasthan. The companies should also spend a part of CSR in creating awareness and combating this issue.

The legislation for this purpose should tackle various existing issues in this arena. The problem of regulator and inspector corruption persists. As a result, offenders frequently escape punishment year after year. To solve this issue, harsh disciplinary measures corresponding to those taken against the people guilty of the violations in question should be specified in the new legislation.



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