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SAFEGUARDING THE MARINE ENVIRONMENT FROM VARIOUS SOURCES OF POLLUTION

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ABSTRACT:

Humans have a complex relationship with water. At least 3.3 billion people rely significantly on marine products for sustenance as it supplies fresh water, oxygen, moderate climate, influence weather, and even connect every form of pollution and environmental harm. However, there is a need to protect and preserve the marine environment. This article mainly focuses on highly tropical problems such as marine plastic pollution, oil spills that happened in past years, and pollution from land bases sources resulting in harming marine life and their ecosystem. Here we report using principle of common heritage of mankind and various international agreements, treaties and conventions ratified by the Parliament of India as the Judiciary is showing keen interest in the environmental issues affecting various aspects of the life of human beings passed appropriate orders, directions and writs against persons adversely affecting the environment and the need for protection of this ecosystem has been acknowledged worldwide and UNCLOSURE 1982 prescribe the responsibility on the coastal states in preserving and protecting the marine and environment and associated resources.

The research uses a mixed methods approach, including both doctrinal and non-doctrinal approach, to comprehend the subtleties of marine environmental protection. First, a thorough literature analysis examines previous research on marine pollution in order to identify historical and societal trends that have influenced the current situation.

When regional approaches are being made for a healthy environment by addressing the problem of marine activities causing marine pollution the objective can be achieved easily. National and international level attempts are being made to establish Marine Protected Areas (MPAs). We would also discuss about several legislative initiatives for ocean conservation to address the issue of marine environment pollution.

This observation also found a significant barrier to the field of marine environment protection is a lack of public awareness, which has to be addressed adequately.

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KEYWORDS: Marine pollution, Oil spills, Environmental protection, Convention, Laws governing sea, International waters.

INTRODUCTION:

*We have forgotten how to be good guests, how to walk lightly on the earth
as its other creatures do. – Barbara Ward*

The above words indicate that human's interaction towards nature is diminishing in the past few decades. Environmental pollution, destruction, increase in sea level, failure of monsoon has seriously threatened, human life and health. But a proper balance of ecosystem is necessary for the current situation. The one solution to tackle the existing problem is sustainable development or to implement the existing laws effectively. In India since the ancient times i.e. the Vedic period it has been the main objective of human kind is to protect and preserve the environment and the five elements of nature called the Pancha Mahabhuta, i.e, Prithvi (Earth), Jal (water), Agni (Fire), Aakasha (space) to live in harmony with the surrounding environment and various creatures inhabiting the earth.

MARINE POLLUTION:

Marine pollution is defined as “Introduction of man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious affect as human to living resources, hazard to human health, hindrance to marine activities including fishing, impairment of quality for use of seawater and reduction of amenities.” By the GESAMP (Group of Experts on Scientific Aspects of Marine Environmental Protection). In simple marine pollution is a combination of chemicals and trash, most of which comes from land sources and is washed or blown into the ocean. This pollution results in damage to the environment, to the health of all organisms, and to economic structures worldwide.

The phrase “blue economy,” which has gained popularity in the last ten years, refers to an endeavour to acknowledge and manage the risks that come with an economy around the ocean, while also trying to capitalise on the potential it presents. It's basically the ocean version of the “green economy,” a decarbonised, regenerative, and more just economic structure. The 'blue economy' gained prominence at the 2012 UN Convention on Sustainable Development (UNCSD), or Rio+20 conference, when small island developing states began

emphasising the importance of the ocean and marine economy in response to land-focused calls for a 'green economy'.³

Six origins of marine pollution have been distinguished in the UNCLOS Convention. The major danger to the oceans is contamination from land-based sources. These include municipal,

engineering and farming wastes which get in touch with the ocean from rivers, estuaries, pipelines and outfall constructions.⁴ The second pollution source is offshore seabed action like drilling for oil, which has created new hazards in recent decades where recent demand for offshore oil and gas resources has speedily increased throughout the world. The other sources include nuclear water plants, factories releasing cooling water, pesticides applied to farmland flowing into river with rain which finally reaches the ocean which often resulting disadvantage to marine life and people depending on it.

LAND BASED SOURCE OF MARINE POLLUTION:

Various studies show that vast majority i.e, 8% of marine pollution is caused by land-based sources. These include sewage outfalls, industrial discharges, runoff from urban storm water and agriculture, river borne, airborne pollution, litter, can also be transported through the air such as by vehicle emissions.

Recognising the condition going out of hands the 1992 United Nations Conference on Environment and Development agreed to advance the subject. Agenda 21 invited the United Nations Environment Programme to convene a meeting on land-based sources as soon as practicable and identified priority actions for control of these sources and recommended updating the 1985 Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land Based Sources, assessing the effectiveness of regional agreements on land-based sources and the formulating of new regional agreements where appropriate, and providing guidance on appropriate technologies and the development of policy guidance for relevant global funding mechanisms. International conference on land-based sources of marine pollution held in Washington, DC, in November 1995. It produced the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities, for which UNEP is Secretariat. Financing for implementation is available through the International Waters Funds of the Global Environment Facility ("GEF"). The GPA is the only global intergovernmental mechanism directly addressing the connection between

³ Silver et al. 2015, Dornan et al. 2018.

⁴ See UNCLOS Convention; Art 207-12. (1969).

terrestrial, freshwater, coastal and marine ecosystems. Its aim is to sustain action to prevent, reduce, control and eliminate marine degradation from land-based activities. Every five years, Intergovernmental Review Meetings (IGR) are held to assess how well each country is implementing the GPA through its national action plan and to offer guidance on any future implications.⁵

DEEP SEA MINING OR OCEAN MINING SOURCE OF MARINE POLLUTION:

Another source of ocean pollution is deep-sea ocean mining. Sulphide deposits can be found up to 3,000 metres below the ocean's surface at ocean mining sites who drill for silver, gold, copper, cobalt, and zinc.

Many ocean contaminants are discharged into the environment far upstream from seashores, says National Geographic. Farmers that apply nitrogen-rich fertilisers inland, for instance, eventually deposit their fertilisers in estuaries, bays, and deltas after finding their way into nearby waterways, rivers, and groundwater. Massive blooms of algal species caused by these surplus nutrients have the potential to deplete the water's oxygen supply, making places unsuitable for the existence of marine life.

VESSEL BASED SOURCE OF MARINE POLLUTION:

The waters become polluted by a variety of processes, such as cleaning oil tankers, getting rid of cargo residue, having ships collide, or having big oil tankers sink in the ocean. Oceans, canals, and ports are contaminated by enormous amount of oil that has leaked into the sea, killing numerous marine life forms. Even noise pollution from large ships and vessels upsets and affects marine life. Thus, ships contribute to marine contamination in a negative way.

Oil pollution comprises about 71% of vessel-based marine pollution. The total annual oil spillage into the oceans is estimated at one million tonnes dumped in standard operations and 200,000 tonnes spilled in tanker accidents per year.

According to the reports, despite the efforts of cleaning up after the **Exxon Valdez oil spill** in 1989 a study of 2007 conducted by the *National Oceanic and atmospheric administration (NOAA)* found that 26000 gallons of oil from the Exxon Valdez oil spill was still found in the sand along the Alaska shoreline that is why it is regarded as the most dangerous environmental disaster which cannot be removed even after years. The scientists also revealed that the oil was declining less than 4 percent rate annually.

⁵ UNITED NATIONS INFORMATION PORTAL ON MULTILATERAL ENVIRONMENTAL AGREEMENTS, Unit 5, Land based source of marine pollution.

The International Maritime Conference in Washington, D.C., adopted the first international treaty on oil pollution in 1926. Nevertheless, this proposal was not approved. There are no specific global environmental conventions that clearly govern marine contamination, especially when it involves oil. A number of international law articles take this type of pollution into consideration. Yet there aren't many restrictions on this matter in the international conventions. After the Stockholm declaration which addressed the issue of human and living organisms living under the sea 's health are in danger because of the substances that spilled into sea and stressed the view on liabilities and penalty for doing such acts, Geneva convention of 1958 addressed a few regarding this issue and made another important convention for UNCLOS (United Nations Convention on the Law of the Sea).

The UNCLOS Convention provides that “States shall co-operate on an inclusive basis and, as apposite, on a regional basis, directly or through capable intercontinental organizations, taking into account attribute provincial features.”⁶

Insofar as values for combating pollution are concerned, the UNCLOS Convention calls upon states “acting especially through competent international organizations or diplomatic conference” to “endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution.”⁷

Following these there were several other conventions that had been made for protecting and regulating the maritime environment and marine shipping. Some notable conventions are,

- **INTERNATIONAL MARITIME ORGANISATION (IMO):**

An international convention that established the Inter-Governmental Maritime Consultative Organisation (IMCO), formally was accepted at a conference held in Geneva in 1948. Later in 1982 it changed to International Maritime Organisation (IMO).⁸ The IMO Convention entered into force in 1958 with an aim to promote safe shipping and cleaner seas. It has the responsibility, inter alia, to establish rules for prevention of marine pollution from ships.

⁶ UNCLOS Convention, Art. 237.

⁷ Epstein PR, Sherman B, Spanger-Siegfried E, Langston A, and Prasad S, Marine ecosystems: Emerging diseases as indicators of change, The Centre for Health and the Global Environment, Harvard Medical School, 85 p. (1998)

⁸ Convention on the Intergovernmental Maritime Conductive Organisation.

Since, IMO addressed vessel-based marine pollution prior to the negotiation of UNCLOS, the Law of Sea did not elaborate operational controls for vessels, instead referring to standards established by the "competent international organisation," in this case the IMO.⁹

- **INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION OF THE SEA BY OIL (OILPOL):**

The International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) adopted in 1954 was the outcome of negotiations made by the government of the United Kingdom and provided certain functions to IMO. The Convention establishing IMO and OILPOL convention entered into force within few months gap. OILPOL applied to tankers engaged in the transportation of oil. It prohibited discharge of persistent oil or oily mixtures of greater than 100 parts per million within fifty nautical miles of land or within special areas and regulated the rates of discharge.

- **INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL):**

- The IMO's efforts to develop more comprehensive approaches to address maritime pollution beyond oil resulted in MARPOL, the International Convention for the Prevention of Pollution from Ships. The Convention was adopted in 1973, altered by the 1978 Protocol, and entered into force in 1983 superseding OILPOL. 1973 MARPOL applies to ships flying or entitled to fly the flag of parties and ships operating under the authority of a party but excludes warships, naval auxiliary and ships owned or operated by a state and used only on government non-commercial service (article 3).

The core of 1973 MARPOL lies in its annexes that deal with all types of pollution by ships (excluding dumping), rather than oil discharges alone. MARPOL's six annexes deal with: (I) pollution by oil, (II) pollution by noxious liquid substances in bulk, (III) pollution by harmful substances carried by in packaged form, (IV) sewage, (V) garbage, and (VI) air pollution.

INTERNATIONAL CONVENTION ON OIL POLLUTION PREPAREDNESS, RESPONSE AND COOPERATION (OPRC):

⁹ Ward JR, Lafferty KD (2004) The Elusive Baseline of Marine Disease: Are Diseases in Ocean Ecosystems Increasing? P. 120.

Work by the IMO on vessel accidents and emergencies that threaten the marine environment led to development of the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) adopted in 1990, which came into force in 1995. It was followed by a Protocol relating to hazardous and noxious substances (OPRC-HNS Protocol), which was adopted in 2000 and entered into force in 2007.

The OPRC-HNS Protocol applies to any substance other than oil that, if introduced into the marine environment, is likely to pose a threat to human health, affect living resources and marine life, damage amenities, or interfere with other lawful uses of the sea. It guarantees that readiness and response protocols are similar to those already in place for oil incidents.

INDIAN LAW AND ENVIRONMENT:

The Indian Constitution, when it was first established, has no specific provisions for environmental preservation. Perhaps the founders of the Indian Constitution did not consider the environment to be a critical problem back then. Constitution of India talks about the right to life and personal liberty,¹⁰ it states that “No person shall be deprived of his life or personal liberty except according to procedure established by law.” This article imposes a duty on the state to protect the life and liberty of the people. The Indian Judiciary while dealing with cases relating to environment considered the right to clean or the good environment as fundamental to life and upheld it as a fundamental right. The Judiciary has played a vital role in interpreting the Article 21 of the Indian Constitution.

In India after the Stockholm Conference in 1976, under the 42nd Amendment of the Constitution Article 48-A and Article 51-A (g) were inserted in the Indian Constitution. Article 48-A placed environment as responsibility of the state government under the Directive Principles of State Policy. Article 51-A (g) made environmental protection and conservation a Fundamental Duty of all the citizens of India.

LANDMARK JUDGEMENT:

MC Mehta V. Union of India (Kanpur Tanneries case)¹¹

¹⁰ Article 21, Constitution of India.

¹¹ In M.C Mehta vs Union of India, AIR1988 SCR 538.

MC Mehta an advocate who's also an activist filed a writ petition enlightening the pollution in river Ganges. Further, the court ordered the various tanneries to wind up. And also highlighted that how industries are not eligible to exist when it cannot pay minimum wages, if one industry which couldn't set up a primary treatment plant also not permitted to be in existence.

S. Jagannath V. Union of India & Ors.¹²

As the decrease in resources of sea and pollution was increasing in the marine environment, UN conference on human environments in Stockholm, 1972 uttered its serious concern and ordered other nations to take necessary action on pollutants.

Vellore Citizens Welfare Forum V. Union of India and Others.¹³

The petitioner organisation was concerned about water pollution resulting from the discharge of untreated effluents by tanneries and other industries into river Palar in the State of Tamil Nadu, which was a source of drinking water supply. The Supreme Court directed the constitution of an authority under the Environment Act to deal with the situation created by the tanneries and other polluting industries in the State. The authority was also directed to frame and execute scheme(s) for reversing ecological/environmental damage caused by pollution in the State. It also imposed pollution fine on all the tanneries, and ordered the closure of tanneries that fail to pay the fine.

Indian Council for Enviro-Legal Action V. Union of India and Others.¹⁴

In this particular case it was alleged that water in wells and streams in village Bichhri in Udaipur district in the State of Rajasthan had become unfit for consumption as a result of disposal of untreated toxic sludge from an industrial complex located within the limits of the village. The Supreme Court held that the respondents were absolutely liable to pay compensation for the harm caused by them to the villagers in the affected area and surrounding areas as well as to the environment.

M. Nizamudeen V. M/s. Chemplast Sanmar Limited and Others.¹⁵

The Ministry of Environment and Forests (MOEF) granted environment clearance to the project proposed by Chemplast for manufacturing Poly-Vinyl Chloride (PVC) and to install a Marine Terminal Facility ('MTF') near the seashore for receiving and transferring Vinyl

¹² S. Jagannath Vs. Union of India & Ors [1996] INSC 1592 (11 December 1996), 1996 Latest Caselaw 1036 SC.

¹³ Vellore Citizens Welfare Forum v Union of India and Ors, AIR 1996 SC 2715(India).

¹⁴ Indian Council for Enviro-Legal Action v Union of India and Ors, AIR 1996 SC 1446(India).

¹⁵ M. Nizamudeen v M/s. Chemplast Sanmar Limited and Ors, AIR 2010 SUPREME COURT 1765, 2010 (4) SCC 240, 2010 AIR SCW 1937, 2011 BOMCRSUP 127, (2010) 1 WLC(SC)CVL 468, (2010) 4 MAD LJ 333.

Chloride Monomer (VCM) from the ships to the PVC plant through underground pipeline under the provisions of under the provisions of Coastal Regulation Zone Notification, 1991. Chemplast made an application to the Executive Engineer, PWD, seeking permission for carrying seawater and raw materials through pipelines laid 3.50 meter below the riverbed. The Executive Engineer granted permission but in less than a month cancelled the aforesaid permission observing that VCM may cause pollution and health hazard to the public.

The Madras High Court set aside the order of the Executive Engineer revoking the permission granted; it was then that the appellant filed PIL before the High Court praying therein that the order granting permission by the Executive Engineer be quashed and Chemplast be directed to forebear from laying of pipelines for drawing VCM raw-material from jetty to their plant. The petition was dismissed.

The first question which the apex court analysed is whether Uppanar river and its banks at the point where pipelines pass, fall in the CRZ III area. In that case the pipelines crossing underneath Uppanar river would require environmental clearance. The other main question to consider is whether paragraph 2(ii) of 1991 Notification restricts transfer of VCM (hazardous substance) beyond port area to the PVC plant through pipelines. According to the Court, the permission granted to Chemplast by the MOEF is in exercise of the powers conferred under paragraph 3(2)(ii) of 1991 Notification, thus held no illegality in the permission granted by the Executive Engineer, as Uppanar river and its banks at the relevant place where the pipelines laid by the Chemplast pass do not fall under CRZ III area as per 1996 Plan for the purposes of demarcation and classification of CRZ area in the state of Tamil Nadu, and no environmental clearance is needed for such pipelines. Appeals are dismissed.

ENNORE PORT OIL SPILL TRAJECTORY:

In south India, the region is located in Chennai, (Ernavour/ Ennor). In 2017 the Liquefied Petroleum Gas (LPG) tanker and a chemical tanker of Kanchipuram collided near 2 nautical miles of Ennore port which resulted in 196.4 metric tons of Heavy Furnace Oil (HFO) spillage. This was taken care of by Indian Coast Guards. But after the recent Michaung cyclone, the Ennore people faced the huge crisis due to oil spillage from CPCL, it affects nearly 20.sq.kms. which affected to the extent of every wall in Ernavour has the oil spill prints from the water flooded during the cyclone rainfall. The residents over there are also undergoing several medical issues due to this. If the laws were effective enough to bring the

protection marine environment from oil spillage it would also be betterment for the human living around such an environment.

LAWS IN INDIA RELATED TO MARINE ENVIRONMENT:

India has also made various acts and rules in the field of marine environment protection, the main Acts and Rules regulating coastal and marine activities in India include:

1. Indian Fisheries Act 1899 and its amendments in 1920 and 1980
2. Indian Ports Act 1902
3. Merchant Shipping Act 1974
4. Wildlife Protection Act 1972(Amended in 1991 and then in 2002)
5. Water (Prevention and control of Pollution) Act 1974
6. Indian Coast Guard Act 1974
7. Marine Zones of India Act (Regulation of fishing by foreign vessels) Act 1981
8. Environmental Protection Act 1986.

The implementation and execution of the provisions of the acts have never been adequate. At most times these laws are just in paper.

ANALYSIS FROM THE SURVEY CONDUCTED:

We have conducted a survey by asking several questions to more than 100 people from different fields like students, professors, IT professionals and so on.

In which we asked, “what do you think as a due cause for marine environment pollution?”

58.10% people think that pollution from land by plastics and several other wastes are the major reason and 25.71% people have chosen the option of oil spills and here some people have told us that E-waste and industrial emissions, waste & other pollutants from deep sea mining.

Then in a question “Do you know that there are various international conventions related to environmental law addressing marine environmental pollution?” 70% of people have said yes and also said they're not effectively implemented enough and 30% of other people have said that there may be a few legislations existing but not aware of those.

For the question “Are laws relating to marine environmental pollution being effectively implemented?” 74.29% of people voted No and 13% have said that implementation could be more effective in order to curb pollution to the maximum extent possible.

For “why is it needed to be protected?” 38% of people have said that it should be protected for Organisms living under sea and 10% of people say it for global warming and some of them have said that to maintain ecological balance and for the betterment of the whole biodiversity.

SUGGESTION BY PARTICIPATED PEOPLE IN SURVEY:

- Most of the people were insisting on getting rid of single use plastics and regulating the proper waste management.
- Regulating proper regulations on disposal of industrial emissions and waste
- Preventing global warming with required measures
- Implementing the existing laws in an effective manner and bringing stringent punishment to the offenders thereon
- Promoting sustainable fishing practices where in controlling the limit of fishing and reducing habitat destruction
- Creating awareness among the people about the provisions available thereby
- People should be educated about the consequences of the plastic debris in the sea , which are hazardous to organisms living in the sea.
- Stringer provisions and proper execution of those.
- Banning/suspending the vessel or tankers which may seem to cause the accident.
- The stoppage of dumping the waste should start from small water bodies which will eventually end up in the ocean.

SUGGESTION:

This paper suggests seven key actions to assist states and international organisations in supporting and improving humanity’s diverse relationships with the ocean by fostering participatory democratic governance:

1. humanise the new ocean narrative by focusing economic development on the objective of increasing human well-being.
2. Encourage diversity and inclusion within the sustainable maritime economy.
3. Collaborate with a diverse group of ocean allies, including small-scale fishermen, community elders, social and environmental activists, indigenous people, and women working in the maritime sector to protect marine habitats.
4. Increase the capability of meso-level institutions below the national government and above the individual citizen-consumer.

5. Ecological-based management, if properly developed, legally implemented and effectively enforced, organisation instruments can add more coherent, multi-spectrally synchronised management of the use, preservation and defence of the marine and coastal surroundings and its resources.
6. In addition to institutional frameworks for ocean interaction, regional organisations and conventions, both within and outside the UN system, have become increasingly important for action. Ecological global programs are implemented at a regional level by organisations with Contracting Parties located closer to the problem. So local experts can effectively address local needs and goals, such as pollution reduction and marine protected zones.
7. While many regions have significant assessment capabilities, there is a need for global experience and communication in marine appraisal technology.

CONCLUSION:

Our oceans and seashores supply living space and they directly and indirectly create money, including millions of jobs in industries such as fishing, aquaculture, and tourism. The marine environment includes the water of the ocean, the seabed, its subsoil, all marine life of the sea and coastal habitats. Marine resources are the precious assets and heritage that must be protected, conserved and properly utilised. The human relationship with the ocean is diverse and complex. It gives food in the form of fish and shellfish it is used for transportation for both travelling and shipping for commercial purposes. It is mined for minerals e.g. salt, sand, gravel, and some manganese, copper, nickel, iron and cobalt can be found in the deep sea and drilled for crude oil. The ocean indirectly contributes to the process of eradication of carbon from the atmosphere and providing oxygen which regulates earth's climate. The ocean also provides resources for biomedical organisms with huge potential for fighting disease and much more. Therefore, a clean healthy and safe marine environment is a part and parcel of the basic human right to live a healthy and fulfilling life.

Despite the fact that several laws have been enacted to safeguard biodiversity, appropriate implementation and public awareness remain essential. Exploiting marine biodiversity is necessary, but it must be done sustainably. The precise records of marine life and changes must be carefully kept. The Indian Ocean Biogeographic Information System (IndOBIS) and Census of Marine species programs have been created to consolidate all information about marine species and changes occurring beneath the sea. It made available through a portal and

is an internationally recognised data protocol. Concerned individuals and indigenous communities should be informed about such technological advancements to utilise it.

The menace of accumulation of plastic and its clearance from the sea needs to be solved. Many national and regional monitoring programs exist for monitoring a variety of pollutants. In India, coastal water quality is being monitored for last 25 years at 24 priority sites. But in spite of such available technologies and research and development opportunities, the quality of marine environment has failed to come at par with other developed countries. Proper legislative measures, socio economic analysis and integrated pollution management practices of both marine and surrounding terrestrial areas are required to develop a sound marine biodiversity conservation strategy.

Environmental impact assessments should be conducted in depth, and various principles, such as polluters pay, should be implemented. Various NGOs and Coastal Zone Protection units established in coastal areas should be supplied with the required technical expertise and financial support. Furthermore, every environmental preservation strategy should include scientific research, raising awareness, and involving the local population.