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Man-Made Environmental Disasters: Who Bears the Economic Liability?

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Abstract: The contribution of man - made disaster and natural disaster has been continuously expanding worldwide. As we can say there is not a single day where we do not read headlines about the tragedy happened due to natural disaster or man- made disaster. So, in this paper we will talk about both the disaster but the focus will be more on man- made disaster. The natural event like tsunami, hurricanes, and floods causes human suffering which are connected to disasters. The authoritarian regimes and the economic and social policies constitute equal important dimensions towards both the disasters. There have been analyzed the political goals and negative range of economic and social policies which are beyond the stated aim of conditions, which had led to the human suffering, especially among out of proportion women, poor people and children. In this research work, I'll take a case study on Iraq and a identification of human made disaster and studied on US- led policy of Iraq. I will sharing the economic impacts and social impacts happened due to natural disaster and man- made disaster. I got some secondary data on natural and man- made disasters which discusses the difference between direct and indirect effects of disaster. As we all know there are no boundaries of disasters. But, what are the causes of disaster? We have discussed the causes as well as the solution of the disaster in this paper. There are many institutions which are been developed for the management of disasters wither it is man- made or natural.

Keywords: Economic impact, human activities, disaster management

I. INTRODUCTION

Man-made disasters, such as industrial accidents and environmental contaminations, pose serious threats to human life, property, and ecosystems. This research aims to explore the root causes of these disasters, classify the economic liabilities they generate, and review the legislative framework in India that addresses them. Additionally, it examines the roles of various stakeholders involved in managing these liabilities and underscores the importance of effective prevention and mitigation strategies. By delving into these aspects, the research seeks to provide a thorough understanding of man-made disasters and propose practical solutions to reduce their impact.

II. RESEARCH METHODOLOGY

Secondary Data

By examining various published sources such as reports, online data, news articles, and media outlets, we have gathered valuable information on the economic liabilities associated with man-made environmental disasters. These sources provide a wealth of knowledge from different perspectives, enabling us to understand the financial responsibilities and impacts of such incidents. The economic liabilities from man-made environmental disasters often include cleanup and environmental restoration costs, compensation for affected communities, and legal penalties and fines.

Objectives :-

- To identify the causes of man-made disasters.
- To categorize the types of economic liabilities.
- To analyze legislation in India related to man-made disasters.
- To examine the stakeholders involved in economic liability for environmental disasters.
- To develop prevention strategies for man-made disasters.
- To propose mitigation strategies for environmental disasters.

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III. CAUSES OF CERTAIN MANMADE DISASTERS

Prior to continuing further, the reasons for the previously mentioned man-made misfortunes should be recognized. Fire episodes are generally brought about by electrical short circuits compounded by absence of imperative block free leave focuses, crisis lights and sign presents sound framework on transfer the message and space requirements for the section and compelling activity of firefighting vehicles and non accessibility of water for contributing fire.

Unapproved erection of impermanent designs, viz., pandals, tents and so forth wherein electrical wires dubiously hold tight and are associated with the principle in the neighboring structure regardless of the heap factor and safety gadgets. consistency conditions may have been set down in the request allowing consent, at the same time, at the ground level, the recognition of such conditions is an extraordinariness. There is no satisfactory assessing staff worth the name to keep a vigil against such unapproved acts/exclusions or infringement.

Perpetual constructions (business buildings like film lobbies, multiplexes, work corridors, shopping centers, inns, night clubs, instructive establishments, assembly halls, multistoried private edifices) where individuals gather in enormous numbers:

The disciplines recommended by the laws administering different parts of wellbeing and upkeep are not sufficient and regardless they are not obstacle enough to correct consistence. The Management can pay a pitiful measure of fine and keep on disregarding the laws, for example, under the Cinematograph law

Building breakdowns happen by virtue of frail establishments inadmissible to the states of soil and water-table, weakness to water-logging, defective underlying planning, powerless bars and low quality of development. Non-recognition of quake obstruction principles in weak regions is another reason. Adequate consideration isn't taken while allowing authorizations or to assess during the development Stage.

Types of Economics Liabilities

Economic liabilities are obligations that individuals, businesses, or governments must meet in the future, typically in the form of debts or financial obligations. Here are the key types of economic liabilities:

Current Liabilities:

- Short-term debt: These are debts due within a year, such as short-term loans or credit lines.
- Accounts payable: Amounts owed to suppliers or vendors for goods or services received but not yet paid for.
- Wages payable: Salaries or wages owed to employees for work already performed.
- Taxes payable: Taxes owed to the government within a short period.
- Accrued expenses: Expenses that have been incurred but not yet paid, such as utility bills or interest.

Non-Current Liabilities (Long-term liabilities):

- Long-term debt: Loans or financial obligations that are due after more than a year, such as bonds or long-term bank loans.
- **Deferred tax liabilities**: Taxes owed in the future due to temporary differences between accounting and tax rules.
- Pension liabilities: Financial obligations related to employee retirement benefits.

Contingent Liabilities:

- Legal liabilities: Potential future obligations arising from lawsuits or legal disputes.
- **Guarantees**: If a company guarantees a loan or debt for another party, it might have a contingent liability if that other party defaults.
- Insurance claims: Potential future payouts from claims made by policyholders under an insurance contract.

Financial Liabilities:

- Bonds payable: Debt securities issued by an entity that must be repaid over time with interest.
- Leases: Obligations arising from leasing arrangements, whether operating or capital leases

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Sovereign Liabilities:

- National Debt: The total amount of money a government owes, often in the form of bonds or loans from other countries or financial institutions.
- Social Security or Health Care Liabilities: Long-term obligations related to public welfare programs.

IV. LEGISLATION IN INDIA

The enactment which is of most extreme importance to the subject being referred to is The Disaster Management Act, 2005. The Act is focused on anticipation and relief of impacts of catastrophes and for undertaking an all-encompassing, composed and brief response to any fiasco circumstance. It is intended to accommodate essential institutional components for drawing up and observing the execution of the catastrophe the board designs and guaranteeing measures by different wings of government (vide Statement of Objects and Reasons). It accommodates setting up of a National Disaster Management Authority under the Chairmanship of the Prime Minister, State Disaster Management Authorities headed by the Chief Ministers and District Disaster Management Authorities headed by District Magistrates. It likewise accommodates the constitution of a National Disaster Response Force and setting up of the National Institute of Disaster Management. The Act likewise accommodates the constitution of Disaster Response Mitigation Funds at the National, State and District levels. The Act likewise accommodates an explicit job for neighborhood bodies in misfortune the executives. The Act requires the foundation of National Institute of Disaster Management arrangement of the training modules for HR development and advancement of awareness among partners.

legal framework and regulations

The legal framework and regulations surrounding man-made environmental disasters are designed to prevent, mitigate, and manage the impacts of human activities that harm the environment. These regulations aim to ensure that individuals, organizations, and governments take responsibility for their actions and help prevent environmental damage. Here's an overview of key legal frameworks and regulations on man-made environmental disasters:

International Frameworks

The United Nations Environment Programme (UNEP): UNEP provides international leadership and encourages cooperation on global environmental issues. It helps to set standards and frameworks for addressing environmental disasters.

The Kyoto Protocol: An international treaty that commits industrialized countries to reduce greenhouse gas emissions, which contribute to global warming and climate change.

National Regulations

National governments typically establish laws and regulations to address environmental disasters caused by human activity. Some of the key national regulatory frameworks include:

Environmental Protection Agency (EPA) Regulations (USA):

National Environmental Policy Act (NEPA): Requires federal agencies to assess the environmental effects of their proposed actions before making decisions. This includes evaluating the potential environmental disasters that could arise from human activities.

Clean Water Act (CWA): Regulates discharges of pollutants into the waters of the United States and quality standards for surface waters.

Clean Air Act (CAA): Aims to control air pollution on a national level, which helps prevent disasters related to air quality.

Resource Conservation and Recovery Act (RCRA): Regulates the disposal of solid and hazardous waste to prevent contamination of the environment.

European Union Regulations:

The European Environment Agency (EEA): Provides a regulatory framework for managing and monitoring environmental risks, including manmade disasters.

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EU Environmental Liability Directive: Establishes a framework for the prevention and remediation of environmental damage, holding operators accountable for environmental harm resulting from their activities.

SevesoIII Directive: Focuses on the control of major-accident hazards involving dangerous substances to prevent industrial disasters like chemical spills or explosions.

India's Environmental Regulations:

The Environment Protection Act, 1986: This act provides a framework for the protection and improvement of the environment and gives the government the power to make rules to address environmental damage caused by human activity.

National Green Tribunal (NGT): An autonomous body that handles environmental protection matters and provides relief in case of man-made disasters.

Factories Act, 1948: This act addresses workplace safety, including regulations on the handling of hazardous materials and preventing industrial accidents.

Industry-Specific Regulations

The Oil Pollution Act (OPA): In the United States, this law addresses oil spills and provides a framework for prevention, preparedness, and response.

Chemical Safety Regulations: These include laws to govern the handling, storage, and transportation of hazardous chemicals (e.g., the **Hazardous Materials Transportation Act** in the U.S. and **REACH Regulation** in the EU).

Mining Laws: Regulations governing the mining industry, such as the **Surface Mining Control and Reclamation Act (SMCRA)** in the U.S., aim to minimize the environmental impact of mining activities and ensure proper reclamation of mining sites after operations cease.

Parties Involved In the Economy Liability At Man-Made Environment Disaster:-

In the event of an anthropogenic environmental disaster, several stakeholders are implicated in the financial responsibility with each facilitating the healing process in a way. The Effective parties of the pollution, more often than not the involved corporations and companies are who are seen as the main in charge in the cause of the loss whether it be cleaning the environment or be subjected to claims from society members due to the effect of the pollution. The involvement of energy from the sun refers to the solar energy which is under the regulatory powers of the European Union, in the U.S.A, the act that controls this is 'EPA as well as the Environment Agency. Green Intercourse has useful information concerning einfoingof the environment that is communicating with people or curtailing the pollution and no sources for harmful activities. Communities, the Environment and Its Resources, Commerce Law, and Natural Resources are also called for to provide for reparations, if compensation has been incurred. It is also possible that the liabilities may be transferred to insurance companies where the insured has such a protection whereas, nongovernmental and advocacy institutions seek to stir blame awareness and assist the victims. Therefore, those officers whose main responsibility is to hold justice and uphold the Constitution would hold court procedures and help place the blame, as well as render indemnity. There are environmental experts as well as environmental engineers background research conducted in the declaration to the scale of causal damage, which act of guiding the environment is normally carried out by the federal or the states water boards or the self-regulatory bodies themselves. Some of the international star companies allowing this fall of responsibility factor involve the activities in a matching risk on supply system or global environmental damage offense that both constitute crossborder risk factors. Lastly, in the background of any such disaster it is the opponents, such as the media or the public who drive the search for justice against such entities and also uphold the laws that exist in such countries. Therefore, the economic liability that arises in any form of an induced climate disaster is host to various responsibilities, compensations and controls revolving around the different players.

Case Studies And Examples:-

The Bhopal disaster, also referred to as the Bhopal gas tragedy, was a gas leak incident in India, considered one of the world's worst industrial disasters. It occurred on the night of 2-3 December 1984 at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal, Madhya Pradesh, India. A leak of methyl isocyanate gas and other chemicals from the plant resulted in the exposure of hundreds of thousands of people. A government official decharation in 2006 stated the leak caused 558,125 injuries including 38,478 temporary partial and approximately 3,000 severely and permanently

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disabling injuries. There were mass funerals and mass cremations as well as disposal of bodies in the Narmada River. 170,000 people were treated at hospitals and temporary dispensaries. 2,000 buffalo, goats, and other animals were collected and buried. The gas cloud was composed mainly of materials denser than the surrounding air, stayed close to the ground and spread outwards through the surrounding community. The early effects of exposure were coughing, vomiting, severe eye irritation and a feeling of suffocation.

Owing to their height, children and other people of shorter height inhaled higher concentrations

V. IMPACT OF DISASTER

The actual disaster results in a lot of damage to the population in terms of loss of life and property. This direct result can be dubbed as the 'first disaster'. The impact of the first disaster sends another wave of destruction triggered by chain of events relating to the first disaster by means of cause-and-effect, resulting in indirect damage to people remote from the original disaster. This can be called the 'second disaster'.

PHYSICAL – Health effects:

The gas cloud was composed mainly of materials denser than the surrounding air, stayed close to the ground and spread outwards through the surrounding community. The initial effects of exposure were coughing, vomiting, severe eye irritation and a feeling of suffocation.

Thousands of the seriously affected survivors still go through such extensive lung damage that they can no longer apply themselves physically and walking briskly even for a few minutes sends them gasping to their knees.

Women have abnormal gynecological problems and are still giving birth to distorted children. The acute symptoms were burning in the respiratory tract and eyes, breathlessness, stomach pains and vomiting.

Findings during autopsies revealed changes not only in the lungs but kidneys, fatty degeneration of the liver .The stillbirth rate increased by up to 300% and neonatal mortality rate by around 200%.

CAUSES OF DISASTER:

Attempts to reduce expenses affected the factory's employees and their conditions. Kurzman argues that "cuts...meant less stringent quality control and thus looser safety rules. A pipe leaked? Don't replace it; employees said they were told ... MIC workers needed more training? They could do with less. Promotions were halted, seriously affecting employee morale and driving some of the most skilled ... elsewhere". Workers were forced to use English manuals, even though only a few had a grasp of the language. No maintenance supervisor was placed on the night shift and instrument readings were taken every two hours, rather than the previous and required one-hour readings .serious communication problems and management gaps between Union Carbide and its Indian operation".

The events in Bhopal revealed that growing industrialization in developing countries without concurrent evolution in safety regulations could have terrible consequences. Even without enforcement, international standards could provide norms for measuring performance of individual companies engaged in hazardous activities such as the manufacture of pesticides and other toxic chemicals in India National governments and international agencies should focus on widely applicable techniques for corporate responsibility and accident prevention as much in the developing world context as in advanced industrial nations Specifically, prevention should include risk reduction in plant location and design and safety legislation.

Prevention And Mitigation Strategies:-

Preventing and mitigating man-made environmental disasters requires a combination of proactive strategies, regulatory frameworks, public awareness, and technological solutions. Here's a breakdown of how we can address these issues:

1. Prevention Strategies

Regulatory Frameworks and Policies

Stronger Environmental Regulations: Governments should implement and enforce stricter environmental regulations to control pollution, deforestation, industrial waste, and harmful emissions. Laws like the Clean Water Act, Clean Air Act, and Environmental Protection Agency (EPA) guidelines play a vital role.

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Sustainable Urban Planning: Cities and industries should be planned in a way that minimizes environmental degradation. This includes limiting industrial development in sensitive ecological areas, promoting green spaces, and using sustainable construction materials and techniques.

Corporate Accountability: Businesses must be held accountable for the environmental impact of their activities. This includes adopting sustainability practices, reducing waste, and investing in renewable energy sources.

Waste Management

Proper Disposal and Recycling: Ensuring that hazardous and non-hazardous waste is disposed of properly can prevent soil and water contamination. Effective recycling programs and waste reduction strategies should be encouraged.

Chemical Management: Strict regulations on the use and disposal of harmful chemicals, such as pesticides, heavy metals, and industrial solvents, can significantly reduce the risk of contamination.

Energy and Resource Efficiency

Renewable Energy Adoption: Shifting to clean energy sources like solar, wind, and hydropower can mitigate environmental damage caused by fossil fuels, which contribute to climate change, acid rain, and air pollution.

Resource Conservation: Encouraging the efficient use of water, energy, and other natural resources helps prevent over-exploitation, which can lead to resource depletion and environmental degradation.

Education and Awareness

Public Awareness Campaigns: Educating the public about the causes and consequences of environmental disasters can lead to more sustainable practices and a greater public demand for action.

Training and Capacity Building: Developing a workforce skilled in environmental science, sustainability practices, and disaster management is essential for preventing and responding to disasters.

2. Mitigation Strategies

Early Warning Systems and Disaster Preparedness

Monitoring Systems: Implementing advanced environmental monitoring systems, such as satellite imaging, air quality sensors, and soil health monitoring, can help detect potential threats before they escalate into major disasters.

Early Warning Systems: In the case of industrial accidents (e.g., chemical spills, oil spills), natural disasters triggered by human activity (e.g., dam failures, earthquakes caused by fracking), early warning systems are essential for evacuations and timely response.

Emergency Response Plans: Establishing disaster response protocols that include evacuation plans, response teams, and resource mobilization strategies can significantly reduce the human and environmental impact of disasters.

Restoration and Remediation

Pollution Cleanup: In the aftermath of disasters like oil spills, toxic waste leaks, or chemical plant explosions, timely remediation efforts, including the cleanup of contaminated water, soil, and air, are essential to reduce long-term environmental damage.

Reforestation and Habitat Restoration: Following deforestation or land degradation due to human activity, largescale restoration projects such as reforestation or wetland restoration can help recover ecosystems and mitigate the effects of erosion, loss of biodiversity, and climate change.

Technological Solutions

Carbon Capture and Storage (CCS): Technologies that capture carbon emissions from industrial sources before they are released into the atmosphere can help mitigate the effects of climate change.

Sustainable Agriculture: Using technologies that reduce the use of harmful pesticides, encourage crop rotation, and optimize water use can prevent soil degradation, desertification, and other environmental impacts.

Green Infrastructure: Incorporating nature-based solutions like green roofs, permeable pavements, and urban wetlands can help manage stormwater, reduce heat island effects, and mitigate flooding caused by human urbanization.

3. Community-Level Actions

Community Engagement: Local communities can play a significant role in preventing and mitigating disasters. Grassroots movements can raise awareness, initiate local conservation programs, and advocate for policies that protect the environment.

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Disaster Resilient Infrastructure: Communities should invest in infrastructure that is resilient to potential man-made disasters. This includes flood barriers, fire-resistant buildings, and resilient transport networks.

VI. CONCLUSION

People impact the endurance of characteristic biological systems and change human natural surroundings; approaches and activities which influence the relationship of people with the climate are exceptionally urgent for the fate of the climate and human existence. Consequently, it tends to be presumed that a social methodology is to instruct the general public about how significant we as a whole are to keep up and care for the climate. Our capacity to understand this profound association with our planet with will decide our associations with different people and with our current circumstance. People should ensure the climate for human endurance later on. Growing such an attitude requires early adjustment. Cataclysmic events are for the most part unavoidable. Nonetheless, every occasion can give insight to people on limiting effect and adapting. A cataclysmic event can cause positive or negative changes in local area conduct. Debacle can at the same time fortify fortitude and make strife inside society. Catastrophic events now and then bring to the surface issues that have been covered locally so they can be tended to, particularly with help by individuals who are prepared to settle them. Our particular proof affirms a genuine absence of protection markets for harms emerging from common and artificial catastrophes. Without viable ex bet gauges, the genuine financial misfortunes brought about by a catastrophe can be tremendous. For instance, the Great Hanshin-Awaji (Kobe) earthquake end up being amazingly huge for the public authority to help viably. Truth be told, after the Kobe tremor, the focal and neighborhood governments offered the biggest monetary help throughout the entire existence of Japan to reproduce the influenced regions and to encourage financial recuperation of the people in question. Notwithstanding the broad help given by the public authority, direct exchanges to casualties who lost their homes were only USD 1,000-1,500 for each family.

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