Review paper (SS-II)

NATURAL DISASTER, A POTENTIAL THREAT TO HUMAN ECOLOGY: AN OVERVIEW

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ABSTRACT

The Bay of Bengal in Odisha and Andhra Pradesh, India suffered continuous natural disaster inform of very severe cyclonic storm (Phailin), severe cyclonic storm (Helen), cyclonic storm (Leher), in a sequential manner. These were followed by un-interpreted torrential rainfall for days together leading to intense disruption of the human ecology. Preparation to face these disaster have been designed with good margin of safety, that would not mean there be no mishap. Even then how quickly the bunch of processional, at any given point of time, react to a situation to evaluate the unavoidable ravage and take effective majors to repair the situation, the total scenario is abysmal. The paper presents scientific, environmental, economic and technological prospective of human ecology innovative management following natural disaster.

Key Words: Very severe cyclone (Phailin), Severe cyclonic (Helen), Cyclonic (Leher) Natural calamities

INTRODUCTION

The greatest threat to ecology in India as well world today is natural disaster, climate change, industrialization, ever increasing urbanization. Very severe cyclonic storm “Phailin” on 12th October 2013, severe cyclonic storm “Helen” on 19th October 2013, severe cyclonic “Lehar” on November 28th 2013, originating at bay of Bengal high light the danger of ecological ravage. The modern scientific acumen was a silent spectator and could also do nothing to halt the process. There was enormous damage of environment, agriculture product, houses causing shatter to the ecological existence.

The environment is all of the natural resources and living being including sunlight. Living things do not simple exist in their environment, they constantly interact with it. Thus the relationships between human being and the environment is well-established (human ecology). At the beginning of this millennium, it was widely felt and campaign propagated at the base level of society that unless the environment is protected from all its adversities then the whole world might face a devastating effect of its very existence.

In the past such encounter have been experienced almost 98 times from 1891 to 2000, eight being most severe cyclonic storm (calamities of rare nature) caused considerable destruction to human life to environment and ecology.

Natural calamities befall on mankind in an unanticipated, unexpected and extraordinary manner. Man everywhere struggle hard to survive and overcome the disastrous consequence of natural calamities of various form. Modern man notwithstanding the scientific and technological success in maneuvering and forecasting the natural tumultuousness, admit the limit to human cognizance of natural disaster and unlike the non-human being he is not unprepared for any worst consequence, this is how the ecology perish. Even though the problems and eventuality engulf him in insurmountable proportion, he is all the while on the look out for controlling the vicissitudes of nature, overcoming its ravage and curbing the threatening consequence in the aftermath of the calamities.

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In the advent of calamities and while passing through it, man response to it in several ways, the nature of which depends upon socio-cultural adaptability and technological outfit. Modern man in the scientifically and technologically advanced part of the world gear up all its technological excellence and know how to tide over the anomalous situation in the wake of natural calamities and make him easier for him to live with other living being and environment where as man living in the scientifically and technologically advancing, does solve the problems to greater extent, the deplorable trend of overpowering exogenous systems (Natural calamities) on endogenous system (ecology), which call for an urgent attention from the point of view taking problems, this paper brings the scientific and technological prospective of encountering, countering and overcoming the spell of Natural disaster.

**DISCUSSION**

**Climate change**

Climate Change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time period. Science has made enormous inroads in understanding climate change and its causes, and is beginning to help develop a strong understanding of current and potential impacts that will affect people today and in coming decades. This understanding is crucial because it allows decision makers to place climate change in the context of other large challenges facing the nation and the world.

Most of the natural disaster originate at sea level due to sudden climate change. On broadest sense, the rate at which energy is received from the sun and the rate at which it is lost to the space determine the equilibrium temperature and climate of Earth. This energy is distributed around the globe by winds and ocean current. The ocean is a fundamental part of climate change. The surface sea water temperature rises steeply due to combination of solar radiation and change in the Green House gas concentration. That can be natural (change in solar output or anthropogenic (increase emission of green house gases)) where as the deep sea temperature more or less remains constant at below 4° centigrade, ocean depth still lagging in temperature adjustment. As a result which, there is expansion of deep sea water causing increasing volume hundred of times more and get lighter having very high inertia (atmosphere ocean circulation) some changes in it occurring at a longer time scale than an atmosphere. This can affect both global and local pattern of climate and atmosphere ocean circulation. 

**Impact of natural disaster on green house effects**

The green house effect is a process by which thermal radiation from a planetary surface is absorbed by atmospheric green house gases (water vapor (H₂O), CO₂ and methane (CH₄) etc.). The atmospheric concentration of green house gases are determined by the balance between sources (emission of gases from human activities and natural system) and sink (the removal of the gases from the atmosphere by conversion to a different chemical compound). This idealized planet’s effective temperature concluding for human ecology. This balance is in variably disturbed following natural disaster which is known as Reducing Emission from Deforestation and Forest Degradation (REDD).

**Green climate fund (G. C.F.)**

The Green Climate Fund in an annual kitty which is to change make over plan includes revival of the ecology by man make plantation to restore lush Green or lost greenery. Increasing planting in unknown forest land, exploring where new increased tree planting could create barrier to storm and cyclone impact in coastal zone. There is vast scope for increasing the carbon stock by increasing planting on non forest land. Under this initiative tree planting on these non forest land be undertaken.
Global warming
Large part of climate changes are caused by human activities and it largely irreversible. The increase in CO₂ level due to emission from fossil fuel combustion, followed by aerosols (Particulate matter in the atmosphere) and CO₂ released by industry, apart from ozone depletion, IT and massive deforestation. Currently the carbon dioxide retention –per capita emission is 4.8 tons compare to safety margin –per capita 2.8tons. Certain human activities (anthropogenic) due to increasing green house gases also have been indentify significant cause of recent climate change referred to as “global warming” and extinction of ecology⁵,⁹.

Impact assessment
This is “Loss and Damage” assessment and repair mechanism where the developing vulnerable Nations like India may get financial assistance on the premises that they had to suffer losses due to the damage by natural disaster. Monitoring carbon stock bio-diversity at regular interval is necessary to gauge the success. Besides assessing and estimating the quantum of loss of ecology due to natural disaster in pure economic and statically term it is all the more important to describe and appraise the entire gamut of the problems destruction, deprivation, destitution and suffering from living being. The impact of disaster on the economy continue to increase, becoming more severe. It is high time that the Professionals in combination with communities and society act together to minimize the quality and quantity of ravages and its consequence¹⁰.

As regard the bulk of living being including human being affected by a such a situation, available alternative perceive could be temporary evacuation to safety place as an immediate emergency majors. Needless to mention here that successful timely evacuation of 9,83,553 people from costal District minimizing human casualties during Phalin was highly applauded by UNO, 21 people died in the present disaster compare to 9,8885 casualties in the super cyclone that hit the state on October 29, 1999. Heavy human casualties, at Philippines Typhoon, Haiyan in Uttarakhand are the twin human ecological disaster ever encounter in this year. Migration to more develop region where they could find more opportunities to sell their labour for survival are observable post cyclonic event as well. In case of animal such structural constraint to sustains even the existing levels of living due to ecological ravage force them to migrate to human habitat.

In June 2008 Govt. of India National Action Plan on climate change (NAPCC) was announced. This Nation action plan focuses attention of priorities National Mission, such as, solar energy, enhance energy Efficiency, Sustainable Habitat, Conserving Water, Sustaining the Himalayan Ecosystem, A Green India, Sustainable agriculture and Strategic Knowledge Platform for climate change. The objective is to be adapt and enhance ecological sustain abilities of India development path. The vision is to create a prosperous self sustaining economic. The principle is to maintain a high growth rate and reduce vulnerabilities¹¹.

Assessing additional threat to biodiversity and wild life. Climate change possess a threat to wild life because many species may be unable to tolerate weather changes. Due to extreme weather condition there will be increase disturbance through fright. Increase strengthening the resilience of plant and wild life through the development of protected area and wild life habitat is necessary. Elephant requires much larger area of natural forest range, then many other terrestrial mammals. They are often the first species to suffer the consequence of climate change. Due to deforestation, these animals very often migrate to human habitat and causes destruction of houses, agriculture product. There may be loss of life of both sides due to clash as well. Other wild animals, birds are equally affected as observed in world famous bird Sanctuary Chilika Lake and Olive ridley, tortoise of Rushikulya river belt. (Fig. 1 and Fig. 2)
Each one teach one programme
The major second thought of success in environmental revival is “each one teach one” a green movement of plantation and fostering a tree by individual/ by the society. This has emerged as a viable model and part of social mobilization campaign for better environment with a “right to survival of a child” in better environment. Even though it is a game changing innovation model, sound basic, yet the central to the success story is at low cover price. It is a social movement to work to evolve new systems to support for community.

Bio-technology prospective
In the late 20th and early 21st century biotechnology has expanded to include new and diverse science. Such as domestication of animal, cultivation of plants, and molecular ecology meaning thereby manipulating biology to achieve a result, that can improve function in plant and animal.

Apart from industrial biotechnology applied to minimize Co2 emission and environmental pollution it has been successful in developing high yielding Genetically modified (GM) variety crop with reduced vulnerability to environmental stress, viral fungal and herbicide.

The elimination of a wide range of pollutant and waste from the environment is an absolute requirement to promote a sustainable development of our society. Biological process play a major role in the removal of contaminates. Biotechnology takes advantage of the catabolic variability of Microorganism and their abilities to degrade/convert such compound12,13.

Of late the space science has recently emerged as yet another milestone for earliest detection of calamitous storm. The phenomenal development in the application of space remote sensing technique have now become a very powerful tools for monitoring and management of lost natural resources/ biodiversity. The availability of internet access is on the threshold revolutionizing information collection of “Damage & Loss”. There are different models, but prediction are still not very accurate and more research need to be done. During the past twenty years the information flow has considerable improve till their loss of life, in major catastrophes, is very severe. Profiling the effective use of early warning system preparedness and evacuation, a key to the innovative successful model to mitigate the loss.

Application of this technology (Green Biotechnology ) have been filed under the protection of plant verities that enable some plants to cope with extreme condition10, 15-17. Even though the green revolution enabled India
to increase the food grain productivity to address the food shortage to feeds its growing population its destruction due to cyclone, calamity, heavy rainfall, climate change, wild animal is inevitable. More and more alteration between wild animal(elephant) and human being being leading loss of lives from both sides is a serious post cyclonic observation

**CONCLUSION**

In view of the prevailing recurrent natural disaster which has made economic condition of the people quite precarious, certainly one would ask for alternative strategies for alleviating the present state of disaster induced ecological ravage. The technical acumen to explore the reality of the calamities, the ability to suggest low cost and efficient ameliorative measures and other practical steps for curbing the situation, through innovative majors are alternative viable model to prevent extinction human ecology in the present scenario.

**REFERENCES**