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10

CLIMATE EXTREME, POVERTY AND STRESS NEXUS IN INTRODUCTION OF NOVEL DISEASES

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Abstract: *Our planet is functioning at the epochal point in time, where the world is encountered with numerous turmoils in getting to grips with poverty due to inequality and injustice occurring between and within countries. While, stress connected with poverty and impacted by climate change together are threatening the natural systems' sustainability and ecological well- being. At the same time this vicious circle, synergistically may evolve some novel diseases that never ever the populations on earth have experienced before. Assessment of anthropogenic impact in ecological settings on every occasion should recognize human as well as natural processes. The goal is to recognize an acceptable contribution of the climate extreme, poverty and stress nexus to perceivable encountered diseases. This article focused attention on some issues concerned with ecological integrity and epidemiological trend in the changing environment, impacted by human activities. While climate extreme, poverty and stress unveil themselves in different directions, they are closely interwoven. Dealing with landscape conservation against economic growth is an obvious complexity attribute. From an assessment perspective, a large programme like Ecological-Epidemiological interactions require large diverse projects across numerous countries constituting specific issues. In*

Key words: Epidemiology, Sustainable Development, Climate Extreme-Poverty- Stress Nexus.

Introduction

Our planet is functioning at the epochal point in time, where the world is encountered with numerous turmoil in getting to grips with poverty due to inequality and injustice occurring between and within countries. While, stress connected with poverty and impacted by climate change together are threatening the natural systems' sustainability and ecological well- being. At the same time this vicious circle, synergistically may evolve some novel diseases that never ever the populations on earth have experienced before. The World Health Organization (WHO) roughly expresses that between 2030 and 2050, around 250,000 additional deaths per year will be registered to climate-linked mortality (WHO, 2014a). Climate extreme, poverty and stress can have considerable direct and indirect interactions with sustainable development. Though worldwide economic improvement has promoted millions out of utmost poverty and inequalities, the uncontrolled climate change is pressurizing those achievements by reversing poverty elimination attempts globally, and unequally exerting impact on poorest communities and terrains. The wide-ranging interlinkages among environmental, economic, social and behavioral aspects of climate change are building the attribution of health consequences complex. But there is a common agreement among scientists that climate change bring detrimental effects to people (Woodward, A., et al., 2011).The World Bank report indicates, an extra 68 to 135 million people would be knocked out into poverty by 2030 for the reason of climate change. In undeveloped countries, a major portion of the population rely on natural resources for survival, that immensely impacted by climate change. The poorest communities due to the lack of access to basic benefits of health services, when climate change hit their property and revenue flow, get stress shock.

Climate change as a driver of biophysical effects is principally anticipated to intensify present health threats among people in sensitive areas by climate responsive diseases (IPCC, 2014). But the worse scenario is when, the diseases evolve their range of potency and create new conditions to emerge, which we call novel diseases. The pathways by which climate change affect human health at the primary level is through direct climatic exposure, at the secondary level is through climate-induced changes in ecosystems, and at the tertiary level is influenced by social and economic disruption in human systems. The mechanisms by which climate change act on human health are very complex for secondary and tertiary levels, as health consequences interconnect with environmental, social and political elements (McMichael, AJ, 2014). The complication of poverty is the key to identify the nexus between climate extreme, poverty and stress. Different types of poverty, such as, all the time versus most of the time and recurrent versus irregular poverty exist with distinct related vulnerability (Tanner, T., and Mitchell, T., 2008). A connected characteristic is the length of the poverty (Leichenko, R. and Silva, J. A., 2014). Each maintain its related vulnerability features (Tanner, T., and Mitchell, T., 2008). Poverty can also be tightly associated with environmental deterioration, because the impoverished community attached themselves with their basic necessity to natural resources. Moreover, poverty causes poor populations exceptionally to be vulnerable to climate change and jeopardize global future economic and social development. Thus, sustainable development should stand in need of growth that lower down the poverty level, while taking into action environmental solicitude (Dasgupta, S., et al., 2005; Lufumpa, C. L., 2005). Climate extreme, poverty and stress nexus are triple crises requiring unified, extensive and holistic perspectives. Climate extreme pressurizes society and impact health, wealth and communication status as a whole. The immediate obligation to address this crisis in a wide and integrative modus operandi, are being conditional on how to mobilize the resources. Safeguarding stock carbon-rich ecosystems, has numerous advantages for biodiversity and human beings. Large amount of carbon in these ecosystems has assembled

over very long period of time. If released, would augment greenhouse gas in the atmosphere (Cook-Patton, S.C., et al. 2021; Goldstein, A., et al. 2020; Noon, M. L., et al. 2021).

The carbon deposits in ecosystems are based on ecological cohesion and biodiversity. Protected areas and corridor connectivity together furnish ecosystem cohesion, resilience and buffering capacity. Hence, they are profoundly significant for carbon relief and retention in biosphere (Strack, M., et al. 2022). Resilience is intrinsically an implication concerning with systems, incorporating human inclusion, ecological systems and governance constituents, with the interlinkages among them (MEA, 2003; Ostrom, E., 2009). The system outlook can stipulate a merging structure to move ahead with climate-poverty-stress nexus, at all operational levels. Climate impacts aggravate present poverty and imparity by augmenting vulnerability. As Verner (2010) said, “climate change is a daunting danger to poverty diminution and if hasn't been solved properly will further worsen the vulnerability of the needy people.” In this condition, the poor do not have any option except to rely on nature with further degrading natural resources, which is named, resource dependency pitfall with climate repercussion. Climate change is affecting human health in innumerable ways, by reinforcing climate extremes, increasing climate-sensitive health hazards, spreading contagious diseases of extreme weather occurrences, the emergence and spread of transmissible diseases and disordering subsistence processes. Assessment of anthropogenic impact in ecological settings on every occasion should recognize human as well as natural processes. The goal is to recognize an acceptable contribution of the climate extreme, poverty and stress nexus to perceivable encountered diseases. This article focused attention on some issues concerned with ecological integrity and epidemiological trend in the changing environment, impacted by human activities. While climate extreme, poverty and stress unveil themselves in different directions, they are closely interwoven. Dealing with landscape conservation against economic growth is an obvious complexity attribute. Land degradation due to climate change, diminishes the fertility of agronomic arrangements and intensifies vulnerability to climate strikes, mainly for inhabitants having life in distant regions (Barbier, E. B. and Hochard, J. P., 2016), with high level of vulnerability to trauma and stress.

This research paper involves the system theory approaches to realize complex system and to detach effects on sustainable development. A complex system is specified by its component function in interconnected and interdependent direction, and as well how intercepting agents cause unanticipated outcomes. As menaces from climate extreme is more exacerbated, the merits of protected and reserved areas in capturing and storing atmospheric carbon has become more appreciated. It clearly advocates, the consideration for bigger areas in nature conservation. Moreover, the greater network connectivity of these areas, are the root of greater hope for the global species survival.

Methodology

The assessment procedures and methodologies keep continuously rectifying and becoming more attentive. The important is theory-based approach to assessment. The logic model of interaction is used to understand how nexus overlap and impact each other. The climate extreme data, economic and social background, and health features have been considered to determine the effect of climate extreme, poverty and stress nexus on the rate of diseases and deaths in this assessment.

Geographical Area

Provinces in north of Iran. North of Iran is a large and fertile region, consisting of the southern border of the Caspian Sea and the Alborz mountains. It includes the provinces of Gilan,

Mazandaran and Golestan, and covered with dense forests, snow-covered mountains and magnificent sea coasts.

Results and Discussion

Climate change is closely associated with people's health. Beside direct impact like heat stress, climate extreme can impact people through natural and socio-economic systems. Deprived people due to low adaptive capacities and confined resources are especially at risk of climate change. In the lack of proper policy reactions, the outcomes could obstruct global development attempts. Huggel et al. (2013) indicated, climate change attributes to increasing periodicity and severity of climate calamity, and how gaps in the capacity to react would affect society. These objectivities affect policy options with regard to development (Nelson, D. R., et al., 2016). Consequently, understanding climate events help secure communities from poverty, stress and diseases. As we know the climate change event occur in a long period of time, and the corresponding health hazards also develop in a long-range period of time. There is significant uncertainty between the interactions of human system (social and economic) with natural system (ecosystem). For health officials any policy planning response depends on understanding of interaction between these two systems. However, fortifying the health system and the correlating policy development, need authentic evidence on the connection between climate and health.

Climate change making our endeavor more bothersome to progress towards poverty reduction and health promotion. We do not need another pandemic zoonotic disease like COVID-19, to understand that, the functioning of our natural system is disconnected and disrupted. In spite of the extent of disaster, the influence of climate change on health has not been fully understood. The underlying physiological features connecting climate change with the occurrence of vector-borne and waterborne illnesses is well illustrated by many researchers (George, A. M., et al. 2024; Semenza, J. C., et al. 2023; Thomson, M. C., et al. 2022; Wong, C., 2023), but the scale of danger has hardly been expressed (Mora, C., et al. 2022). Roy et al. (2018) have figured out, social justice and fairness are central passage of climate-resilient progress path for transformational social transition. Climate change has intense and substantial detrimental effects on human health and ecological integrity. The warming planet would drive vast majority of population into greatest poverty, health emergency and environmental catastrophe, hence reducing the life expectancy and increasing the cost of illnesses. The study reveals that, climate extreme increasing morbidity and mortality from communicable and non-communicable diseases through food insecurity, insufficient nutrition and inadequate access to safe water and proper sanitation. Moreover, there are great trauma on maternal and child care mental health, and altogether making fatal illnesses outbreak, some may be newly encountered diseases. Thus, climate-poverty-stress nexus impact on diseases and societal well-being should always be systematically considered in the development processes.

Recommendations

- Incorporate attention of poverty and stress into Nationally Determined Contributions (NDCs).
- Execute climate vulnerability monitoring and evaluation for vulnerable population.
- Build resilient infrastructure and promote sustainable economic growth.
- Sustainably manage natural resources and restrain climate change.
- Systematically monitor and evaluate climate extreme health vulnerability for promoting health services delivery.
- Expand the capability and knowledge base for united climate-poverty-stress actions.

Conclusion

Anthropogenic pressures are exceeding the biosphere integrity and threatening the secureness of the global environment. The increasing impacts of climate extreme, poverty and stress nexus on human development and the incoherence of reaching the Sustainable Development Goals (SDGs) without addressing this relationship, may jeopardize urban environment and nature together. The global Ecological-based Epidemiological trend (EbEt), (The determinants, occurrence and distribution of health and disease response rate to the continuous exposure and full array of interactions within an ecosystem.) clearly indicate the firm interlinkages between ecological integrity and global health in the urban-rural landscapes, as it evolves with climate change impacting environment, poverty and health. In certainty, the health strikes from climate extreme are firmly interconnected with ecological and social systems which furnishes a chance to strengthen the adaptation and mitigation capacities through intersectoral cooperation.

Environmental problems are unexpectedly complex and the climate extreme, poverty and stress nexus have multi features and hard to assess. The unique challenges are the geographical scales, data accessibility, quality and reliability, and issues concerned with research plans that produce challenges for estimating appropriation of ecological disruption to the occurrence of novel and recurrent diseases. From an assessment perspective, a large programme like Ecological-Epidemiological interactions require large diverse projects across numerous countries constituting specific issues. In this regard the first challenge concern is clustering the results at the global level. The next major challenge concern is the indirect monitoring impacted by policy transformation. It is a necessity to expand a more unified and interconnected assessment structure illustrating the nexus between the environmental integrity and diseases outcome. Assessment should elaborate our vision on environmental concerns in relation to national and global development processes. Moreover, assessment provide remarkable clue to draw strategies and outline interventions to cope with complex system impact. Only meticulous assessment would stipulate answers to complex challenges concerned with the planet-wide ecology-epidemiology nexus and the nexus improvement can vigorously contribute to various aspects of sustainable development.

Moreover, the climate change is enhancing the periodicity of climate extreme occurrences and the appearance and proliferation of contagious diseases. Not only will the rate of morbidity and mortality escalate, but also the geographical range and locations. Countries with low GDP and high poverty face devastating effect. In health system we should recognize and address the interactions among climate, poverty and stress nexus to emerging diseases. We should strengthen the reduction capacity of greenhouse gas emissions and increase investments in primary health care systems. The funding must direct all activities in building resiliency towards climate change impacts. The compliance of good governance approach in diseases risk reduction policy fabricate the policy settings to structural improvement for developing long-term adaptive capability to climate change. There is a need to mainstream relationships of poverty-stress decrements with climate accountabilities to existing and new national health policies and long-term development plans. Thus, the climate-responsive development, poverty-responsive climate mitigation and adaptation, and stress–responsive poverty augmentation are decisive elements in strengthening the link and adhesiveness required among reactions towards climate change and poverty-stress decrement. In spite of new approaches in linking among climate change with other elements and features, there is still huge gaps in understanding the climate-poverty-stress nexus in introducing novel diseases. However, it is crucial to enhance cohesion between climate policy and actions, in order to strengthen control over current and newly encountered diseases

related to climate change. Furthermore, connectivity that integrates climate, ecosystem and development advantages, should confer poverty and stress relieves, because gaining profits from coexistence with natural resources and problem solving through Nature-based Solutions (NbS) can enhance environmental protection and reduce communal poverty and diseases outbreak.

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