

THE IMPACTS OF ENVIRONMENTAL CHANGE ON DEVELOPMENT WITH PRACTICAL EXAMPLES FROM AFRICA AND THE REST OF THE WORLD

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ABSTRACT

Global Environmental Change is an increasingly discussed phenomenon in the scientific literature as evidence of its presence and impacts continues to emerge from different corners of the world. These changes in the environment one way or the other has significant effects on the development of the world economy. As a result, this paper sought to assess the impacts of environmental change on development with practical examples from Africa and the rest of the world. It specifically identified the factors responsible for environmental change; examined the relationship between environmental change and development; and the impacts of these changes on development with examples from Africa and the rest of the world. The paper is purely a desktop descriptive work and as such employed the use of secondary data obtained from the internet, books, global reports and journal articles for the description of the phenomenon under study. From the study, it can be concluded that the global environment is changing on a higher rate as a result of both natural and anthropogenic factors. These factors range from volcanic eruptions, ozone layer depletion, climate change, atmospheric and water pollution as well as deforestation. The changes in the environment has negative consequences on the natural environment, human health and economic development. This therefore has resulted in the low quality of life of individuals in the global economy. It is recommended that the global economy inculcate into their policies, programmes and project most of the multilateral agreements geared towards mitigating environmental change.

Keyword: - *Global Environmental Change; Climate Change; Development; Environment.*

1. INTRODUCTION

Global environmental change (GEC) is an increasingly discussed phenomenon in the scientific literature as evidence of its presence and impacts continues to emerge from different corners of the world [14]. The notion of GEC refers to a set of planetary-scale changes in the Earth System spanning from large scale changes related to the global geosphere and biosphere systems (e.g., nitrogen and carbon cycles, biodiversity loss) to changes at the local or regional scale and related specifically to human activities (e.g., waste production, extirpation of species, land-use changes). The processes driving GEC result from complex articulations of human actions [17] as well as from biological and physical processes, sometimes resulting from the accumulation of even multiple localized processes.

Environmental change has been described by scholars as an integrative, all-encompassing, and even cyclical process [7] [1], with significant social dimensions. Environmental change occurs as a result of both natural and human processes. Environmental systems and human activities contribute to environmental changes through the transformation and transportation of large quantities of energy and materials. Natural systems transform the sun's energy into living matter and cause changes by cycling materials through geological, biological, oceanic and atmospheric processes.

Development according to [6] includes the conditions of reality that allow people to take their destiny into their own hands individually and collectively. It can equally be defined in terms of the ability and capability of a people. In accordance to Principle 1 of the Stockholm Conference of 1972, 'Human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'. Development

therefore must necessarily include the conditions of reality that allow people to take their destiny into their own hands. Taking their lives into their own hands will involve economic, social, political, psychological, environmental, cultural, religious and international dimensions of their environment. Development can also be defined in terms of the ability and capability of a people with much focus on human needs.

With reference to the prevalent changes occurring on the environment, this paper sketches out a broad framework to address the impacts of environmental change on development with practical examples from Africa and the rest of the world.

1.1 Aims and objectives

This paper seeks to assess the impacts of environmental change on development with practical examples from Africa and the rest of the world. Specifically, the paper seeks to:

1. Identify the factors responsible for environmental change;
2. Examine the relationship between environmental change and development,
3. Substantiate the impacts of environmental change on development with examples from Africa and the rest of the world.

2. RESEARCH METHODOLOGY

This paper is the result of a desktop descriptive work and as such employed the use of secondary data obtained from the internet, books, global reports and journal articles for the description of the phenomenon under study.

3. RESULTS AND FINDING

This portion of the paper looks at the various objectives as they appear in the reviewed literature.

3.1 Objective 1: Factors Responsible for Global Environmental Change

Although there are a number of factors that contribute to changes in the environment globally, the discussion in this paper limits it to both natural and economic factors.

The environment undergoes changes naturally from time to time as a result of physical and biological processes which are constantly taking place globally. The inequalities in the earth's energy balance results in the depletion of the ozone layer which has negative consequence on the environment [3]. This depletion is responsible for increasing levels of ultra-violet radiations which have serious consequences on the health and survival of all species and their ecosystems. Loss in biodiversity as a result of the species extinction results in changes in the environment which has cumulative impact on development globally.

It is also important to know that climate change which is a global phenomenon and characterized by rise in the average global temperature, thawing of ice blocks and permafrost in the north and south pole; loss of glacier and snow on tall mountains like Mount Kenya; changes in the timing and rainfall distribution as well as sea level rise leads to frequent climatic droughts and flood which causes serious changes to the global environment.

Human activities such as deforestation is a major contributing factor to the global changes in the environment especially in the tropics. This is where natural forests which serves as a major carbon pool for the environment is cleared for timber, agriculture, settlements, infrastructure development and mineral mining. The overexploitation of these dry land resources over time leads to the reduction in vegetation thereby increasing the wastage of land through loss of soil fertility, enhanced soil erosion and desertification. This process in the end leads to social conflicts as well as loss of livelihood and displacement of pastoralist communities.

In addition to the above, atmospheric pollution with carbon dioxide and other gasses from human activities is equally responsible for the greenhouse effect and subsequently global warming. Acid rain formed as result of the increasing rate of these gases in the atmosphere threatens both plants and animals while water pollution threatens human and aquatic life. All these changes in the environment results in global environmental problems which has serious repercussion on development [18].

3.2 Objective 2: Relationship between Environmental Change and Development.

Environmental change and development interact in a circular fashion. Alternative development paths will certainly affect future environmental change, and in turn, environmental change will have an impact on prospects for sustainable development [9]. In the same context, environmental change may endanger the success of some development co-operation efforts and vice versa, i.e., some development assistance efforts could (unintentionally) have repercussions for a country's emission levels or mitigation options, as well as exacerbate its vulnerability to environmental change.

3.2.1 Economic and social risks arising from environmental change

Decision-makers for a variety of reasons are beginning to show more interest in the assessment of how environmental change poses serious threats to the future basis for improving the quality of life of the human population.

First and foremost, from the social perspective, existing evidence demonstrates that poorer nations and disadvantaged groups within nations may be especially vulnerable to global environmental change [5] [10]. The historical effects of large scale regional phenomena like El-Nino could provide some indication of the likely future impacts of climate change on a planetary scale [12]. Global environmental change is likely to exacerbate inequities due to the uneven distribution of the costs of damage, as well as of necessary adaptation and mitigation efforts – such differential effects could occur both among and within countries.

From the economic viewpoint, global environmental change will have diverse effects, but the larger the changes and rate of change in the environment, the more the adverse effects predominate [10]. In its simplest form, the economic efficiency viewpoint will seek to maximize the net benefits (or outputs of goods and services) from the use of the global resource obtained from the environment. Broadly speaking, this implies that the stock of environmental resources or assets, which provide a source of raw material for production, needs to be maintained at an optimum level. The underlying principles are based on optimality and the economically efficient use of a scarce resource, i.e., the global environment.

3.3 Objective 3: Impacts of Environmental Change on Development

3.3.1 Natural impacts

The impacts of global environmental change on the natural environment is evident in a number of ways. These changes are already visible, for instance; temperatures are rising as a result of the disequilibrium of the energy budget; polar caps are melting as a result of the changes in the climatic conditions in the polar regions; sea level is rising due to the thermal expansion of the oceans and ice melting of Greenland; the rapid increase in desertification and the wetted winters in Europe. It has been scientifically demonstrated that Mount Kilimanjaro through the years contains less and less snow as a consequence of global heating. It is questionable whether this mountain in Tanzania will be covered with snow at all in the next 50 years.

It is also concluded that the number of natural disasters increases more and more over time. Tsunamis, floods and extreme drought occur more frequently than in times past. Between the periods of 1950-1960 there were 13 natural disasters worldwide were registered as compared to 72 in the period 1990-1998 [1]. What do we think will happen in the next 20-30 years from now? These are questions we need to ask ourselves as the environment continues to change globally on a more alarming rate.

3.3.2 Economic impacts

Changes in the global environment will have enormous consequences for living organisms naturally as well as the economy. Even a small rise in mean annual temperature can have a major impact on a region's ecology and biological diversity [13]. Biodiversity is of crucial importance for the stability of ecosystems as well as for human health [8]. The economic impact of drought, floods, and other environmental change effects will become quite substantial. Some researchers estimate that these costs are set to rise to between 5% and 20% of global income [16]. For example, in regions where environmental change leads to more severe drought, poverty and hunger will be exacerbated rather than eradicated. The multiple impacts of environmental change on biodiversity will mean less environmental sustainability.

Conflicts among pastoral communities are also likely to rise along with high temperatures. The drying up of grazing areas as a result of high temperatures in Sub-Saharan Africa is one of the compelling reasons for the frequent migration of pastoralist in search of food for their numerous animals which are likely to starve if they stay in their comfort zones. Cattle, goats, camels, sheep, and other animals who depend on access to grazing areas for food will suffer from hunger and dehydration. As water supplies dry up, farmers and herders are living out an ancient struggle over land and water resources [4]. One startling example is in Sudan's Darfur region where the effects of climate change coupled with population growth, including dwindling water supplies and diminishing arable land, have reportedly created an untenable and devastating situation. Farmers and herders have taken to arms, fighting to gain and maintain control of increasingly scarce water and land. Not confined to Sudan, these same conflicts are being fought with greater frequency in several other African nations, including Ghana, Nigeria, Chad and Niger.

3.3.3 Health Impacts of Environmental Change

Global environmental change would affect human health through pathways of varying complexity, scale, and directness and with different timing. Similarly, impacts would vary geographically as a function both of the environment and topography and of the vulnerability of the local population. Through environmental change, humans are contributing to a change in the conditions of life on Earth. The more direct impacts on health include those due to changes in exposure to weather extremes (heat waves, winter cold); increases in other extreme weather events (floods, cyclones, storm surges, droughts); and increased production of certain air pollutants and aeroallergens (spores and molds). Environmental change will mean that malaria spreads further around the globe rather than being effectively combated.

Decreases in winter mortality due to milder winters may compensate for increases in summer mortality due to the increased frequency of heat waves. In countries with a high level of excess winter mortality, such as the United Kingdom, the beneficial impact may outweigh the detrimental [11] [15]. Environmental change, acting via less direct mechanisms, would affect the transmission of many infectious diseases (such as water, food and vector-borne diseases) and regional food productivity (such as cereal grains). For vector-borne infections, the distribution and abundance of vector organisms and intermediate hosts are affected by various physical (temperature, precipitation, humidity, surface water and wind) and biotic factors (vegetation, host species, predators, competitors, parasites and human interventions).

4. CONCLUSIONS AND RECOMMENDATION

In conclusion, the global environment is changing on a higher rate as a result of both natural and anthropogenic factors. These factors range from volcanic eruptions, ozone layer depletion, climate change, atmospheric and water pollution as well as deforestation. The changes in the environment has negative consequences on the natural environment, human health and economic development. This therefore has resulted in the low quality of life of individuals in the global economy.

It is recommended that for the global economy to mitigate these environmental challenges, actions at all levels must be taken. Global, national and community actions must be incorporated in policies, programmes and projects of individual nations. Countries must strengthen their capacity to implement multilateral environmental agreements to which they are signatories to. Examples of such includes Convention on Biological Diversity, Convention to Combat Desertification and many others.

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