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Full Length Research Paper

Global Warming, Climate Variability Influences, and Destitution in Emerging Nations

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Abstract

This essay started with discussing the similarity and difference of climate variability and climate change and it was noted that these are inseparable. Discussions and debates along with pledges to help emerging nations to curtail GHGs were also tackled. Renown people have talked and reminded the UN Conference that the longer no action is taken to solve this, self-extermination may result (Araujo, 2000; Dankelman and Davidson, 2013). Just this week a young lady forcefully talked to the world leaders to change their course of steering the world boat which if the thinking is to gain riches then we all are to perish. For poor countries vis-à-vis guinea pigs where some new and vital innovations are brought in for trials, demonstrations and experiments, time and opportunities avail to us to take advantage of (Gueron, 2017). Destitution cannot be overemphasised as on daily basis many Africans are leaving their own countries for Europe perhaps to get a better life Social learning is one approach that can solve the challenges faced by both illiterate and educated farmers.

Keywords: Global Warming; Climate Variability; National Governments

Introduction

The fundamental purpose of this essay is to initiate discussions and provide a contribution of climate variability causing unprecedented destitution mushrooming in emerging nations generally and Malawi particularly. This is revealed to a large extent by high poverty levels and food insecurity that is widespread in many countries. It amazes a lot of people with the rhetoric speeches made in international conferences that are inaccurately conveyed that something is being done affecting and transforming the wel- fare of people, but yet these discourses frequently lack honesty or consequential content. World leaders were reminded world lead- ers, national governments, the humanitarian community and do- nor agencies of making the best commitments to address the root causes

of poverty, chronic hunger and reduce human suffering [1]. Yet nothing has been done up to now.

What is exactly perceived is when people exercise their prow- ess of speaking, but what is on the ground is to the contrary even completely nothing. Since beggars cannot remind the givers, the sit- uation remains as it were [2]. Time has come now of telling people the truth about what climate variability is doing and can do. More importantly and necessary, to show what should be done to avert the suffering of the people [3]. Climate variability is nonetheless critically threatening a significant number of people that makes the already tough global situation of food insecurity even worse. The developed countries only show crocodile tears and giving their usu- al lip service. Promises and pledges have been made towards avert- ing and reducing the production of greenhouse gases (GHG) [4].

This situation is portrayed by an increased likely effect of climate variability that is destroying already scarce renewable resources. More recently, Cyclone Idai affected large parts of the Southern African Region particularly ravaging three countries, namely: Ma- lawi, Mozambique, and Zimbabwe. It has been revealed that more than 1.5 million people have been affected by flash floods with 150 deaths reported [5]. Scrutinising very closely these countries are also experiencing the worst circumstances in terms of people's welfare. Malawi is one of the least developed countries in the world and a very impoverished country where more 52% leaving below the poverty line the people can be categorised as destitute in the own country [6,7]. If war can be factored in, then Malawi is at the bottom of impoverished countries. Mozambique which has been in a war is above us a country that has never experienced war and the facts are there for anyone to cross-check.

Global warming, which is cited by many experts, researchers and professionals, is likely to spoil irrevocably the natural resource foundation on which agriculture depends, with grave consequenc- es for food security which can also lead to armed conflicts [8-10]. Malawi, being an agro-based nation, takes this development seri- ously. Besides, climate variability could also meaningfully restrict the country's economic growth. According to meeting the double challenge of realising food security and other social developmental benefits, on the one hand, and extenuating and acclimatising the climate variability, on the other, determines commitment at the highest level of policy decision making and the active participa- tion of the affected people. According to NRC what is more painful though, is not time per se, but not encouraging people to transform the mindset to deal with climate variability [11].

While concerted efforts have been made to minimise starvation and poverty globally, progress in sub-Saharan Africa (SSA) has so far been very inadequate. Irrigation which has been observed as an opportunity to improve and sustain rural livelihoods [12], and proclaimed to increase crop productivity that can improve food in- security by using simple new technologies to inform farmers when and how much water to apply are not easily adopted by farmers [13]. It is an absolute fact that every year, world leaders, national governments, the humanitarian community, and donor agencies meet to make uncompromising commitments to resolve and ad- dress the root sources of poverty and enduring starvation to lessen human suffering, yet nothing tangible is seen and done.

Country situation

Malawi is a country located in the southern part of Africa. It is exclusively within the tropics; from about 9° 30' S at its northern-most point to about 17°S at the southernmost tip, with a territorial area of 118,480 km2, of which 20% is water. It has a tropical climate with unpredictable temperatures, relative humidity and fertile soils [14,15]. The country's topography is highly varied; the Great Rift Valley runs North to South through the country, containing Lakes Malawi, Malambe, Chilwa, Chiuta and the landscape around the valley at an elevation of around 800-1200m, but with Sapitwa Peak as high as 3000m. The country has a tropical climate; however, its high elevation influences relatively cool climate in up- land areas.

Malawi is a country with very fertile soils that has not relied very much on its mineral resources. The people are hardworking, very trustworthy and very friendly. The economy is propelled by the tobacco, popularly known as the 'green gold' by locals. Due to market liberalisation in the early 1990s soon after the second republic, allowing the buyers of tobacco to participate in growing the crop turned the tables around. Farmers who were able to feed their families became beggars and impoverished over a short time. Instead of the government protecting its people, middlemen ben- efit enormously [16-18]. The government has not come up with an alternative crop to tobacco, it is playing the song 'let the sleeping dogs lie'. It will be too late when we shall realise that the country missed the opportunity to bring in a crop that farmers would easily be able to grow and manage.

Weather, climate variability and climate change integra tion

Weather is one of the important factors that explain spatially and temporary the prevailing atmospheric conditions, in terms of temperature, humidity, wind speed, and rainfall. It frequently changes from day-to-day. Climate is a normal pattern of weather conditions over several decades for a certain place. What is impor- tant is that changes in climate are very hard to identify without records kept for a very long. Lippard., et al. claimed that climate is what you expect, whereas weather is what you get [19]. Alterna- tively, another way to differentiate the between weather, climate variability and climate change is to think about how they operate on different time scales. Thus, weather operates within hours, days and sometimes months; climate takes longer from months, years and to decades, and climate change operates over a longer period from several decades to centuries. According to Hoegh-Guldberg., *et al*. weather consists of rainstorms that might last one or two hours and tropical cyclones that may last days [20]. Climate vari- ability, another phenomenon, is defined by climate patterns like El-Niño Southern Oscillation and climate change refers to things which happen over centuries, like global warming. Continued use of fossil fuels and GHG like methane, carbon dioxide continues to affect global climate conditions.

One may ask why talking about climate variability and climate change. There is one simple reason why it is important to under- stand what one has to do and solve. It is difficult to comprehend the composition of the atmosphere. It is extremely complex and non- linear in the way it reacts. Teasing out and ascribing the prop- erties of climate change and climate variability is not an easy issue, and it is an area that requires an ongoing investigation across the outsized scientific disciplines [21,22]. Prevailing disaster models, however, often include statistical and meteorological methods that reflect both climate change and climate variability. If an explicit form of climate variability involves, for instance, environmental conditions supportive of serious rainstorm development, then that effect is covertly involved. If the effects of climate change, however, influence those same environmental conditions, then they are also taken into account.

Atmospheric models are frequently revised and include investi- gated established results using more recent data to reflect uncer- tainty in the current climate regimes. Any climate change that has already occurred is indirectly accounted for and previous changes are taken into account as the models are revised repeatedly [23- 25]. Thus, climate change and climate variability do not operate in isolation, however, each mechanism plays a vital role in shaping the prevailing climate; thus, they both influence the daily weather risk. It is upon this fact that as people who are affected by the vagaries of weather vis-a-vis climate variability, we need to realise, consider and put in place things or assets that will help us in time of need. What are these issues we need to consider and put in place?

Famine and erratic rainfall distribution

Several new agricultural technologies have been developed and have been proven successful in research stations in SSA to solve famine which is on the increase. Whilst fingers have been pointed at pockets of poverty in areas considered by erratic rainfed distri- bution and/or fragile soils, little research has been done to iden- tify why smallholder farmers do not adopt these simple to use technologies particularly in irrigated farming [26]. But before the issue of famine is critically discussed, it is better to differentiate and discusses what is meant by "climate change" and by "climate variability." People are already familiar with the contrasts between 'weather' and 'climate'.

Weather simply denotes the atmospheric circumstances an- ticipated or likely to occur in a certain locality during a period of hours or days, while climate, on the other hand, characteristically, concerns how atmospheric air conditions behave, on average, over the years or decades [27]. These conditions have perilous impli- cations on water availability on productive, environmental and social function in agricultural sub-sector and the wider economy. For instance, crop productivity in largely-external farming systems is slackening, serous environmental challenges are slowly emerg- ing, and both land fragmentation and water scarcity extremely constrain intensification of irrigated farming. Consequently, some high potential areas demonstrate diminishing marginal returns for further land expansion as Hazell and Fan noted, that in many cases, this relates adversely with the likely water accessibility to develop and expand more land for farming [28].

Climate variability and change are currently negatively influ- encing Malawi, where greater frequencies of droughts and flood events have interchanged over the last past years resulting in increased outbreaks of pests and disease with severe economic and

social consequences [29]. Malawi is one of the most suscep- tible countries to climate change in the Southern African Region and it adversely affects agricultural productivity, the backbone of the economy. The effects of climate change, however, are revealed in numerous ways in terms of rainfall intensity and distribution, floods, and prolonged dry spells during the farming periods. It is estimated that climate change is already negatively affecting more than 84% of Malawians who rely on rainfed agriculture and other natural resource-based livelihoods.

Although the climate is noted to vary rather sluggishly, this should not be disregarded and thought to be looked into the future. Numerous factors cause temperatures to oscillate around the mean without influencing necessarily the long-term average effects to global or local changes. This event is climate variability, and it is usually referred to periods ranging from months to as long as 30 years. The recognition of this fact is about describing something that is naturally influenced and not man-made process, affecting the atmosphere [27]. Experts have alluded to the North Atlantic Oscillation (NAO) changes in atmospheric pressures at sea level frequently linked to the above-average storm events over parts of Europe and the United States. Its opposite is the likely familiar event, the El Niño Southern Oscillation (ENSO) phenomenon near the equatorial Pacific Ocean, where instabilities of sea surface temperatures characteristically fluctuate every few years between a warming phase (El Niño) and cooling periods (La Niña), with a neutral phase in between [30]. Several investigators have observed that negative ENSO years are correlated with a higher likelihood of Atlantic hurricane formation, as well as warmer, dryer weather in northern states.

Accepting, scientifically of course, that there are variations in the earth's atmosphere composition that happen over much longer periods, spanning from decades to millennia, these variations can be characterised as climate change as claimed by Cubasch., *et al*. not climate variability as discussed above [31].Climate change, similar to climate variability can be caused by natural processes however by volcanic activity, solar variability, plate tectonics, or shifts in the Earth's orbit. The changes that occur through these processes are referred to changes attributable to human activity. The fifth Assessment IPCC Report noted on average that worldwide temperatures increased nearly 0.85°C from 1880 to 2012, and surmised that more than 50% the observed increase in global average temperatures was due to carbon dioxide and other GHGs [31].

Our take and irrigation development

Reports indicate that over the course of the last generation more than a billion people graduated from the most destitute livelihoods.32 But the question to be answered is; Will this prog- ress continue over the coming decade in emerging countries? The response is definitely NO! While the big success against the very worst poverty was rapid globally, the number of people in extreme poverty however dropped from nearly 2 billion in 1990 to about 650 million in 2018. This cannot however be translated in in terms of food security and social wellbeing, meaning decent housing which are critical. People in SSA are trekking to Europe because they cannot fend for themselves. Others have been displaced in their own country due to many issues hanger and water scarcity being imperative.

As you may have noted in the introductory paragraph, numerous conferences and pledges have been made to deal with these phenomena. Quoting Leonardo DiCaprio what he said at the UN Conference in 2014, which has not yet been answered up to this date is about climate change that "None of it is rhetoric, it is not hysteria but rather it is an absolute fact'. He did not miss words but hit the nail on its head. He echoes the scientific community which has been developing technologies that even illiterate people can us. The industries have reduced costs so that even the poorest of the poor can be able to acquire. Most governments in SSA have come up with conducive policies for farmers to adopt and use these technologies. Fiscal budget allocations for agriculture in some countries have been improved However, why are farmers in SSA still not improving their agricultural production processes? Reading newspapers and information gathered from other social media platforms, one issue that comes out clearly and threatens most countries is climate change. For instance, Nevitt noted cli- mate change to be the single national greatest security threat that has to be dealt with decisively [33].

Acknowledging that one of the most critical issues of the 21at Century is climate change is not wrongly recognised. Climate change is indeed threatening the lives and livelihoods of billions of people. Natural tragedies, ecosystem degradation, and extreme weather patterns mess up harvests, deplete fish resources, erode livelihoods and induce communicable diseases. Some effects come on

unexpectedly, for instance, a cyclone of unique forces destroying whole communities. Besides, persistent drought destroys crops, leaving people without food or income.

Malawi is endowed with 5 million hectares of arable land and 407,862 hectares of potentially irrigable land and barely 104,634 hectares has developed for irrigation purposes [34]. However, the country has not taken the comparative advantage of the climatic condition, the large expanse of land that stays idle during the dry season and the ever-increasing growing population to produce sufficient food production. It was during the first republic that Malawi never complained much about food insecurity. The problem is that once a new pollical administration comes into power in Africa, everything the previous administration was doing good is not taken on board in their policies [35-37]. Training of grassroots manpower in Malawi has completely been discarded although these cadres could train farmers to grow a variety of crops that could thrive well with maximum yield in different ecozones of the country. Whilst, there is no denying that the youth require higher education, the decision-makers do not always consider introducing incentives that would retain them in the countryside.

Fundamentally, country's natural resources are categorised as having fair to good soils, but poor, variable rainfall distribution with low quantities as the case in arid and semi-arid regions [38]. Nevertheless, new technological development to improve irrigated farming by informing farmers when and how much water to apply have provided the opportunities to utilise the water and soil to the best advantages and all the year-round. Some devices that proved to be very beneficial only accessible by the very affluent farmers mainly in developed countries. Devices like tensiometers that are very relevant today are so expensive that farmers in SSA cannot afford.39 Besides, it is very challenging for a farmer to visit a neigh- bour's field plot to learn from him. This aspect is very divisive and controversial when it comes to sharing knowledge.

The genesis of irrigation development in the 1960s started with large schemes managed by the government [40]. These schemes are no longer operational as there has been a change of manage- ment. The underperformance of several irrigation schemes due in part bureaucratic and unprofessional management tendencies in- stigated a change in doing things as usual. Besides, this coincided with the global weakening economy and several political crises of the 1980s in many countries. It was until in the year 2000 that Malawi initiated for greater water users' participation in irriga- tion management that then lead to irrigation management trans- fer (IMT) [41-43]. While this seemed to be a good idea, there is nothing worth pointing at. Irrigation systems managed by farmers themselves are experiencing multiple complex challenges. Much of it is water demand conflicts due to climatic variability and change, compounded by socioeconomic issues. While relevant organisa- tions for water management have been established to cope with the water management, evidence on the ground shows completely different situation, institutional adaptive capacity is very weak re- quiring some influence [44].

Improving water management through social learning

What is vividly noted throughout the soil and water engineer- ing field is how people's behaviour can be changed most effectively. Transforming a person's, the mindset to ensure thinking in a new desired way is crucially beneficial [45,46]. Notably, this is workable but takes time and effort to effect a supportive change. Neverthe- less, if it is essential, time and effort can be effectively invested so that one person's mindset change can lead to taking actions re- quired to generate thrust and a vital mass of obligation. However, there are some basic aspects to consider in doing this.

People are social being as such we learn from each other. Good or bad things are learned from others and this where more values are strict to be considered. Social Learning Theory (SLT) suggests that people learn from one another through reflexion, coping, and demonstration [47]. The SLT has frequently been known as a bridge between behaviourist and cognitive learning theories because it incorporates attentiveness, drive, responsiveness, and enthusiasm. This theory is a learning process and a change of social behaviour that suggests that new behaviours can be learned by perceiving and imitating what other people are doing.

Recently, simple innovative tools have been developed that even illiterate people can use in irrigated farming [48-50]. They are relatively cheap if one compares with tensiometers. Some of these devices use colour coding to determine water retention in the soil which a farmer will be able to know when and how much to use. It is a change in farmers' behaviour to change how much water to use. The beauty of SLT inculcates a human social behaviour that offers that new behaviours can be assimilated by coping, asking and

forming learning platforms with other farmers doing very well. Waiting for affluent nations with their pledges to come and bureaucratic processes it may take longer. Whilst other gen- erous inventors of new affordable technologies and researchers bring these devices to us, the talk should be what can we learn from those using these devices.

Conclusion

This essay started with discussing the similarity and differ- ence of climate variability and climate change and it was noted that these are inseparable. Discussions and debates along with pledges to help emerging nations to curtail GHGs were also tack- led. Renown people have talked and reminded the UN Conference that the longer no action is taken to solve this, self-extermination may result [51,52]. Just this week a young lady forcefully talked to the world leaders to change their course of steering the world boat which if the thinking is to gain riches then we all are to per- ish. For poor countries vis-à-vis guinea pigs where some new and vital innovations are brought in for trials, demonstrations and ex- periments, time and opportunities avail to us to take advantage of (Gueron, 2017). Destitution cannot be overemphasised as on daily basis many Africans are leaving their own countries for Europe perhaps to get a better life Social learning is one approach that can solve the challenges faced by both illiterate and educated farmers. It is recognised in this essay that SLT is at the root cause of numerous cultural and psychological interrogations that also include the effect of nature against. nurture on human personality intentions and behaviours of acquiring self-respect and wellbeing [53].

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