1. Introduction

Scientists now agree that the increasing concentration of greenhouse gases in the atmosphere due to human activities is responsible for climate change characterized by rising temperatures and changing weather patterns on the Earth’s surface. This phenomenon, generally referred to as global warming, may bring certain localized benefits, such as fewer winter deaths, from hypothermia and exposure, in temperate climates and increased food production in some areas. Overall, however, the effects of a changing climate are likely to be overwhelmingly negative on health. Evidence suggests that the rising average global temperatures over the last 50 years are primarily due to increased emissions of anthropogenic greenhouse gases. The resultant global warming has, and will continue to have, negative health effects on humankind. The Fifth Assessment Report of the United Nations Intergovernmental Panel on Climate Change projects that, by 2050, climate change will exacerbate world health problems, and that countries with low health outcomes will be at the greatest risk in the future (IPCC, 2014).

Together with most other sub-Saharan countries, Kenya is projected to experience higher temperature increases than the global mean temperature, with adverse effects on human health. This is because climate change affects the main social and environmental determinants of health – clean air, safe drinking water, sufficient food, secure shelter, and vector-borne diseases. The present policy brief explores the effects of climate change on health in Kenya and recommends adaptation measures.

The climate change framework policy spearheaded by Kenya’s national Government shows that most parts of the country have experienced rising temperatures, while at the same time rainfall has generally become more erratic, often falling in large amounts over short periods thereby causing flooding. In short, high climate variability is associated with abrupt shifts between extreme drought and flood conditions. Where Kenya’s climatic zones are concerned, dry zones in arid and semi-arid lands are projected to receive high rainfall with increased floods, while the highlands are projected to become warmer with reduced precipitation (GoK, 2013). These changing patterns will redefine the current climatic zones and present unprecedented challenges to the health system.

2. Trends in selected health outcomes

Over the years, the Government of Kenya has prioritized health as a strategic sector in its national development agenda. As far back as 1965, sessional paper no. 10 on African socialism and its application...
Climate Change Effects on Health in Kenya

3. Health impacts of climate change

Although Kenya enjoys a relatively good tropical climate, it is prone to cyclical droughts and floods whose frequency and intensity is likely to be accentuated under the effects of a changing climate. Drought is the most common climate hazard, and affects almost 70 per cent of the country. Climate-sensitive diseases include diarrhoea, hepatitis A, and typhoid fever, along with vector-borne diseases such as malaria, dengue and Rift Valley fever (UNDP, 2013). Kenya’s epidemiological profile indicates that there is a substantial burden of existing climate-sensitive diseases. With climate change, the magnitudes of these diseases will increase in step with their geographical distribution.

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Alteration of vector-borne diseases

The link between climate change and human diseases is a major policy concern in Kenya. Although the impact of climate change on malaria remains inconclusive, a number of studies suggest a close association in the Kenyan highlands between changes in the incidence of malaria and climate variability. Traditionally, the regions around Lake Victoria and in the coastal zones near the Indian Ocean have been associated with a high prevalence of malaria. These areas formed the focus for malaria reduction campaigns, including the use of bed nets and distribution of anti-malaria drugs in health facilities. As temperatures rise and rainfall patterns become more erratic, the highland areas have recorded a rise in malaria cases, while in the lowlands, where the disease was endemic, its prevalence has declined. People living in low malaria-risk areas are now vulnerable to malaria under the influence of a combination of factors, such as low immunity to the disease, lack of information about the disease and its treatment, and lack of proper curative drugs and preventive insecticide-treated nets in local public health centres.

According to the Kenya Demographic and Health Survey, 71 per cent of households obtain drinking water from an improved source, while 27 per cent use non-improved sources, although there are great disparities in this respect between urban areas (88 per cent) and rural areas (59 per cent). Some 40 per cent of rural households obtain drinking water from non-safe sources, such as surface water (24 per cent), unprotected wells (8.8 per cent) and unprotected springs (5.5 per cent) (KNBS, 2014). Flooding has the potential to cause deaths through drowning, injuries inflicted during evacuation or during clean-up activities, and post-trauma management. Rising annual temperatures also lead to the increased prevalence of respiratory and cardiovascular diseases, including asthma, respiratory allergies and occupational lung diseases, all of which are affected by air pollution. Pollen and other aero-allergen levels tend to be higher in extreme temperatures, triggering asthma.

The health effects of flooding include mortality caused by unpredictable drowning accidents. The greatest numbers of deaths and injuries are caused by flash flooding and the collapse of dams, exacerbated by weak response mechanisms. Blunt trauma injuries are not uncommon during floods, owing to the amount of debris that may be caught in the moving floodwaters along with the unsuspecting victims. The collapse of Solai dam in Nakuru County in 2018,
where more than 30 people died tragically, exemplifies the health effect of flooding in Kenya. Floods can also cause the contamination of drinking-water supplies by sewage or farm run-off, leading to outbreaks of such diseases as typhoid fever, diarrhoea, cholera, leptospirosis and hepatitis A. These ailments are becoming particularly rampant in Western Kenya and the Lake Victoria Basin, owing to the terrain in these areas and their poor hygiene and sanitation. Diarrhoeal diseases mainly affect children aged up to five years and also people living in poor sanitary conditions.

**Effect on food and nutrition security**

The Food and Agriculture Organization of the United Nations (FAO) (2008) defines four dimensions of food and nutrition security, namely, food availability, food access, food utilization, and food stability. Food availability refers to the physical quantities of food that are produced, stored, processed, distributed and exchanged, including that which is exported and imported. This dimension thus corresponds to the adequacy of food available to supply the country’s food balance sheet. Food accessibility is the ability to secure entitlements defined as the set of resources (including legal, political, economic and social) that an individual requires to gain access to food. What this means is that the mere presence of an adequate supply of food does not necessarily ensure that a person can obtain and consume food – that person must first have access to the food through her or his entitlements. Entitlements that determine people’s access to food depend on allocation and distribution mechanisms, affordability, and cultural and personal preferences for particular food items. Food utilization refers to the use of food and how a person is able to secure essential nutrients from the food consumed. It encompasses the nutritional value of the diet, including its composition and methods of preparation; the social values of foods, which dictate what kinds of food should be served and eaten at different times of the year and on different occasions; and the quality and safety of the food supply, which can cause loss of nutrients in the food and the spread of food-borne diseases if not of a sufficient standard. Food stability is determined by the temporal availability of, and access to, food.

Climate affects almost every aspect of food security, from the plants and animals used, to the areas where food is produced and the price of foodstuffs in supermarkets. A number of studies have shown that climate change increases plants’ thermal time accumulation from flowering to maturity and reduces their simulated yields, whereas increasing the thermal time from seedling emergence to the end of the juvenile phase increases the simulated yields. When they cannot afford food, households adjust by eating less of their preferred foods or reducing the total quantities consumed as food prices increase. Given the growing numbers of urban residents who depend on the market for their food supply, food prices are critical to consumers’ food security and must be watched. When the varied climatic zones of Kenya and its specific distribution chains are taken into account, it can be seen that some parts of the country will experience major disruptions in the supplies of food, as it will be impossible to deliver them to market owing to the poor road network.

Droughts and floods can affect the availability and affordability of foods that make up a healthy diet. Without a healthy diet, the population is susceptible to a range of nutrition-related diseases like obesity, diabetes, heart attacks and bowel cancer. Changes in temperature, rainfall and humidity can also affect the distribution and impact of food-borne infections. Thus, under the influence of climate change, households may be forced to reduce the daily amounts of food consumed or to allocate food on a preferential basis to certain members, often the able-bodied male adults, who are assumed to need it the most in order to stay fit and continue working to maintain the family. Non-farming low-income households whose incomes are affected by climate change face similar choices.

Already, climate change and variability are associated with the declining production of Kenya’s main staple food crops based on rainfed farming techniques. The reduced amounts of rain, coupled with changing rainfall patterns, are disrupting planting seasons and encouraging the prevalence of crop and livestock diseases and pests.

Although climate change effects on health are widespread, children are among the most vulnerable to the resulting health risks and will be exposed longer to the health consequences. These health effects are also expected to be more severe for women and people with infirmities or pre-existing medical conditions. Regions with weak health infrastructure – mostly the rural areas and informal urban settlements – will be the least able to cope with climate change consequences without external support.

Thus, with the expected rise in the frequency and severity of drought, affected regions may experience a sharp increase in mortality due to protein malnutrition (kwashiorkor) or calorie malnutrition (marasmus). Certain vitamin deficiencies, such as a lack of vitamin A, can lead to specific consequences such as xerophthalmia and child blindness. Prolonged malnutrition can result in increased rates of disease and mortality and limit the general population’s functionality. Frequent drought may disrupt livelihoods and provoke mass movements of people, leading to overcrowding and poor hygiene. This will result in an increase in the transmission of communicable diseases such as tuberculosis or gastrointestinal infections.
4. How can climate change effects on health be reduced?

In summary, current and projected climate change will have severe consequences on health and present novel challenges to health delivery. In order for Kenya to make progress towards realization of the Big Four Agenda and the Sustainable Development Goals, it will be essential to pursue broad-based measures, not only within the health sector but extending to other associated sectors. Such measures, which may be carried out in collaboration with specialists from AFICS-Kenya, include the following:

(a) Vulnerability assessments:

A sound knowledge of the shifting climate is a prerequisite in tracking its impacts across various climatic zones. What is needed therefore is to strengthen collaboration between national government institutions responsible for climate change and county government departments handling health, so as to ensure that action plans implemented at the county level are informed by climate science.

(b) Malaria campaigns in newly affected areas:

Populations living in areas with new malaria cases should be made aware of the importance of preventive measures to eradicate malaria, including the use of insecticide-treated nets and indoor residual insecticide spraying before rains;

(c) Evaluation of the current health supply system for anticipated climate impacts:

The health supply chain system should be restructured and updated periodically by integrating climate change considerations to ensure that the right drugs are available in areas experiencing climate change-induced diseases;

(d) Improved coordination between national and county governments for improved disaster management:

It will be essential for the national Government to work closely with county governments to develop and implement a robust disaster management strategy that enhances preparedness and response to climate-induced disasters, with a focus on disaster prevention and mitigation at the community level.

References


