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Perspective

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Setting priorities for disaster management in the East African sub-region

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Abstract

Drought is of topmost concern among disaster risks in the East African sub-region. Although all phases of disaster management are relevant, the multi-dimensional ripple effects of drought and the international movement towards disaster risk reduction through proactive measures hinged on environmental sustainability and a development agenda make mitigation a priority. Public health partnerships/networks with stakeholders can be used to engender a culture of disaster risk reduction and can play a crucial role in containing potential threats (mitigation), capacity development in terms of scaling up health systems and public health response competency (preparedness), and service delivery during a drought incident.

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A “disaster” is a severe disruption of a community or a society´s functioning as a result of a hazardous event interacting with conditions of exposure, vulnerability and lack of capacity, leading to human, material, economic and environmental losses that exceed the ability of the community to cope [1]. Therefore, not all adverse events (hazards) lead to a disaster, but those that are of such *magnitude/threat* as to overwhelm the *response capacity* of the community. Climate change is the foremost precipitating/aggravating factor for disasters, being connected to about three-quarters of global incidents [1]. Its impact on countries, resulting from other hazards acting through pathways that could be synergistic, cuts across the spectrum of socioeconomic development, though developing countries of Asia and Africa have been worse hit, with large scale human affectation in South Asia, Central Asia, Southern Africa, and East Africa [1,2]. The crises predictions, in 2007, of the humanitarian futures programme for the decade 2005-2015 have proven to be accurate, if not an underestimate of current trends [2]. For East Africa, the report speculated global climate change would contribute to droughts, floods, and conflict-related forced migration affecting 15,476,000 and 22,059,000 persons in 2010 and 2015 respectively, with drought alone expected to take its toll on 12,273,000 and 17,367,000 persons in those years [2]. Indeed over 13 million persons had been negatively impacted at the end of 2010 by the ensuing drought of that year [3]. Predictions made in 2020 have come to pass with La Niña-driven shortages in rainfall in the latter part of that year and the March-May season of 2021, and rainfall levels as low as 50-75% below the 40-year average recorded by mid-April 2021 in eastern Ethiopia, northern Somalia, and northern and coastal Kenya [4]. This is likely to reoccur in late 2021 with dire consequences for food security, nutrition and general health possibly spilling into the next year, and over 50 million people requiring food assistance [4,5]. East Africa´s drought menace has been fueled by climate change, anthropogenic activities such as land degradation and deforestation, and armed conflict [3]. This paper will focus on East Africa, an area that is probably the most drought-prone in the world and yet has a population whose main occupation is crop production/livestock rearing that is heavily dependent on rainfall [3], and its disaster management priority between now and 2025.

Prioritisation of hazard: a “hazard” is any phenomenon that is capable of causing disruption/damage to lives, property, and the environment [6]. It is any event or physical force (which may be man-made or natural) in the environment that may adversely affect human life, property or activity [6]. The “risk” of a hazard is the product of its *likelihood of occurrence and the magnitude of impact* if it does happen [6]. This interplay of a hazard´s likelihood and its consequence has implications for disaster managers who have to make choices in the face of scarce resources. Besides identifying the hazards that a country or region has experienced or can experience in the future, profiling and risk analysis/risk assessment must be done by a comparative evaluation and ranking of all possible risks so as to determine which measures will be most appropriate, effective, and economically efficient [6]. By sheer figures (Table 1), the consequences of drought are overwhelmingly greater than those of other crisis agents. Furthermore, with the pattern of now occurring once every three years, there has been a hundred percent increase in drought frequency since 2005, with at least eight boreal spring droughts in the last 16 years [3]. Over the last two decades they have become longer and more severe, characterised by famine, malnutrition, forced migration, epidemics, and high mortality - 250,000 in Somalia alone during the 2010-2011 episode [3]. Therefore combating drought should be a priority for the region. All phases of disaster management are relevant, albeit unequally, to drought management. Mitigation, which is the reduction of risk by decreasing/eliminating the likelihood/adverse impact of a hazard, may involve

tremendously improving agricultural productivity by enhanced soil, water, crop, and nutrient management practices such as irrigation schemes, crop rotation, switch to drought-resistant breeds, use of fertilizers, and minimising wastages/losses, while removing obstacles to trade and improving efficiency of markets especially for small-holder farmers as has been successfully demonstrated in Ethiopia [7,8]. Preparedness entails equipping people and systems at risk of a disaster with tools to absorb the impact of a hazard and increase their chances of survival based on a good understanding of the hazard risks and keying into early warning systems, including occupational mobility and diversification of the economy; establishment of climate information services that keep farmers abreast of seasonality, trends, and variability; and provision of agricultural insurance and safety nets [6,9,10]. It is therefore aimed at reducing "vulnerability" which is a predisposition of individuals, communities, or countries - by virtue of their characteristics (biological, social, economic, mechanical, etc) - to be severely affected by the consequences of a hazard [6]. Disaster response is the collection of actions taken to curb further damage and losses after a disaster has occurred and includes relief efforts [6]. The United Nations humanitarian response depot coordinates logistics services for the network of humanitarian actors, and increasing the number of depots would go a long way to improving the efficiency of supplies [11]. Recovery phase entails the process of restoring optimum environmental, physical, infrastructural, social, economic, psychological functioning following, at the individual, family and society levels, following a disaster experience [6]. In other words, it involves repairs, reconstruction, and rehabilitation.

Prioritisation of disaster management phase: disaster mitigation should be a priority for East Africa. Socio-economic resilience is heavily dependent on ecological resilience [12]. Prevention is of the essence since droughts have stupendous ecological, political, economic and social ripple effects, and have the potential to cascade into other natural disasters such as heat waves and floods [13]. There has therefore been a paradigm shift regionally and internationally on the drought discourse with greater emphasis on proactive measures since reactive management has proven to be inefficient [13]. The proactive approach involves land and water conservation/rehabilitation; improving ecological, economic, and social resilience; enhancing drought monitoring, forecasting, and warning systems; as well as community assessments for risk and vulnerability [13]. This has been championed by the High-level Meeting on National Drought Policy (HMNDP) held in Geneva in March 2013. Among other points, it highlighted the urgent need for coordinated and consistent drought vulnerability and impact assessments, and mitigation policies centered on reversing land degradation and desertification [13]. Moreover, the Hyogo framework for action placed a high premium on disaster risk reduction (DRR) hinged on environmental sustainability and a development agenda [14]. Disaster risk reduction is the attenuation of hazard likelihood and consequence through analyses and policy frameworks geared towards reducing hazard exposure, decreasing vulnerability, managing the environment, and preparing for events [15]. The Sendai Framework, building on that of Hyogo, prioritises a thorough appreciation of disaster risk, setting up strong governance structures to manage the risk, local and international cooperation/collaboration, and channelling of resources to risk reduction [16]. Regional workshops on policy development have buttressed the three pillars of drought risk reduction namely *monitoring and early warning systems, vulnerability assessments, and mitigation measures* [13]. Fundamentally, "a national drought management policy should take a risk-management approach that applies measures to prepare for, adapt to and mitigate drought impacts. Drought management policy should also support the development of comprehensive drought monitoring and early warning systems and outline ways for better communication and dissemination of information on drought onset and risks. But

above all, a drought management policy should empower action and change that reduce risk and increase resilience" [13]. Risk reduction is cost-effective, engenders sustainable social, political, and economic development, and drives nations towards achieving goals 2, 8, 13, 15, 17 of the SDGs [17,18]. Furthermore, droughts, besides being easier to forecast, are slow-onset and so not as immediately dramatic as other hazardous events, making it less likely to attract early international sympathy and relief efforts [11].

Role of public health: food and water scarcity due to droughts have health implications for the populace, with a potential to escalate into a public health emergency. Apart from hunger and chronic malnutrition, there is a grave risk of epidemics of water and food-borne infections, and high psychosocial stress that can lead to mental disorders. In 2016, there was an outbreak of a tick-borne disease among nomads in Uganda, Kenya, and South Sudan as they massively crossed borders in search of water and pasture [1]. Public health partnerships/networks with stakeholders can be used to engender a culture of DRR, and can play a crucial role in containing potential threats (mitigation), capacity development in terms of scaling up health systems and public health response competency (preparedness), and service delivery during the disaster for example treatment of diarrhoeal diseases and malnutrition [8].

Conclusion

Climate change is severely impacting on the region of East Africa through drivers such as water dimensions, inter/intra-state instability, environmental degradation, and epidemics which are interacting additively or synergistically to produce crisis agents. By far the most significant of these agents, in term of magnitude of impact and likelihood of occurrence, is drought. Current thinking in line with propositions of relevant international organisations is that mitigation linked to developmental strides and environmental sustainability is paramount. The community collaboration this will entail can leverage on the partnerships and linkages of public health machinery. Furthermore, Public health should play a vital role in equipping the health systems to respond to the direct and indirect health impacts of drought.

Competing interests

The author declares no competing interests.

Authors' contributions

The author have read and agreed to the final manuscript.

Tables

Table 1: incidents of drought in East Africa over the last six decades

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Table 1: incidents of drought in East Africa over the last six decades				
Country	Drought years	Number of drought episodes	Number of people affected (million)	Number of deaths
Burundi	1999, 2003, 2005, 2008, 2009, 2010	6	3.1	126
Djibouti	1980, 1983, 1988, 1996, 1999, 2005, 2007, 2008, 2010	9	1.2	0
Eritrea	1993, 1999, 2008	3	5.6	0
Ethiopia	1965, 1969, 1973, 1984, 1987, 1989, 1997, 1998, 1999, 2003, 2005, 2008, 2009, 2012 and 2015	15	77.1	402,367
Kenya	1965, 1971, 1979, 1983, 1991, 1994, 1996, 1999, 2004, 2005, 2008, 2010, 2012, 2014 and 2016	15	50.2	196
Rwanda	1976, 1984, 1989, 1996, 1999, 2003	6	4.2	237
Somalia	1964, 1969, 1973, 1980, 1983, 1987, 1988, 1999. 2004, 2005, 2008, 2010, 2012, 2014 and 2016	15	18.4	19,673
South Sudan	2010, 2016	2	7.9	0
Sudan	1980, 1983, 1987, 1990, 1991, 1996, 1999, 2009, 2012 and 2015	10	31.5	150,000
Tanzania	1967, 1977, 1984, 1988, 1990, 1996, 2003, 2004, 2006, 2011	10	12.7	0
Uganda	1967, 1979, 1987, 1998, 1999, 2002, 2005, 2008, 2010	9	5.0	194
East Africa		100	216.9	572,793