

Water security and climate change in East African Countries



The water security ensures the adequate access to water on sustainable basis in sufficient quantity, necessary to sustaining livelihood, socio-economic development, preserving political and peace ecosystem and provide protection against natural disasters¹. Therefore, the concept is not limited to availability of drinking water but extends to overall human well beings and ecosystem services. Sometimes, there is no issue of water supply but even then the region is water insecure because it is not being judiciously used and evenly distributed. The East African countries are water insecure in both supply and further distribution pattern. It was also concluded that 1/3rd humanity is at the risk of water scarcity due to climate.

The phenomenon of climate change is derived by multiple factors and it also affects the multiple fields in human life. However, the intensity of climate change disasters is regional, having slight to extremes consequences. The food security and water security are key fields being affected by the climate change. Among the climatic variables, the water availability is directly suffered from precipitation, however, temperature has partial contribution. It promotes water losses by increasing the rate of evaporation. The future climatic vagaries depend upon local greenhouse gases production, locality of region and adaptive capabilities of the inhabitants. The East African countries are although not a big contributors of climate change due to low industrialization but are most affected countries of the world. The great vulnerability might be the result of the large

dependence on the natural resources and substantial livelihood. There have been many such incidence in the past in form droughts, floods, high speed winds and earthquakes.

The Africa including Eastern parts are already water stressed region of the world. It might be due to result of low precipitation in this region and uneven water distribution. In Africa two out of three in rural areas and one out of four in urban areas do not have access safe and clean water². The water flow in two of three rivers in Tanzania have drastically reduced resulting in water shortage, lack of agriculture production and variation in hydropower projects³. The lack of precipitation in catchment areas, reduced the annual water flow of River Pangani and river Ruvu by 6-9% and 10%, respectively⁴.



Between 1900-2017, Ethiopia, Kenya and Somalia observed 15, Sudan and Tanzania observed 10 and Uganda observed 9 severe drought events. The cumulative number of deaths in East Africa due to drought have been 572,793 and associated economic losses of 1495900 US\$. Out of the African countries, the highest number of deaths (402,367) were recorded in Ethiopia⁵. These droughts diminished water and led to famine. In Somalia, the frequency of moderate droughts are 3-4 years and severe drought repeats after every 7-9 years. Many families from Somalia ran away to Kenya in 2006 as a result of drought and other internal conflicts⁶. The drought in East Africa over past thirty years were the results of continuous warming in Indian pacific warm pool⁷. The

rising temperature enhance the melting of glaciers which results temporary floods. The melting of glaciers is also threat of climate change for future generations. The Kilimanjaro, an important basin of river Panjani is likely to disappear between 2015-2020⁸. It was estimated that coastal flooding due to rising sea levels in Kenya would affect 10000-86000 people which have economic cost of 7-58 (million US\$)⁹. If sever precipitation occurs in already wet period, it may result thunder storm and floods in certain parts. It will enhance water erosion which may reduce the storage capacity of reservoir due to silt deposition. There are chances that excessive rains might not improve the water availability round the year if not properly stored. Therefore, the sea surface level may rise in future because of increased precipitation.



The future projection revealed that rainfall in Africa is likely to drop by 10% by 2050 which would result in 17% less drainage¹⁰. The Africa is the driest region of the world and further climate change based reduction in precipitation would make the survival impossible without any proper intervention. The significant portion of East Africa is desert and only small are is under forest. About 70% of the precipitation in this region occurs during March-May and remaining amount is received during October-December¹¹. Being a desert, it is already suffering from water scarcity and further reduction in availability of water is serious future threat. The agriculture is main source of livelihood in developing countries and unfortunately, it is the most affected sector by climate change.

The changes are not uniform across the whole region but it might vary in region. The future drought incidences in East Africa were projected at three RCPs (2.6, 4.5 and 8.5) and it was concluded that drought area would expand by 16%, 36% and 54% corresponding to respective increase in the value of RCPs. Among the East African countries, the frequency and intensity of drought will be higher Somalia, Sudan, Tanzania as well as South Sudan, while its impacts are likely to decrease in Uganda, Kenya and Ethiopian highlands¹². The above statement highlighted that water availability in Somalia is at greater risk in the future according the projected drought spells.

It can be concluded that East African countries are water insecure, promoted by low precipitation and non-judicial water use as a result of bad governance. The per capita water availability will decline in future without some intervention to improve the water conservation. The people in East African countries are basically resource poor people and are seeking some external aids in order use water saving technologies.



Citation Sources

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