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Water Scarcity - the Driving Force of Underdevelopment in Rural Areas of Developing Countries

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***Abstract*— Water scarcity results to socio-economic problems and health complications. Attempts at solving water scarcity problems, such as groundwater extraction and stream damming, are not easily attainable in some locations due to geological formations and hydrologic features. The aim of this study is to investigate health and socioeconomic effects, causes and remedy of water scarcity in rural communities with difficult geological terrains. Water demand, water usage, population, and consequences of water scarcity were investigated through structured questionnaires. Data on water related diseases, topography, geology, rainfall and runoff were obtained and analysed. Malaria remained the highest occurring water related diseases in the study area and these were prevalent during wet seasons. The viable option to curb water scarcity in such environment is runoff harvesting and treatments.**

***Keywords*— Water Scarcity, Water related diseases, Geological formation, Water Quality, Water Quantity,**

I. INTRODUCTION

The importance of wholesome and adequate water for plant irrigation, conducive environment, heat removal, sanitation, hygiene, dirt removal and human consumption cannot be overemphasized. Water remains the most important natural resource necessary for life sustenance (Liu et al., 2016) . Lack of adequate and quality water can be threatening to humans, animals and plants existences (Jia et al., 2020). Man, animals and plants cannot thrive without water; since water makes up about 60 to 70% of plants and animals bodies. Inadequate water supply is the inability of supplied water to meet the demand of populace (Pande & Telang, 2014). Lack of adequate water to meet population demand are associated with water related diseases (DeNicola et al., 2015). Majority of water related diseases can be curtailed when people have access to adequate water supply (Omole et al., 2015). Water scarcity among other challenges such as poverty, energy shortage, food insecurity (hunger and malnutrition) and climate change facing developing countries; seems to be one of the most important. It cuts across all other challenges (UN DESA, 2015; Booker & Trees, 2020). Water scarcity is taking its toes on the world at large (UN- Water, 2018; Jia et al., 2020). This is resulting from exploding world population, increasing industrial and agricultural activities. These may lead to the next world war if adequate measures are not taken (Pande & Telang, 2014). These situations tend towards water insecurity; which is the incapacity of people to have access to acceptable water quality in adequate quantity needed for living, socio economic development, sanitation and ecosystem preservation in a peaceful and politically stable climate (UN Water, 2016).

Abundant water resources in the past are becoming scarce and this scarcity in turn affects other sectors such as health, food production and natural ecosystem (Seckler et al., 1999). In 2016, about 384 million people, faced drought around the world (Mekonnen & Hoekstra, 2016). Drought which has large impacts especially on agricultural production had led to annual financial losses in regions like the USA, China and other places around the world (CRED, 2016). More than half of the of the world population experience water scarcity for more than 30 days within 365 days (Mekonnen & Hoekstra, 2016). According to Lukenga (2015), 3.6 million people die annually from water related diseases. Forty-three percent (43 %) of water related death results from diarrhoea (Mekonnen & Hoekstra, 2016). Ninety-eight percent (98 %) of these water related deaths occur in the developing countries where about 884 million people lack access to safe water supplies (Lukenga, 2015).

IV. CONCLUSION

It was clearly established that communities with difficult terrains especially basement complex geological formations are bound to experience water scarcity due to low groundwater storage. The consequences of water scarcity range from health effects such as malaria and diarrhoea to socioeconomic effects such as loss of productive hours, high crime rate and use of unhygienic sanitary systems. Rainwater harvesting are not viable in such rural communities due to limited roofs. The proposed option to combat water scarcity in such rural communities with difficult terrain is runoff harvesting and remediation.

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