The Impact of Water Infrastructure on Refugee Populations Globally

Introduction

Why Study Water Infrastructure?

- Globally, this impacts over 2 billion people (UN, 2019). Water is at the foundation for sustainable and socio-economic development.
- Access to water and sanitation is a basic human right. The UN General Assembly recognized this right and states that “Everyone has the right to sufficient, continuous, safe, acceptable, physically accessible and affordable water for personal and domestic use” (WHO/UNICEF 2019).
- Lack of water also impacts mental state and health status. Water stress occurs when the available water isn’t sufficient for the population and causes health and psychological issues.

Sanitation

- 1.7 billion people around the world lack access to basic sanitation services (WHO/UNICEF 2019).
- Health and sanitation are also directly tied to water. Having access to safe water could lessen the burden of global disease. 
- In low- and middle-income countries approximately 829,000 people die each year as a result of insufficient water and sanitation (60% of total deaths from diarrhea) ((WHO/UNICEF 2019)
- Every year over 297,000 children under the age of five die from diarrheal diseases caused by unsafe drinking water, and poor sanitation/hygiene (WHO &UNICEF, 2019).

Migration

- The International Organization for Migration (IOM) reports that as of 2018, there are upwards of 760 million domestic migrants globally (World migration report 2018).
- The World Bank’s data states that 10% of all migration from 1970 to 2000 is due to water deficits (Jägerskog et al., 2021). Regions that do not have the capacity to deal with issues, including water insecurity, limited infrastructure, and the over-exploitation of resources, increase the likelihood of migration (Jägerskog & Swain, 2016).
- Another way a lack of water impacts these communities is that it affects agriculture. Water shocks often have a significant impact on agriculture; when farmers cannot supply their crops with enough water, they are forced to look elsewhere, and that community’s economy suffers because of it (Khan et al., 2019). These people, mostly influenced by a lack of water, or water shocks, often work in agriculture.
- It is not uncommon to have a particular part of a region experience drought and deficits in water infrastructure while others do not. Due to water deficits, many rural areas are urbanized, which drives former agricultural workers “into cities in search for better opportunities” (Jägerskog et al., 2021).
- Drought and water shocks combined with inadequate infrastructure impact the attractiveness of an area and influence wealth and agricultural productivity, which act as push factors for individuals struggling and considering migration (Jägerskog et al., 2021).

Methods

To test the relationship between infrastructure and the migration of people, I used data from the World Development Indicators. The variables that represent water and sanitation infrastructure were percent of population using basic water services, percent of population using safely drinking water services, percent of population using basic sanitation services, percent of population using safely managed sanitation services, and percent of population practicing open defecation. After preliminary analysis Net Migration was thrown out due to lack of data and unreliability, instead refugee population and number of displaced persons due to natural disasters were used as the dependent variable to examine the movement of people.

Before performing the correlation and regression analysis, all variables were examined to test for normalcy. The variables were either logged or recoded to create a normal distribution.

Research Questions:

What data supports the above literature? Is the UN and WHO doing enough to help improve water infrastructure? What aspects of infrastructure have the biggest impact on the global refugee population?

Interesting Descriptive Analysis

Refugee Population

The Refugee population was weakly and moderately correlated significantly with population percentage having access to basic water service (.352), population percentage having access to safely managed drinking water (.375), population percentage of access to basic sanitation services (.296), population percentage of access to safely managed sanitation services (-.558), and percentage of population practicing open defecation (.210).

Displaced Persons

The population of displaced people due to natural disasters was significant but weakly correlated with (.249), percent population having access to safe water service (.323), percent population having access to basic sanitation services (.225), percent population having access to safe sanitation services (.349), and percent population practicing open defecation (.199).

Regression

Regression analysis shows that with a R value of .419 can explain that 42% of the variation in refugee population can be explained by the infrastructure variables. In addition, the percent of population with access to safely managed sanitation services has a statistical significant impact on the outcome variables.

Discussion

Often a scarcity of resources can be linked to migration, and access to water and its surrounding infrastructure has become increasingly scarce. Water deficits impact an area’s agriculture, economy, and population. It acts as a push and pulls factor for migration. Looking at a lack of water and its infrastructure, one could start to understand migration patterns and explore water infrastructure’s impact and significance on migration. The UN is aware of these issues and has provided access to safe water for areas with less access to water, but is this enough? Analysis shows that the continuing lack of water infrastructure impact migration and can shift the demographics of an area. The results show how these factors still significantly impact the refugee population and the movement of people in and out of certain areas. Improving the infrastructure for water would increase countries’ economic growth and poverty reduction as well as increase overall global health.

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References available upon request