Engineering skills

Group Assessment

Group 06

222490055	218415826
222449284	222411686
222106492	222007311
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INTRODUCTION

In this assignment we will be discussing about the sustainability and impact of engineering activities, focusing on problems regarding water scarcity, food insecurity, and poor waste management, lack of infrastructure and energy efficiency.

Water Scarcity

Water scarcity mean scarcity in availability due to physical shortage, or scarcity in access due to the failure of institutions to ensure a regular supply or due to a lack of adequate infrastructure and it has already affected every continent. Shortages can cause a variety of illnesses which can range from food poisoning to cholera. (Nations, n.d.)

Causes of Water scarcity

The following are some of the major causes of water scarcity:

Climate change, natural calamities such as droughts and floods and increased human consumption

Water use has been growing globally at more than twice the rate of population increase in the last century and an increasing number of regions are reaching the limit at which water services can be sustainably delivered, especially in arid regions. (Suzman, n.d.) (Water Solutions, n.d.)

Solutions for water scarcity

Sustainable water management- Improving water infrastructure must be a priority, as water conservation and efficiency are key components of sustainable water management. Solar desalination and smart irrigation

systems are great examples of clean technology for water efficiency and control. That obviously applies even more to the agriculture and farming sector - the largest consumer of water.

Reclaimed water- Rainwater harvesting and recycled wastewater also allow to reduce scarcity and ease pressures on groundwater and other natural water bodies. Groundwater recharge, that allows water moving from surface water to groundwater.

Pollution control & better sewage treatment- Without proper sanitation, the water becomes full of diseases and unsafe to drink. That is why addressing pollution, measuring and monitoring water quality is essential. Besides, improving the sewage systems in specific areas is another way to prevent water scarcity from becoming any worse.

Awareness & Education-Education is critical to solve the water crisis. In fact, in order to cope with future water scarcity, it is necessary to radically reform all forms of consumption, from individual use to the supply chains of large companies.

FOOD INSECURITY

Food insecurity is the measure of the availability of food and individual's ability to access food that is affordable, nutritious and sufficient in quantity. (Food Insecurity, n.d.)

WHAT CAUSES FOOD INSECURITY IN OUR COMMUNITIES

It may be influenced by factors including income, employment, poverty, race/ethnicity, and disability. Food insecurity leads to soil erosion and water pollution. It also increases risk of chronic illness like asthma and anaemia. (Valdes & Siamwalla, 1980)

EFFECTS OF FOOD INSECURITY IN COMMUNITIES

More than half of the population live below the poverty line that means they cannot afford a diet that has all the nutrients they need. That equates to several people being affected by malnourishment because of this, more than 26% of children under 5 years' experience stunted growth. Hunger malnourishment result in poor health and compromised learning and this negatively affects economic productivity Adults who are food insecure may be at an increased risk for a variety of negative health outcomes. (Food Insecrity, n.d.)

HOW ENGINEERING CAN SOLVE THE ISSUE OF FOOD INSECURITY IN COMMUNITIES

The role of engineering is vital in building sustainable storage systems to help secure food supplies for countries all year round. Through increased visibility and involvement, engineers can help to improve rural infrastructure, storage capacities and knowledge-transfer. This will not only significantly reduce food losses and waste throughout the food chain, but also work towards achieving lack of resources for farming. (Taylor, 2021)

POOR WASTE MANAGEMENT

Waste management is the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. Poor waste management can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne diseases (spread by rodents and insects). (Nathanson, 2020)

CAUSES

Causes of poor waste management can all be tackled with the appropriate amount of attention. One of the first causes of poor waste management is

a lack of public awareness or lack of awareness within businesses and poor attitudes. Often, when something is at the end of its use, the way it's disposed of can be done so with a lack of care. A lack of waste management machinery can make it difficult to implement a truly efficient waste management strategy. Waste management strategies are a crucial part of a business' everyday working methodology. (Greenbank, 2020)

ENGINEERING SKILLS SOLUTIONS

Environmental Engineering is essential in developing communities with poor waste management, with the help of environmental engineers, proper waste management and recycling initiatives are reinforced. They are also in charge of public health and water and air pollution control. They ensure that pollution levels are in check. They do so by constantly formulating environmental strategies and processes which take thorough testing before implementation. (Zafar, 2021) (Abdel-Shafy & Mansour, 2018)

Lack of infrastructure

Unreliable and non-existing infrastructure such as roads and bridges in societies is the key problem, in my society there are limited access to tar roads or even gravel roads that are in a safe drivable condition. Children, workers and shoppers travel far distances to a main road for taxis or buses to get them to schools, shops and their respective jobs. (Park, 2018)

FACTORS THAT CONTRIBUTE TO POOR INFRASTRUCTURE:

There are several factors that contribute to poor infrastructure, and they include the lack of, or shortages, of funds, insufficient provision of developmental resources and inefficiency of developmental labour as well as poor repair and maintenance. (DBSA, n.d.) (Mazele & Amoah, 2021)

Solutions:

There must be an investment in basic infrastructure and social services communications, civil engineers and mechanical engineers should build up road constructions and buildings for homeless people in the society, solving problem skills can be used using team building regarding to the health care for people in the economy by providing energy, transportation, build up roads and infrastructure. (Mueller, 2016)

What is energy efficiency?

Energy is defined as the ability to do work while efficiency is the ability to avoid wasting material, energy, efforts, money and time in doing something thus, energy efficiency is using less energy to perform the task that is, eliminating energy waste. It is one of the easiest and most cost-effective ways to combat climate change, reduce energy costs for consumers and improve the competitiveness. (EESI, n.d.)

What are the causes of energy efficiency?

It is caused by over population, unexplored Renewable energy potions, adapting the habit of lowering temperature on the thermostat and limiting space heater use etc.

Conclusion

. Engineers provide accurate analyses and reporting (EUI), and can help to significantly reduce buildings energy use and cost. While renewable energy technologies also help accomplish these objectives, improving energy efficiency is the cheapest-and often the most immediate-way to reduce the use of fossil fuels. (Edvard, 2017)

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